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Factors Influencing Choices for Colorectal Cancer Screening Among Previously Unscreened African and Caucasian Americans: Findings from a Triangulation Mixed Methods Investigation

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Abstract

We investigated factors that influence choice of colorectal cancer (CRC) screening test and assessed the most- and least-preferred options among fecal occult blood testing (FOBT), flexible sigmoidoscopy, colonoscopy, and double contrast barium enema among adults with varied race, gender, and geographic region demographics. Mixed methods data collection consisted of 10 focus group interviews and a survey of the 93 focus group participants. Participants were ≥ 50 years of age and reported not having been screened for colorectal cancer in the last ten years. Analyses examined differences by race, gender, and geographic location. Participants had modest knowledge about CRC and there were fewer correct answers to knowledge

questions by African Americans. Participants recognized value of early detection, and identified health symptoms and their doctor's recommendation as influential for obtaining CRC screening. They chose colonoscopy and FOBT as the most preferred tests, while barium enema was least preferred. The analysis revealed intra-group variations in preference, though there were no significant differences by race, gender, or location. Openness of discussing this sensitive topic, lack of knowledge about colorectal cancer and screening costs, and diversity of preferences expressed within study groups suggest the importance of patient-physician dialogue about colorectal cancer screening options. New approaches to promoting colorectal cancer screening need to explore methods to facilitate patients establishing and expressing preferences among the screening options.

Introduction

Colorectal cancer (CRC) is the third most frequently diagnosed cancer among men and women in the United States and the second leading cause of cancer death [1]. It has a lengthy, detectable, premalignant phase during which a simple intervention (polypectomy) can be used to prevent progression to more advanced stages of cancer [2–5]. When detected early, more than 90% of persons with the disease live at least five years beyond the diagnosis. Unfortunately, only 37% of colorectal cancers are diagnosed before they have metastasized [6]. Methods commonly available for screening include fecal occult blood testing (FOBT) and visualization of the area either with a sigmoidoscopy (rigid or flexible), a colonoscopy, or a double contrast barium enema [7]. Despite the availability of these procedures, screening rates for CRC are quite low. Only 26.5 and 24.2% of adults aged 50 years and over had used a home stool test kit within the past

two years, and 53.5 and 57.1% reported ever having a sigmoidoscopy or colonoscopy examination in 2004 and 2006, respectively, based on Behavioral Risk factors Surveillance system [8].

Previous research demonstrates that most adults believe in routine cancer screening, reasons why they seek screening, and a knowledge gap, especially among women when it comes to cervical and colorectal cancers [9–12]. Personal preference is important in screening [13], and patients vary in their acceptance of tests [14]. A growing body of literature has focused on patient preferences for CRC screening [10, 15, 16]. Beeker et al. identified factors that predispose individuals to be screened for CRC, such as knowledge of the risks [10]. They also identified enabling factors, such as costs, and reinforcing factors, such as interactions with health providers, friends, and family. In a call for further research, Beeker et al. also suggested that future interventions should be tailored for specific populations such as women, racial, and ethnic groups [10].

Leard et al. has explored preferences for method of CRC screening among males and females who were mainly Caucasian (87%) [15]. For these individuals, the preferred screening methods, from most to least, were colonoscopy, FOBT, barium enema, and flexible sigmoidoscopy. Pignone et al. examined preferences for CRC screening after receiving descriptive information, after information about test performance, and with information about out-of-pocket costs [16]. Taken together, the Leard & Pignone studies assess screening preferences among primarily Caucasian, non-rural populations. Thus, they provide little evidence of preferences for individuals with diverse ethnic/racial backgrounds, and do not provide qualitative assessment of the reasons individuals seek screening and the reasons for a preferred screening test for CRC. Given these gaps in previous research, we

investigated factors that influence choice of a screening test. We assessed the most- and least- preferred tests among four tests (FOBT, flexible sigmoidoscopy, colonoscopy, and double contrast barium enema) for study groups that varied by gender, race/ethnicity, and geographic region. The goal was to guide the development of a web-based tool to help patients choose among the screening options and then test the tool in a randomized controlled trial [17, 18].

Methods

Design

We employed a triangulation mixed methods design with both qualitative and quantitative data collected, but with a priority given to the qualitative analysis [19]. The approach to leveraging both data sources together is gaining popularity in the social and health sciences [19–27]. In a triangulation mixed methods design, both qualitative and quantitative data are collected concurrently, and by integrating the results, a more robust and complete understanding is possible than the use of either data source alone (Fig. 1). Based on gaps in the literature, the study was designed to enroll previously unscreened individuals, and to include both African American and rural participants. The University of Michigan Institutional Review Board approved this study.

Recruitment of Participants

Participants were recruited by telephone using a stratified random sampling process reported previously [28]. The stratification was based on three geographic areas: urban, semi-urban, and semi-rural areas and sampled within zip and area codes that represented these three areas. To select

potential participants for each focus group, individuals were called using a computer-aided telephone interviewing (CATI) system. The intent of the initial telephone interview was to determine if the person was eligible and interested in participating. Eligibility criteria consisted of individuals with self-reported age between 50 and 70 years at time of telephone interview, and people who had not been screened for colon cancer within the last ten years. Approximately equal distribution by race was sought.

Data Collection

Following this CATI screening, 10 semi-structured focus group interviews were conducted. Approximately equal numbers of African American and Caucasian American adult women and men in three Michigan communities comprised the focus groups. The focus group interviews were gender-specific, moderated by a same-sex interviewer (both were Caucasian), and lasted approximately two hours [28]. For feasibility issues, one male focus group included both African Americans and Caucasian Americans; all others were race specific.

Prior to the interview, participants completed a CRC knowledge and beliefs instrument consisting of 21 multiple-choice items. Major domains addressed risk factors from lifestyle, personal characteristics and family history, effectiveness of early detection, screening tests, and beliefs about risks of surgery previously identified as important among African Americans relative to breast cancer [29]. During the focus group, participants were asked: their reasons for not being checked for CRC, their reasons for being checked, factors that would influence them to be checked, and their awareness of CRC screening. After this questioning, the facilitator handed out a summary sheet of basic features about four tests to check for CRC [i.e., FOBT, flexible sigmoidoscopy, colonoscopy, and double contrast

barium enema ([Table 1](#))]. Using this summary sheet as a guide, the facilitator reviewed each of the four tests and then led a discussion about the reasons for choosing and not choosing each test.

Next, the focus group participants wrote their decision in private on a slip of paper about which tests were their most and least favorite and then with the group discussed reasons for their choices. Rather than simply recalling information from the handout, the participants framed their reasons in their own words. Follow-up questions addressed the participants' thoughts about insurance coverage for tests and their information sources for learning about cancer. Following the focus group interview, the participants provided demographic information. This data collection yielded 268 pages of transcription, from approximately 40 h of videotape, and survey results on knowledge, beliefs and demographics data.

Data Analysis

We conducted a mixed methods analysis because we collected both quantitative and qualitative data (knowledge and beliefs assessment instrument and demographics, and focus group interviews respectively) [[20](#)]. Quantitative data analysis was conducted using SPSS. Comparisons between African American and Caucasian participants were done using t-test and chi square as appropriate for the variable with adjustments made for multiple comparisons. Qualitative data analysis was conducted using QSR N6. Specifically, the QSR N6 software program was used for storing data, creating categories, and searching for evidence in the database. During the coding process of qualitative analysis, intercoder agreement between one of the investigators (JC) and the focus group interviewer was excellent. There was 88% agreement on codes for the question on reasons to be checked for colorectal cancer, and 100% agreement on the question about factors that

would influence or persuade one to be checked for colorectal cancer. To enhance validity, evidence from the text was sought through the N6 analysis to corroborate the identified themes.

Results

Demographics

There were 93 participants in the focus groups and these ranged in size from 5 to 12 people per group. The demographic features of the study participants overall and by race are summarized in [Table 2](#). The African American participants were significantly older ($t = 2.41, P = 0.01$), had more children ($t = 2.34, P = 0.01$) and grandchildren ($t = 1.64, P = 0.03$), had fewer years of education ($t = 1.96, P = 0.02$), and were more likely to have an annual household income less than \$30,000 (chi square = 5.22, $P = 0.02$). More African Americans (chi square = 1.75, $P = 0.03$) reported ever having a health maintenance examination (HME), and the most recent HME was more recent than Caucasians ($t = 2.16, P = 0.03$).

Quantitative survey data yielded insight into the personal knowledge and beliefs individuals had about CRC. The qualitative data led to themes about reasons why individuals should be tested, what would encourage individuals to be tested, and the role of their physician and insurance in screening. Finally, the qualitative focus group data were transformed by coding and quantification to provide rank ordering of volunteered preferences for screening tests and to include quotes to support reasons for choices of tests.

Personal Knowledge and Beliefs of Colon Cancer

To highlight areas of least understanding among the participants, [Table 3](#) compares by race the number and percentage of participants with

uncertain/incorrect responses about knowledge and belief questions. Overall, participants had modestly good understanding of lifestyle risks associated with CRC (i.e., smoking, age, foods high in fat, and low in fiber). They were, however, uncertain as to whether risks changed based on the ethnicity or gender of a person. For the most part, they were aware of the need for early detection, benefits of early detection, and screening tests available (i.e., FOBT, flexible sigmoidoscopy, colonoscopy, and double contrast barium enema). They were uncertain about the relationship of family history (i.e., breast, prostate, ovarian, CRC or colorectal polyps) to CRC. Further analysis showed that there were no significant gender differences on any knowledge item ($P > .05$). Significantly more African Americans than Caucasians (chi square = 4.99, $P = 0.02$) did not know increased fiber consumption is a means to reduce risk. In addition, more African Americans responded incorrectly or were uncertain of the risk of family history for CRC (chi square = 9.135, $P < 0.002$) and ovarian cancer (chi square = 4.18, $P = 0.03$). Far more African Americans (57% vs. 31% for Caucasians, chi square = 6.24, $P = 0.01$) were uncertain or incorrectly believed that surgery for CRC will cause cancer to spread.

Reasons for Testing

As shown in [Table 4](#), participants in the focus groups identified specific reasons about why they should be tested for colorectal cancer. Of multiple reasons mentioned, the most frequently discussed were: prevention or early detection ($n = 38$), health symptoms or problems ($n = 28$), family genetics or family history ($n = 14$), and age of a person ($n = 10$). Several individuals ($n = 10$) indicated that they had never thought about being checked. Additional factors cited were: other people who have had cancer, a doctor's recommendation, its prevalence today, and publicity in the news media.

Others commented about how testing simply would prolong their lives.

The participants frequently mentioned early detection as a primary reason to be tested. They indicated that detection of colon cancer early enhances the probability of recovery, provides early signs of polyps that could be excised, removes the possibility of the spread of cancer, and makes colorectal cancer easier to treat. Health problems such as constipation, blood in the stool, excessive straining, or general problems with the rectum or bowel would also lead some participants to testing. Someone in the family with cancer or prior testing for cancer also was provided as a reason to lead individuals to colorectal cancer testing. Several individuals talked about their family histories of cancer, such as their father's or cousin's cancer. Although they did not mention a specific age, they commented about how they need testing as they age or because illness occurs more frequently with older age. A curious finding was that women in two groups, one Caucasian and one African American, spoke about how they avoid thinking about colorectal cancer.

Factors Encouraging Testing

We asked focus group participants to identify factors that would influence or encourage them to be screened. As shown in [Table 4](#), the five most frequently discussed influences were physical symptoms (n = 33), a doctor's recommendation (n = 31), knowledge about colorectal cancer (n = 21), family history (n = 20), and availability of insurance coverage (n = 12). Other less frequently reported influences were friends, experiences of others with cancer, age when a CRC check is recommended, additional free time after retirement, availability of a “simple” test, and the importance of early detection.

Physician's Role in Testing

Participants varied in their perspectives of the role their physicians should take in test choice ([Table 4](#)). Most participants said they leave test choice up to the physician because of their training, knowledge, and inclination to be directive (n = 23). A subset of participants anticipated a middle path of assessing the pros and cons of each screening test together with their physician, and then making a decision about which procedure (n = 13) to use. Only two participants indicated that the choice was ultimately their own to make. The participants also discussed the importance of rapport and trust in their physicians.

Insurance as a Factor

As shown in [Table 4](#), many participants reported that test cost and insurance coverage had a direct effect on their test choices (n = 14). Participants had difficulty indicating how much money they would be willing to spend on an un-reimbursed test because they did not know the costs of different screening tests (n = 5). They were aware, however, that the colonoscopy and barium enema tests are more costly, and several recommended that patients should discuss costs with their physicians. Some thought that even though they were jobless or uninsured, Medicare would cover the costs of the test. Only two stated insurance was not necessary and they would still get tested even not having insurance.

Test Preferences

[Table 5](#) illustrates participants most and least favored test for CRC screening. In all, 74 provided an opinion about most preferred test. The ordering by most preferred test is: colonoscopy (49%) fecal occult test (39%), barium enema (7%), and flexible sigmoidoscopy (5%). Reasons

given for preferring colonoscopy were thoroughness of information provided and the lack of need for additional follow-up tests. They viewed it as accurate, relatively painless because of the anesthesia, and essentially the best available test because, “it's more involved, but once you get through it you're home free for at least ten years.” Reasons for preferring fecal occult testing were its brief test-retest interval (“I can get it done annually and if blood is found, then I would take the other test.”), simplicity, convenience, and personal privacy. Moreover, participants saw it as a preliminary screen before more invasive testing was required, “So first I have to know if I have a problem, and then I'm going to do something about it.”

While there were trends found in subgroup analyses, there were no statistically significant differences by gender, race and geography. More Caucasians than African Americans preferred fecal occult test (46% vs. 30%), while more African Americans than Caucasians preferred colonoscopy (55% vs. 44%). There was no gender difference in preference for colonoscopy; whereas, slightly more males than females (43% vs. 36%) preferred fecal occult test. Urban and semi-urban participants tended to prefer colonoscopy to fecal occult testing (55% and 50% for colonoscopy, 35% and 42% for fecal occult blood test, respectively) although the semi-rural participants were equally divided between preferring colonoscopy (38%) and fecal occult testing (38%).

Regarding least-preferred tests, 64 gave an opinion ([Table 5](#)). Over half of the participants least preferred barium enema (53%) followed by colonoscopy (22%), flexible sigmoidoscopy (14%), and finally fecal occult testing (11%). Reasons for ranking barium enema as least-preferred were: the need to have barium and air pumped into the colon (“the air would just be too much”), the perception that the test may require follow-up testing

(“need to have a colonoscopy or something if you had polyps”), and the length of time required for barium clearance (“the recovery time”). Finally, reasons given for ranking colonoscopy as the least preferred were: the need for anesthesia (“I like to avoid any kind of anesthesia”), invasiveness, and potential pain (“I wouldn't want to have that probe stuck up...it would be quite uncomfortable”).

There were trends, but no statistically significant differences by race, gender, or location for the least-preferred test. More Caucasians than African Americans (22% vs. 4%) rated flexible sigmoidoscopy as least preferred (“What about the other two-thirds of the colon?”). More females than males (62% vs. 40%) considered a barium enema to be the least-preferred test (“I'd have to get rid of it (gas) for days”). More males than females rated colonoscopy as least preferred (28% vs. 18%) and for diverse reasons (“the time, pain, discomfort, having somebody take you to the hospital and all that”). In terms of their least-favorite test, urban and semi-urban participants were more favorable about a flexible sigmoidoscopy test than the semi-rural participants, and the semi-rural participants were more favorable than the semi-urban participants toward the fecal occult blood test.

Discussion

This study highlights the complex factors that go into individuals choosing a colorectal cancer screening test. Overall, the study participants had modest knowledge about colorectal cancer, results that have been elicited in prior research [9, 10]. Despite some differences by race, and possible trends by race, gender and geographic location, the overall intra-group variation suggests that regardless of the sub-population studied, there will be

individual variation that physicians should explore in helping patients choose and be screened for CRC. In the knowledge and beliefs evaluation, African American participants had higher numbers of uncertain or incorrect answers. This suggests physicians should take care to fully disseminate information and provide opportunities for discussion especially with their African American patients.

Regarding reasons for testing, participants focused on early detection and health problems that would signal a need to be tested. Physical symptoms and the advice of their physicians also encouraged them to proceed with testing, results consistent with previous findings [10]. Leaving the decision up to their physician was a role many were comfortable with, and, while insurance to pay for the tests was viewed as important, some felt that tests were needed regardless of the availability of insurance, even though they were uncertain about how much these tests cost. For all participants, the most favored test was colonoscopy (consistent with Leard et al., but contradictory to Pignone, et al.) and the least preferred test was the barium enema [15, 16]. The study groups that favored the colonoscopy tended to be the Caucasian males from urban and semi-urban settings. The study groups that were least favorable to the barium enema were females from the urban and semi-urban areas.

As the study participants were not chosen at random, this may limit the generalizability of findings. There were inadequate numbers to achieve statistical significance for many of the sub-analyses. The number of participants, the self-reported data and focus group methodology limitations may have precluded full elucidation of relevant perspectives. Still the data transformation procedure used does provide a view on relative importance of various factors based on frequency raised. A potential concern is that the

information sheet about the four screening tests given to participants could bias their responses, but they independently arrived at their choice after discussing the advantages and disadvantages of each test. Findings might have been different among adults with more recent screening experience, and new screening tests such as virtual colonoscopy or DNA stool test were not addressed in the focus groups. Finally, because the study participants were all of average risk for colorectal cancer, findings may be different among adults at increased risk.

This study represents an assessment of preferences for different colorectal cancer screening tests by men and women, African Americans and Caucasians, and by individuals from different types of communities. This predominantly qualitative study adds to that of Beeker et al. by further elucidating the participants' preferences regarding available screening options for CRC [10]. There is striking diversity in perspectives within these groups in CRC screening preference and this reinforces the need for physicians to individualize screening tests and to discuss and negotiate with individuals about their choice of tests. Despite the sensitive nature of the subject matter, the participants in this study openly discussed their reasons for screening and the attitudes towards each test. Patients appear to need an open discussion of the pros and cons of each test, especially if they are uncertain or unknowledgeable about colorectal cancer.

Practical Implications

Determining a patient's preferences among the four screening tests is not a simple task. A simple tri-fold handout or website with just the facts really cannot adequately address many of the variables adults consider. Simply giving patients a choice from among the screening options does not appear to improve screening rates [30–33]. Rather, an effective tool for CRC

screening decision-making needs to provide decision support and preference clarification with regards to the variables and domains raised in this research.

Consequently, we used the findings from the current investigation and created an interactive decision aid called Colorectal Web to promote colorectal cancer screening [17]. The current program can be reviewed at <http://colorectalweb.org/>; login: test; password: test. The program focuses on helping users establish a choice among the screening options through a preference clarification activity. The activity allows users to select three issues they are concerned about in checking for colon cancer. The possible issues include pain, preparation required, accuracy, frequency, extent of invasiveness of the test, and cost. Based on this research, Colorectal Web contains education topics specific to gender, race, and other risk factors for colorectal cancer, and the content was generated specifically to address misperceptions based on the knowledge and belief items and concerns identified in the qualitative findings. In a randomized controlled trial, the tool developed based on this research proved to be quite effective in getting users to complete colorectal cancer screening [18]. The probability of being screened for colorectal cancer after 24 months in the Colorectal Web intervention study arm was more than threefold greater compared to the control arm (OR = 3.23, 2.73–3.50 95% Confidence Interval).

Unscreened patients can clearly develop a preferred screening approach for colorectal cancer, though the factors influencing the preference are manifold and complex. Remaining unanswered questions for future research are how to establish efficiently a preferred screening method; how patients can express their preferences to their clinical providers; how providers respond to requests for the preferred screening option and does having a clear

preference lead to more screening in a variety of patient populations. As the web-based intervention developed from this project lead to increased screening, research on how to disseminate this program, and whether there are gender and racial differences when used on a broader scale are questions that merit further inquiry. One project underway is examining whether sending the patient's doctor the results of the preference generated through the Colorectal Web preference clarification activity leads to more screening.



[View larger version](#)

Fig. 1. Mixed methods triangulation design of the factors influencing choices for colorectal cancer screening

Table 1
Summary of four tests to check for colorectal cancer

	Fecal occult testing	Flexible sigmoidoscopy	Colonoscopy
Purpose	Chemically tests for blood in stool	Directly looks in last third of colon	Directly looks in all of colon
How to do it	Patient collects stool on a stick and scratches the stool to a special card	Doctor inserts a 2-foot long flexible instrument into the colon	Doctor inserts a 3-6 foot long flexible instrument into the colon
Preparation	Small Diet low in lightly cooked meats and certain vegetables	Moderate Take a medication that stimulates a bowel movement and use an enema to clean out the	Intense Take several medications that stimulate a bowel movement, or flush by mouth to clean out the stool

[See full table](#)

Table 1. Summary of four tests to check for colorectal cancer

Table 2
Demographics of participants

	African Americans N = 31 n (%)	Caucasian Americans N = 42 n (%)	B (%)
Age (mean, years)	58	60	66
Marital status			
Married	22 (57%)	28 (69%)	46
Single	6 (14%)	10 (24%)	28
Divorced/separated	8 (19%)	11 (26%)	25
Widowed	6 (14%)	6 (14%)	12
Mean number of children	3.3	2.4	21
Mean number of grandchildren	5.0	3.2	4
Self-rated of health			

[See full table](#)

Table 2. Demographics of participants

Table 3
Knowledge and beliefs about colorectal cancer

Knowledge and belief items	Incorrect or uncertain African Americans	In %
Risk factors from lifestyle		
Smoking increases the risk of getting colon cancer (True)	27	(34%)
Eating foods high in fiber increases the risk of getting colon cancer (False)	35	(37%)
Eating foods high in fat increases the risk of getting colon cancer (True)	17	(34%)
Risk factors based on personal characteristics		
The risk of getting colon cancer increases as a person gets older than 50 (True)	33	(20%)

[See full table](#)

Table 3. Knowledge and beliefs about colorectal cancer

Table 4
Themes in choice for colorectal cancer screening

Themes and sub-themes	Quotes and attributions ^a
Reasons why they should be screened	
Prevention or early detection (n = 28)	"Do come see get it, catch it early." AA female FI, Urban area
	"Could be treated earlier if you get it early." Mixed males FI, Se
	"Early detection means quicker or a better chance of recovery." C
Health symptoms or problems (n = 28)	"I've heard blood in the stool." AA female FI, Urban area
	"There is a whole bunch of symptoms, blood, irregular bowel mov urban area
	"A lot of stools, strain causes problems, etc." AA female FI, Se

[See full table](#)

Table 4. Themes in choice for colorectal cancer screening

Table 5
Choice of most favorable and least favorable test by ethnicity, gender, and location

	n			
	Colonoscopy	Fecal occult	Double contrast barium enema	Flexig
All respondents^a				
Most favored	74	36 (49%)	29 (39%)	5 (7%) 4 (5%)
Least favored	64	14 (22%)	7 (11%)	34 (52%) 9 (14%)
Ethnicity				
African American				
Most favored	33	18 (55%)	33 (95%)	4 (12%) 1 (3%)
Least favored	28	7 (25%)	3 (11%)	37 (87%) 1 (4%)
Caucasian				
Most favored	41	38 (94%)	19 (46%)	1 (2%) 3 (7%)
Least favored	36	7 (19%)	4 (11%)	37 (47%) 8 (22%)

[See full table](#)

Table 5. Choice of most favorable and least favorable test by ethnicity, gender, and location*

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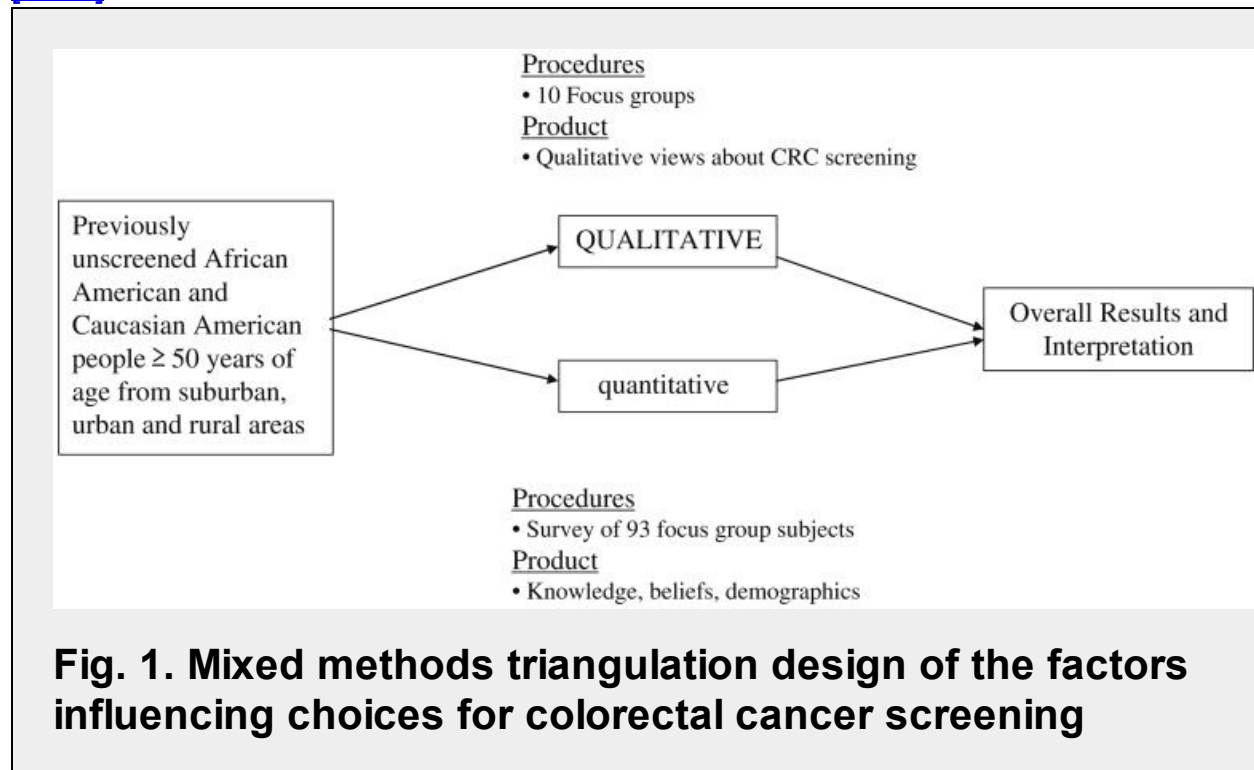
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Table 1. Summary of four tests to check for colorectal cancer

	Fecal occult testing	Flexible sigmoidoscopy	Colonoscopy	Double contrast barium enema
Purpose	Chemically tests for blood in stool	Directly looks in last third of colon	Directly looks in all of colon	Uses an X ray to look in the colon
How to do it	Patient collects stool on a stick and touches the stool to a special card	Doctor inserts a 2 foot long flexible instrument into the colon	Doctor inserts a 5–6 foot long flexible instrument into the colon	Radiologist inserts air and barium into the colon, then X rays are taken
Preparation	Small Diet low in lightly cooked meats and certain vegetables	Moderate Take a medication that stimulates a bowel movement and use an enema to clean out the	Intense Takes several medications that stimulates a bowel movement, or fluids by mouth to clean out the	Moderate Take a medication that stimulates a bowel movement and use an enema to clean out

		stool	stool	the stool
Pain	None	Mild to moderate	Moderate to severe, Requires anesthesia, Risk of perforation	Mild to moderate
Test accuracy	Fair	Good-only 1/3 of colon seen; Limited if stool still in bowel	Excellent-limited only if bowel still has stool inside	Excellent-limited only if bowel still has stool inside
How often?	Annually	Every 5 years	Every 10 years	Every 10 years
Other testing involved?	If blood found, need colonoscopy	Biopsy done at time of test, may need colonoscopy if abnormalities found	Biopsy done at time of test	If abnormal, need colonoscopy

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Table 2. Demographics of participants

	African Americans N = 51 n (%)	Caucasian Americans N = 42 n (%)	Both N = 93 (%)	mean or P value
Age (mean, years)	58	60	60	<0.001
Marital status				
Married	22 (52%)	25 (60%)	46%	ns
Single	6 (14%)	10 (24%)	21%	ns
Divorced/separated	8 (19%)	11 (26%)	29%	ns
Widowed	6 (14%)	6 (14%)	12%	ns
Mean number of children	3.5	2.4	2.9	<0.001
Mean number of grandchildren	5.0	3.2	4.2	<0.001
Self-report of health				
Excellent	8 (22%)	9 (21%)	21%	ns
Good	22 (60%)	26 (62%)	57%	ns

Fair	6 (16%)	6 (14%)	20%	ns
Poor	1 (3%)	1 (2%)	3%	ns
Years of education	13	14	14	<0.001
Ever Had HME	49 (96%)	37 (88%)	86 (92%)	<0.001
Years Since Last HME	1.1	2.1	1.5	0.034
Frequency of HME				
Yearly	30 (59%)	17 (41%)	47 (57%)	ns
Every 2–3 years	9 (18%)	5 (12%)	14 (17%)	ns
Every 4–10 years	9 (18%)	13 (31%)	22 (27%)	ns
Health Insurance				
Managed care	8 (16%)	7 (17%)	15 (16%)	ns
Private Insurance	17 (33%)	12 (29%)	29 (31%)	ns
Federal (MediCare/Caid, VA)	20 (39%)	15 (36%)	35 (37%)	ns
Self-pay	4 (8%)	8 (19%)	12 (13%)	ns

Household income

< \$30,000	31 (61%)	16 (38%)	47 (50%)	<0.001
> \$30,000	19 (37%)	26 (62%)	45 (48%)	

ns = non-significant

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Table 3. Knowledge and beliefs about colorectal cancer

Knowledge and beliefs items	Incorrect or uncertain African Americans	Incorrect or uncertain Caucasian Americans	P value
Risk factors from lifestyle			
Smoking increases the risk of getting colon cancer (True)	27 (54%)	15 (36%)	0.09*
Eating foods high in fiber increases the risk of getting colon cancer (False)	16 (31%)	5 (12%)	0.02
Eating foods high in fat increases the risk of getting colon cancer (True)	17 (34%)	8 (19%)	0.08*
Risk factors based on personal characteristics			
The risk of getting colon cancer increases as a person gets older than 50 (True)	10 (20%)	3 (7%)	0.07*
African Americans are at higher risk of getting colon cancer (False)	46 (90%)	36 (88%)	ns
Caucasians are at higher risk of getting colon cancer (False)	44 (86%)	32 (76%)	ns

Men are at higher risk than women for getting colon cancer (False)	43 (88%)	39 (93%)	ns
Risk based on family history			
A family history of colon cancer increases a person's risk for getting colon cancer (True)	18 (37%)	4 (10%)	0.002
A family history of breast cancer increases a person's risk for getting colon cancer (True)	39 (77%)	35 (83%)	ns
A family history of prostate cancer increases a person's risk for getting colon cancer (False)	43 (84%)	35 (83%)	ns
A family history of ovarian cancer increases a person's risk for getting colon cancer (True)	36 (71%)	37 (88%)	0.03
A family history of colon polyps increases a person's risk for getting colon cancer (True)	25 (49%)	13 (31%)	0.06*
Effectiveness of early detection			
Tests that check for colon cancer can find it at an early stage (True)	6 (12%)	3 (7%)	ns
Treating colon cancer at an early			

stage will usually result in its cure (True)	18 (37%)	5 (12%)	0.006
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Finding colon cancer when it is advanced usually results in an early death (True)	31 (62%)	24 (57%)	ns
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Screening tests

Colon cancer can be found by checking for blood in the stool (True)	16 (32%)	15 (36%)	ns
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Colon cancer can be found by using a blood test (False)	36 (71%)	23 (55%)	ns
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Colon cancer can be found by having a barium enema and taking an x-ray (True)	30 (60%)	26 (65%)	ns
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Colon cancer can be found by having a doctor insert a flexible fiber optic endoscope and directly looking for cancer (True)	19 (38%)	11 (27%)	ns
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Beliefs

Most all patients who have surgery for colon cancer will have to have a colostomy (False)	31 (61%)	22 (54%)	ns
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If you have surgery for colon cancer,

the cancer will spread through the blood to other parts of the body during surgery (False)	29 (57%)	13 (31%)	0.01
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*. non-significant values reported to illustrate trend

ns =non-significant

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Table 4. Themes in choice for colorectal cancer screening

Themes and sub-themes	Quotes and attributions*
Reasons why they should be tested	
Prevention or early detection (n = 38)	“In case you got it, catch it early.” AA female FG, Urban area
	“Could be treated easier if you get it early.” Mixed males FG, Semi-rural area
	“Early detection means quicker or a better chance of recovery.” CA male FG, Semi-urban area
Health symptoms or problems (n = 28)	“I’ve heard blood in the stool.” AA female FG, Urban area
	“There is a whole bunch of symptoms, blood, irregular bowel movement.” CA male FG, Semi-urban area
	“A lot of strain, strain causes problems, too.” AA female FG, Semi-rural area

Family genetics
or family history
(n = 14)

“If someone in the immediate family tested with colon cancer.” AA female FG, Urban area

“There is cancer in my family already.” CA male FG, Semi-urban area

“Hereditiy, right?” Mixed male FG, Semi-rural area

Age of the
individual (n =
10)

“If you're a certain age, you should be checked, right?” AA male FG, Semi-urban area

“As you grow older, you have problems with constipation.” AA female FG, Semi-rural area

“I think now that I've gotten older, I think I probably would.” AA female FG, Urban area

Haven't thought
about it (n = 10)

“If we thought about it, and believed in doing it, we would do it!” CA female FG, Urban area

“I never really thought about being tested.” AA female FG, Semi-urban area

“We don't think about it.” CA female FG, Urban area

Factors
encouraging
testing

Physical

symptoms (n = 33) “Blood in your stool.” CA female FG, Semi-rural area

“Complications of the digestive system, irregularities.” CA males FG, Semi-urban area

“Rectal pain or bleeding.” CA males FG, Urban area

Doctor recommendation (n = 31)

“The doctor tell(s) you, ‘you need this done’.” Mixed male FG, Semi-rural area

“If the doctor insisted.” CA female FG, Urban area

“Doctor saying it's time you have one.” CA female FG, Urban area

Information about colon cancer (n = 21)

“The Today Show with Katie Couric.” CA female FG, Semi-urban area

“A news feature that I might take to heart.” AA female FG, Semi-urban area

“Maybe more public awareness.” CA female FG, Semi-rural area

Family history (n = 20)

“There is a high risk of cancer in my family.” AA female FG, Semi-urban area

“Family member being diagnosed.” CA female FG, Semi-rural area

“My father had prostate cancer and it makes you think.” CA female FG, Semi-rural area

Available
insurance to
cover costs (n =
12)

“Because it's covered by insurance.” AA female FG,
Urban area

“In two years I will have Medicare, and then I can go
and get tested.” CA female FG, Urban area

“It would depend on who was gonna pay for it.” CA
female FG, Urban area

Role of
physician in
choice

Physician
decides (n = 23)

“I think I would ask my doctor what he thought about
it.” AA female FG, Urban area

“I want the doctor to make the decision.” Mixed male
FG, Semi-rural area

“He would know more, which one of these tests would
be best for me.” AA male FG, Semi-urban area

Assess pros and
cons (n = 13)

“The doctor would explain all of the avenues, and
explain each one.” CA female FG, Semi-urban area

“I would need to know what all of the tests were.” CA

	female FG, Urban area
	“Get his ideas, the pros and cons to each one.” CA female FG, Semi-rural area
Physician asks you (n = 2)	“I think that he would ask you what you would want.” AA female FG, Urban area
	“He would leave it up to you.” AA female FG, Urban area
Insurance as a factor	
Important factor (n = 14)	“That's part of the pain – if you don't have insurance.” CA male FG, Semi-urban area
	“Most insurances will cover that.” AA female FG, Semi-rural area
Uncertain about costs of tests (n = 5)	“How much would you be willing to pay?” AA female FG, Semi-rural area
	“I don't have an ideas how much these tests cost.” CA female FG, Semi-rural area
Not necessary (n = 2)	“If I didn't have insurance, and the doctor said that I really needed it, I would have it any way.” CA female FG, Semi-urban area
	“I wouldn't even ask how much this will cost me,

when it came to tests.” CA female FG, Semi-urban
area

*. Due to space limitations, not all factors are presented

AA-African American

CA-Caucasian American

FG-Focus group

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Table 5. Choice of most favorable and least favorable test by ethnicity, gender, and location*

	n	Colonoscopy	Fecal occult	Double contrast barium enema	Flexible sigmoidoscopy
All respondents%					
Most favored	74	36 (49%)	29 (39%)	5 (7%)	4 (5%)
Least favored	64	14 (22%)	7 (11%)	34 (53%)	9 (14%)
Ethnicity					
African American					
Most favored	33	18 (55%)	10 (30%)	4 (12%)	1 (3%)
Least favored	28	7 (25%)	3 (11%)	17 (61%)	1 (4%)
Caucasian					
Most favored	41	18 (44%)	19 (46%)	1 (2%)	3 (7%)

Least favored	36	7 (19%)	4 (11%)	17 (47%)	8 (22%)
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Gender

Females

Most favored	39	19 (49%)	14 (36%)	4 (10%)	2 (5%)
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Least favored	39	7 (18%)	3 (8%)	24 (62%)	5 (13%)
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Males

Most favored	35	17 (49%)	15 (43%)	1 (3%)	2 (6%)
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Least favored	25	7 (28%)	4 (16%)	10 (40%)	4 (16%)
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Location [**](#)

Urban

Most favored	20	11 (55%)	7 (35%)	0 (0%)	2 (10%)
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Least favored	18	2 (11%)	1 (6%)	12 (67%)	3 (17%)
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Semi-Urban

Most favored	28	9 (50%)	16 (42%)	2 (5%)	1 (3%)
Least favored	29	7 (24%)	4 (14%)	13 (45%)	5 (3%)
Semi-rural					
Most favored	16	6 (38%)	6 (38%)	3 (19%)	1 (6%)
Least favored	17	5 (29%)	2 (12%)	9 (53%)	1 (6%)

*. 93 individuals participated in the 10 focus groups. Of these 93, 74 (80%) provided information about their favorite test and 64 (69%) offered information about their least favorite test

** . Data on location was missing from the returned surveys for 10 respondents

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