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Neighborhood Satisfaction and Colorectal Cancer Screening in a Community Sample of African Americans

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Abstract

Social determinants are important to cancer screening among African Americans. To evaluate the association between social determinants (e.g., psychological characteristics, perceived social environment, cultural beliefs such as present temporal orientation) and colorectal cancer (CRC) screening among African Americans. African American adults (n = 262) ages 50–75 completed a telephone interview. Multivariate logistic regression analysis was used to identify factors having significant independent associations with CRC screening. Only 57 % of respondents reported having CRC screening. The likelihood of screening increased with greater neighborhood satisfaction (OR = 1.38, 95 % CI = 1.01, 1.90, p = 0.04), older age (OR = 1.75, 95 % CI = 1.24, 2.48, p = 0.002), greater self-efficacy (OR = 2.73, 95 % CI = 1.40, 5.35, p = 0.003), and health care provider communication (OR = 10.78, 95 % CI = 4.85, 29.94, p = 0.0001). Community

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resources are important precursors to CRC screening and outcomes among African Americans. In addition to addressing psychological factors and patient– provider communication, efforts to ensure the availability of quality health care facilities that provide CRC screening in the neighborhoods where African Americans live are needed.

Keywords

Neighborhood satisfaction; Social determinants; Colorectal cancer screening; African Americans

Introduction

Colorectal cancer (CRC) is the second leading cause of cancer death in the US that disproportionately affects African Americans in terms of CRC-related morbidity and mortality [1]. Although most adults should start CRC screening at age 50 [2, 3], recent data show that screening rates continue to be sub-optimal among African Americans. Only about 53 % of African Americans ages 50 and older reported having a colonoscopy or flexible sigmoidoscopy in 2010 [4]. Lack of health insurance, limited health literacy and lack of physician referral are associated with low rates of CRC screening [5]. Recently, we found that self-efficacy, or the extent to which individuals are confident that they can obtain screening, is associated with CRC screening in a national sample of adults [6]. However, socioeconomics, psychological factors, and health care variables may not be the only determinants of CRC screening in African Americans.

Social factors are increasingly recognized as being important to health behaviors; according to models that focus on social determinants of health and racial disparities, variables such as cultural beliefs and values, social cohesion, and the physical environment for health care are critical determinants of health behaviors and outcomes. Many studies have shown that the neighborhoods in which many African Americans live are unfavorable to health behaviors such as diet and physical activity [7–9] and lower neighborhood socioeconomic status was associated with a reduced likelihood of having a colonoscopy among patients in an integrated health care system [10]. But, census level measures of neighborhood status may not reflect the beliefs and perceptions that individuals have about where they live. Recent research has shown that how individuals perceive their social environment is important to cancer screening; greater levels of social capital were associated with an increased likelihood of being screened, particularly for CRC [11]. We recently found that perceptions of the social environment are important to preventive health behaviors in a community sample of African Americans [12].

To our knowledge, however, the relationship between CRC screening and perceptions of the social environment have not been examined specifically among African Americans while considering the effects of health care variables (e.g., physician recommendation), socioeconomic factors (e.g., income), psychological characteristics (e.g., self-efficacy), and cultural beliefs (e.g., present temporal orientation) and values. Studies that use administrative datasets to examine rates and predictors of cancer screening often do not measure cultural beliefs and values or psychological factors. This is an important limitation

because current models of health and well-being emphasize social determinants as causative factors [13, 14].

Social determinants include psychological characteristics and perceptions of the places where individuals live as well as the material resources that are available to those individuals. Understanding the association between social determinants and CRC screening among individuals who are most vulnerable to sub-optimal screening rates and poor outcomes is needed to develop more effective strategies for improving compliance with screening. Therefore, in this study, we evaluated the independent associations between social determinants and CRC screening in a community based sample of African Americans. We focused specifically on utilization of endoscopic screening (e.g., colonoscopy and/or sigmoidoscopy) in a community sample of individuals who were seeking information on CRC screening because after a physician referral and recommendation, individuals ultimately make decisions to complete or not complete screening within the social environment where they live. We also examined the association between cultural beliefs such as present temporal orientation in the present study. Temporal orientation, or attitudes about specific domains of time (e.g., past, present, and future), is one of the primary contexts through which individuals understand and give meaning to their experiences [15]. Present temporal orientation, or having a tendency to focus on immediate consequences rather than on future implications and planning, was negatively associated with mammography utilization in a community sample of African American women [16]. We hypothesized that greater endorsement of present temporal orientation would be associated with a lower likelihood of CRC screening.

Methods

Study Population

Eligible participants were African American men and women who were ages 50–75 who were current residents in the Philadelphia, PA metropolitan area. Individuals who had a personal history of colorectal, breast, or prostate were not eligible for participation. Men and women who were experiencing symptoms of these diseases or had received an abnormal screening result for these forms of cancer were also ineligible. A total of 262 participants were included in this analysis.

Procedures

All study procedures were approved by the Institutional Review Boards at the University of Pennsylvania and the Medical University of South Carolina. Participants were recruited by self-referrals from newspaper and radio advertisements and flyers at community organizations located in the Philadelphia, PA metropolitan area. Recruitment materials described the study as a research program that provided information on how to obtain screening for breast, prostate, and colorectal cancer and directed individuals who were interested in participation to contact the study line for additional information. Following self-referral, a screening interview was completed and eligible individuals completed a structured baseline telephone interview to obtain information on socioeconomic factors, health care variables, psychological factors, cultural beliefs, and perceptions of one’s social

environment after providing verbal informed consent. At the end of the baseline telephone interview, eligible individuals were invited to meet individually with a community-based navigator, who was an individual from the community who was trained to provide navigation for cancer control (e.g., facilitation of cancer screening behaviors and cancer treatment). Since we were interested in the association between CRC screening and social determinants prior to navigation, we used baseline data obtained prior to navigation and based the selection and measurement of variables (see Study Measures and Statistical Analysis section below) on a social determinants model [13, 14] and findings from previous research [6].

Study Measures

We measured social determinants of health in terms of sociodemographic factors, psychological variables, cultural beliefs, and perceived social environment by self-report. Specifically, sociodemographic characteristics included age, gender, marital status, education level, employment status, and income and were obtained from participants during the baseline telephone interview. Among these participants (n = 262), 14 refused to provide information on their income level. Therefore, we used the median income level for the zip codes in which these participants resided using the 2010 Census data. We measured health care variables in terms of health insurance status (yes or no), usual source of medical care (yes or no), and if a health care provider had ever discussed CRC screening with them (yes or no). We used an item from the Health Information National Trends Survey (HINTS) to evaluate self-efficacy to obtain screening [17]. We previously used this item that asked respondents, “How confident are you that you can obtain screening for colon cancer” to evaluate self-efficacy for obtaining CRC screening in a national survey [6]. We re-coded this item into a binary variable based on the distribution of responses and conceptual relevance; self-efficacy was defined as “confident” for responses of “completely confident” or “very confident” and “not confident” for responses of “not at all confident”, “a little confident”, and “somewhat confident.” Cultural beliefs were measured in terms of present temporal orientation using a scale that evaluated the extent to which participants focused their attention and action based on immediate and/or short-term consequences (e.g., there’s no sense in thinking about the future before it gets here; my day to day life is too busy to think about the future) [18]. This scale had acceptable internal consistency in our sample (Cronbach’s alpha = 0.72). Lastly, we measured perceptions of one’s social environment in terms of neighborhood satisfaction using the neighborhood satisfaction sub-scale of the Neighborhood Environment Walkability Scale (NEWS) [19]. The neighborhood satisfaction scale is a 17-item Likert-style instrument that asks participants how satisfied they are with city services, safety, access to food resources and shopping, and traffic and noise levels. Higher scores reflect greater satisfaction. The neighborhood satisfaction scale had good internal consistency in our sample (Cronbach’s alpha = 0.88).

Colonoscopy or sigmoidoscopy use was evaluated by self-report using one item from the Behavioral Risk Factor Surveillance Survey (BRFSS) that asked respondents if they had ever had a colonoscopy or sigmoidoscopy [20]. To enhance the validity of responses, these tests were described as tests that examine the bowel by inserting a tube in the rectum. Participants were asked to provide the month and year of their last test. Participants who reported that

they had a colonoscopy or sigmoidoscopy were categorized as CRC screening users and those who reported that they had never had a test or if they did not know whether they had screening were categorized as non-users. We used a similar procedure to evaluate utilization of CRC screening previously [6].

Statistical Analysis

To analyze study data, we first generated descriptive statistics to characterize participants in terms of social determinants of health and CRC screening. Since our study was guided by a social determinants model and previous research [13, 14] we then generated a multivariate logistic regression model that included sociodemographic factors, psychological variables, present temporal orientation, and perceived social environment to identify social determinants that had significant independent associations with CRC screening. All variables were included in the model simultaneously.

Results

Table 1 shows the characteristics of our study sample. The mean (SD) age of participants was 57.2 (5.0). Fifty-six percent of participants were female, 17 % were married, and 52 % had some college education or more. Thirty-one percent of participants were employed and 50 % had an annual household income[$20,000. In terms of access to health care, 67 % of participants had health insurance, 85 % had a usual source of medical care, and 75 % reported that a health care provider had ever discussed CRC screening with them.

Overall, 57 % of participants reported having CRC screening. Table 2 shows the results of the multivariate logistic regression analysis of CRC screening. This model demonstrated that participants who were most likely to have CRC screening were those who had an annual household income[$20,000, greater self-efficacy, and had previously discussed screening with a health care provider. The likelihood of screening was also greater among participants who were older in age and those who were more satisfied with the physical characteristics of their neighborhood. Greater levels of present temporal orientation were not significantly associated with CRC screening.

Discussion

To our knowledge, this is the first study to evaluate the independent association between social determinants and CRC screening in a community-based sample of African American adults seeking CRC screening information. Understanding the association between social determinants and CRC screening specifically in this population is important because African Americans continue to experience excess rates of morbidity and mortality from CRC despite the availability of an efficacious strategy for early detection and prevention. Consistent with national data and previous studies, we found that CRC screening use was sub-optimal; [6, 10, 21] only 57 % of participants reported ever having CRC screening. Participants who had incomes [$20,000 were significantly more likely to have CRC screening compared to those who had a lower annual household income. Our sample had a sociodemographic profile that was consistent with national trends. That is, although the majority of participants had more than a high school education, many were unemployed. According to national data, African

Americans are more likely than whites to be unemployed despite having a college education [22]. In contrast with other studies [6], health insurance was not associated significantly with CRC screening. These findings suggest that income is an important factor for African Americans to be screened for CRC. Our findings suggest that having health insurance may be necessary, but not sufficient for CRC screening among African Americans. This may be because even with health insurance, individuals may still be responsible for co-payments or paying deductibles to complete screening. Specifically, patients are often still responsible for paying part of the costs associated with anesthesia, bowel prep kits, pathology and facility fees [23]. Thus, individuals with greater incomes are more able to cover these expenses.

We also found that participants who reported that they had discussed CRC screening with a health care provider had a 10-times greater likelihood of screening compared to those who did not report provider communication. But, having a usual source of medical care did not have a significant association with CRC screening. Provider communication about cancer screening is generally essential advice, regardless of whether these discussions occur with a familiar provider or take place in some other type of medical setting. This may explain why the odds ratio for provider communication was the largest among all of the variables examined. Primary care providers play an important role in patients completing CRC screening [5, 24]; our findings underscore the importance of patient– provider communication about screening to increase the utilization of this type of test among African Americans.

Previous research has examined the association between CRC screening and socioeconomic factors, knowledge and attitudes about screening, and present temporal orientation among African Americans using qualitative and quantitative methods [25–30]. But, this work has not examined the association between perceived social environment and CRC screening among African Americans. Further, most prior work on CRC screening has focused exclusively on sociodemographic and psychological determinants of screening among African Americans. A novel finding in our study is that the level of neighborhood satisfaction was associated significantly with CRC screening. As satisfaction with access to food and shopping, physical activity, and education increased, the likelihood of having CRC screening increased. Although we did not ask participants if they obtained health care and CRC screening in the neighborhood in which they live, other research has shown that 73 % of CRC patients traveled a short distance (e.g., \12.5 miles) to the health care facility where they were diagnosed and 86 % of those who traveled a short distance, were diagnosed at an academic health center or a comprehensive cancer center [31]. Thus, individuals are likely to undergo CRC screening at facilities that are geographically close to where they live. In addition, most of the health care facilities that provide this specialty service are likely at or in close proximity to academic health centers in urban settings with concentrated residential areas. This suggests that individuals may be screened for CRC when visiting health care facilities located in their neighborhood. Individuals who are less satisfied with their neighborhood may live in areas that do not have a sufficient number or adequate quality health care facilities. Consequently, satisfaction and availability are likely synergistic in increasing the likelihood of CRC screening among African Americans. Future research is needed to determine the specific locations where African Americans obtain CRC screening and to characterize satisfaction with the health care facility where screening was provided.

These studies are especially needed in rural areas because national data consistently show a shortage of health care professionals [32], decreased access to care [33], and an increased likelihood of traveling long distances to obtain cancer treatment [31, 34].

As in other studies [6], we found that greater self-efficacy was associated with an increased likelihood of CRC screening among participants in our study. While most participants reported that they were confident in their ability to obtain CRC screening, a substantial minority (39 %) were not confident. Similarly, 25 % reported a lack of provider communication about CRC screening. All of the participants in this study met age-eligibility criteria for CRC screening and our data show provider communication increases utilization tenfold. Such an effect of provider advice for CRC screening has been demonstrated in other studies [35], but there may be medical, logistical, or personal reasons why it is not discussed. For instance, 48 % of participants had a personal history of hypertension and 21 % had diabetes. It could be that clinical time with patients having multiple comorbid conditions is used to discuss the treatment and management of these chronic conditions or other issues. Alternatively, it may be that CRC screening is mentioned by providers but, the importance of this test may not be sufficiently emphasized for some patients if they are not counseled or educated using more intensive strategies [36]. Regardless, effective communication needs to be mutual; patients may not be receptive to hearing provider's advice and providers may not have sufficient time to educate patients about the need or importance of CRC screening. Empirical data are needed to determine the nature and scope of patient–provider communication about CRC screening among African Americans who also have chronic health conditions.

In considering the results of this study, some limitations should be noted. First, the cross-sectional nature of our study does not allow us to determine causality with respect to social determinants and CRC screening. An additional limitation may be that CRC screening was evaluated by self-report. However, we used an item from an ongoing national survey and we described the procedures involved in CRC screening to enhance the validity of responses. Despite this, more reliable methods are needed to evaluate CRC screening by self-report. Also, while our study is based on a sample of adults who are most likely to experience morbidity and mortality from CRC, our sample size was modest and the recruitment methods we used may have only identified individuals who were seeking information about cancer screening. This may limit the generalizability of our findings. However, the number of participants in our sample was equivalent to the number of African Americans who were included in a national study of CRC screening in a racially diverse sample of adults [6]. Finally, the perception of respondents' neighborhood and their satisfaction may not be congruent with actual neighborhood resources. We used a validated neighborhood satisfaction scale, which provided a view of how their residential area met their physical needs, but this scale did not ask about the presence or quality of health care services for CRC screening.

Despite these potential limitations, our findings underscore the crucial role primary care providers have in CRC prevention and early detection, and in eliminating racial disparities in outcomes by discussing screening with African American patients. Neither health insurance status nor having a usual source of medical care was associated significantly with CRC

screening in our study. Our results demonstrate that social determinants are important to CRC screening among African Americans. Specifically, patient– provider communication, self-efficacy, and neighborhood satisfaction had significant associations with CRC screening. Neighborhood factors such as the availability and quality of health care facilities are important to utilization of health care services. Studies have shown that the neighborhoods in which many African Americans live do not support positive health behaviors such as diet and physical activity [7–9]. Future research is needed to characterize the quality of health care facilities in which African Americans live, whether or not individuals have sufficient access to these facilities, and if use and satisfaction with these facilities are consistent with overall levels of neighborhood satisfaction.

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References

1. American Cancer Society. Cancer prevention and early detection facts and figures 2010. Atlanta: American Cancer Society; 2010. from http://www.cancer.org/acs/groups/content/@epidemiologysurveilance/documents/docu ment/acspc-027876.pdf [Retrieved January 6, 2015]
2. Levin B, Lieberman DA, McFarland B, Smith RA, Brooks D, Andrews KS, et al. Screening and surveillance for the early detection of colorectal cancer and adenomatous polyps, 2008: A joint guideline from the American Cancer Society, the US multi-society task force on colorectal cancer, and the American College of Radiology*. CA: A Cancer Journal for Clinicians. 2008; 58(3):130–160. [PubMed: 18322143]
3. Rex DK, Johnson DA, Anderson JC, Schoenfeld PS, Burke CA, Inadomi JM. American College of Gastroenterology guidelines for colorectal cancer screening 2008. The American Journal of Gastroenterology. 2009; 104(3):739–750. [PubMed: 19240699]
4. American Cancer Society. Cancer facts and figures, 2013. Atlanta, GA: 2013. from http://www.cancer.org/acs/groups/content/@epidemiologysurveilance/docu ments/document/acspc-036845.pdf [Retreived January 6, 2015]
5. Kelly KM, Dickinson SL, DeGraffinreid CR, Tatum CM, Paskett ED. Colorectal cancer screening in 3 racial groups. American Journal of Health Behavior. 2007; 31(5):502–513. [PubMed: 17555381]
6. Halbert CH, Barg FK, Guerra CE, Shea JA, Armstrong K, Ferguson M, et al. Cultural, economic, and psychological predictors of colonoscopy in a national sample. Journal of General Internal Medicine. 2011; 26(11):1311–1316. [PubMed: 21732197]
7. Corral I, Landrine H, Hao Y, Zhao L, Mellerson JL, Cooper DL. Residential segregation, health behavior and overweight/obesity among a national sample of African American adults. Journal of Health Psychology. 2011
8. Grigsby-Toussaint DS, Zenk SN, Odoms-Young A, Ruggiero L, Moise I. Availability of commonly consumed and culturally specific fruits and vegetables in African-American and Latino neighborhoods. Journal of the American Dietetic Association. 2010; 110(5):746–752. [PubMed: 20430136]
9. Zenk SN, Odoms-Young AM, Dallas C, Hardy E, Watkins A, Hoskins-Wroten J, Holland L. "You Have to Hunt for the Fruits, the Vegetables": Environmental barriers and adaptive strategies to acquire food in a low-income African American neighborhood. Health Education and Behavior. 2011

10. Doubeni CA, Jambaulikar GD, Fouayzi H, Robinson SB, Gunter MJ, Field TS, et al. Neighborhood socioeconomic status and use of colonoscopy in an insured population— A retrospective cohort study. PLoS ONE. 2012; 7(5):e36392. [PubMed: 22567154]
11. Leader AE, Michael YL. The Association between neighborhood social capital and cancer screening. American Journal of Health Behavior. 2013; 37(5):683–692. [PubMed: 23985291]
12. Halbert CH, Bellamy S, Briggs V, Bowman M, Delmoor E, Kumanyika S, et al. Collective efficacy and obesity related health behaviors in a community sample of African Americans. Journal of Community Health. 2014; 39(1):124–131. [PubMed: 24026302]
13. Centers for Disease Control and Prevention. [Retrieved January 6, 2015] Social determinants of health. 2014. from http://www.cdc.gov/socialdeterminants/FAQ.html
14. Marmot M, Friel S, Bell R, Houweling TA, Taylor S. Closing the gap in a generation: Health equity through action on the social determinants of health. The Lancet. 2008; 372(9650):1661–1669.
15. McGrath, JE.; Tschan, F. Temporal matters in social psychology: Examining the role of time in the lives of groups and individuals. Washington, D.C: American Psychological Association; 2004.
16. Lukwago SN, Kreuter MW, Holt CL, Steger-May K, Bucholtz DC, Skinner CS. Sociocultural correlates of breast cancer knowledge and screening in urban African American women. American Journal of Public Health. 2003; 93(8):1271–1274. [PubMed: 12893610]
17. National Cancer Institute. [Retrieved January 6, 2015] Health Information National Trends Survey. 2015. from http://hints.can cer.gov/
18. Lukwago SN, Kreuter MW, Bucholtz DC, Holt CL, Clark EM. Development and validation of brief scales to measure collectivism, religiosity, racial pride, and time orientation in urban African American women. Family and Community Health. 2001; 24(3):63–71. [PubMed: 11563945]
19. Adams MA, Ryan S, Kerr J, Sallis JF, Patrick K, Frank LD, Norman GJ. Validation of the Neighborhood Environment Walkability Scale (NEWS) items using geographic information systems. Journal of Physical Activity and Health. 2009; 6(1):S113. [PubMed: 19998857]
20. Centers for Disease Control and Prevention (CDC), & Centers for Disease Control and Prevention (CDC). Atlanta, GA: US Department of Health and Human Services, Centers for Disease Control and Prevention; 2013. Behavioral Risk Factor Surveillance System Survey (BRFSS). Retrieved from http://www.cdc.gov/brfss/index.htm
21. Centers for Disease Control and Prevention (CDC). Vital signs: Colorectal cancer screening test use—United States, 2012. MMWR. Morbidity and Mortality Weekly Report. 2013; 62(44):881. [PubMed: 24196665]
22. Bureau of Labor Statistics. [Retrieved April 1, 2015] Employment status of the civilian noninstitutional population 25 years and over by educational attainment, sex, race, and Hispanic or Latino ethnicity. 2014. from http://www.bls.gov/cps/cpsaat07.pdf
23. American Cancer Society. Colorectal cancer screening— Insurance coverage. 2014 from http://www.cancer.org/cancer/colonandrectumcancer/moreinformation/colonandrectumcancerearlydetection/colorectal-cancer-early-detection-screening-coverage-laws.
24. Holden DJ, Jonas DE, Porterfield DS, Reuland D, Harris R. Systematic review: Enhancing the use and quality of colorectal cancer screening. Annals of Internal Medicine. 2010; 152(10):668–676. [PubMed: 20388703]
25. Christie J, Jandorf L, Itzkowitz S, Halm E, Freeman K, King S, et al. Sociodemographic correlates of stage of adoption for colorectal cancer screening in African Americans. Ethnicity and Disease. 2009; 19(3):323. [PubMed: 19769016]
26. James AS, Daley CM, Greiner KA. Knowledge and attitudes about colon cancer screening among African Americans. American Journal of Health Behavior. 2011; 35(4):393. [PubMed: 22040586]
27. Palmer RC, Midgette LA, Dankwa I. Colorectal cancer screening and African Americans: Findings from a qualitative study. Cancer Control. 2008; 15(1):72–79. [PubMed: 18094663]
28. Purnell JQ, Katz ML, Andersen BL, Palesh O, Figueroa-Moseley C, Jean-Pierre P, Bennett N. Social and cultural factors are related to perceived colorectal cancer screening benefits and intentions in African Americans. Journal of Behavioral Medicine. 2010; 33(1):24–34. [PubMed: 19876727]

29. Thompson VLS, Kalesan B, Wells A, Williams SL, Caito NM. Comparing the use of evidence and culture in targeted colorectal cancer communication for African Americans. Patient Education and Counseling. 2010; 81:S22–S33. [PubMed: 20702056]

30. Robillard AG, Larkey L. Health disadvantages in colorectal cancer screening among African Americans: Considering the cultural context of narrative health promotion. Journal of Health Care for the Poor and Underserved. 2009; 20(2A):102–119. [PubMed: 19711496]

31. Massarweh NN, Chiang YJ, Xing Y, Chang GJ, Haynes AB, You YN, et al. Association between travel distance and metastatic disease at diagnosis among patients with colon cancer. Journal of Clinical Oncology. 2014; 32(9):942–948. [PubMed: 24516014]

32. US Department of Health and Human Services Health Resources and Services Administration. [Retrieved January 6, 2015] Shortage designation: HPSAs, MUAs and MUPs. 2014. from http://www.hrsa.gov/shortage/

33. Liu J. Health professional shortage and health status and health care access. Journal of Health Care for the Poor and Underserved. 2007; 18(3):590–598. [PubMed: 17675715]

34. Baldwin LM, Cai Y, Larson EH, Dobie SA, Wright GE, Goodman DC, et al. Access to cancer services for rural colorectal cancer patients. The Journal of Rural Health. 2008; 24(4):390–399. [PubMed: 19007394]

35. Ramdass P, Petraro P, Via C, Shahrokni A, Nawaz H. Providers Role in Colonoscopy Screening for Colorectal Cancer. American journal of health behavior. 2014; 38(2):234–244. [PubMed: 24629552]

36. Wallace DAC, Baltrus PT, Wallace TC, Blumenthal DS, &Rust GS. Black white disparities in receiving a physician recommendation for colorectal cancer screening and reasons for not undergoing screening. Journal of Health Care for the Poor and Underserved. 2013; 24(3):1115–1124. [PubMed: 23974385]

Table 1

Sample characteristics (n = 262)

Variable	Level	n (%)
Age in years	Mean, SD	57.2, 5.0
	Range	49.9–73.7
Gender	Female	148 (56 %)
	Male	114 (44 %)
Marital status	Married	45 (17 %)
	Not married	213 (83 %)
Education level	>High school	136 (52 %)
	≤High school	125 (48 %)
Employment status	Employed	80 (31 %)
	Not employed	181 (69 %)
Income level	>$20,000	131 (50 %)
	≤$20,000	131 (50 %)
Health insurance	Yes	176 (67 %)
	No	86 (33 %)
Usual source of medical care	Yes	222 (85 %)
	No	40 (15 %)
Health care provider communication about screening	Yes	197 (75 %)
	No	65 (25 %)
Self-efficacy for screening	Confident	160 (61 %)
	Not confident	102 (39 %)
Present temporal orientation	Mean, SD	9.8, 2.1
	Range	5.0–17.0
Neighborhood satisfaction	Mean, SD	3.5, 0.58
	Range	1.7–5.0

Table 2

Multivariate logistic regression model of CRC screening

Variable	Level	OR	95 % CI	*p* value
Age in years[a]		1.75	1.24, 2.48	0.002 *
Gender	Female	1.14	0.60, 2.15	0.69
	Male			
Marital status	Married	1.05	0.45, 2.44	0.91
	Not married			
Education level	>High school	1.26	0.65, 2.45	0.50
	≤High school			
Employment status	Employed	1.40	0.68, 2.92	0.36
	Not employed			
Income level	>$20,000	2.09	1.07, 4.06	0.03 *
	≤$20,000			
Health insurance	Yes	0.61	0.30, 1.26	0.18
	No			
Usual source of medical care	Yes	2.18	0.88, 5.43	0.09
	No			
Health care provider communication about screening	Yes	10.78	4.85, 29.94	0.0001 **
	No			
Self-efficacy for screening	Confident	2.73	1.40, 5.35	0.003 *
	Not confident			
Present temporal orientation[a]		1.31	0.94, 1.84	0.11
Neighborhood satisfaction[a]		1.38	1.01, 1.90	0.04

[a] OR for continuous variables represent 1 SD unit change

* $p < 0.05$;

** $p < 0.001$;