



Published in final edited form as:

*J Community Med Health Educ.* ; 3: .

## Racial/Ethnic Variations in Colorectal Cancer Screening Self-Efficacy, Fatalism and Risk Perception in a Safety-Net Clinic Population: Implications for Tailored Interventions

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### Abstract

Ethnic and racial minority groups in the U.S. receive fewer colorectal cancer (CRC) screening tests and are less likely to be up-to-date with CRC screening than the population as a whole. Access, limited awareness of CRC and barriers may, in part, be responsible for inhibiting widespread adoption of CRC screening among racial and ethnic minority groups. The purpose of this study was to examine the role of self-efficacy, fatalism and CRC risk perception across racial and ethnic groups in a diverse sample. This study was a cross-sectional analysis from baseline measures gathered on a group of patients recruited into a trial to track colorectal cancer screening in underserved adults over 50. Out of 470 Participants, 42% were non-Hispanic; 27% Hispanic and 28% non-Hispanic White. Hispanic and non-Hispanic Blacks were more likely to have fatalistic beliefs about CRC than non-Hispanic Whites. Non-Hispanic Blacks perceived higher risk of getting colon cancer. Self-efficacy for completing CRC screening was higher among Non-Hispanic Blacks than among Hispanics. Racial and ethnic differences in risk perceptions, fatalism and self-efficacy should be taken into consideration in future CRC interventions with marginalized and uninsured populations.

### Keywords

Race; Ethnicity; Colon cancer risk; Colorectal cancer screening; Computer-tailored intervention

### Introduction

Colorectal cancer (CRC) is one of the leading causes of death and third most common cancer in the U.S. [1]. The American Cancer Society reported in its 2012 Colorectal Cancer Facts and Figures that an expected 148,810 new cases of colon cancer would be reported and 49,960 of those would result in death. If detected early it is preventable and curable [2];

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however low-income and minority groups carry the majority of disease burden and have poorer survival once diagnosed [3,4] when compared to upper and middle income Non-Hispanic Whites. Incidence and mortality disparities across racial and ethnic groups are likely due to many factors. These include differential access to medical care and screening tests, differential adherence to screening test recommendations, genetic variations, and cultural and behavioral health differences for factors such as diet and physical activity that relate to the development of CRC [5-8]. Collectively, these individuals (lower income and minorities) also have a 41% higher relative risk of death from CRC than the commercially insured. Evidence suggests residence in a low social economic status (SES) area is the most powerful predictor of late stage CRC diagnosis; this can be partially explained by socio-demographic [9] and psychosocial barriers. Currently, non-Hispanic Blacks have the highest rate of CRC incidence of any racial or ethnic group [1,10] and are reportedly more fatalistic about cancer [11]. Attention to these racial differences is critical to appropriately design effective programs to address screening.

This study was designed to examine the role of self-efficacy, fatalism and CRC risk perception across racial and ethnic groups in adults eligible for, but not up-to-date with CRC screening.

## Materials and Methods

### Subjects and data collection

This study used baseline data from a two-arm randomized controlled trial, testing the efficacy of a touch screen computer intervention tailored to decisional stage based on the Precaution Adoption Process Model, barriers to health care, and “implementation intentions” for CRC screening in adults age 50 and older. We used a blocked randomization algorithm within a group of nine urban primary care safety-net clinics in the Kansas City metropolitan area for recruitment. Recruitment at each clinic occurred on a rotating basis, randomized into two separate 6-week blocks over a 24-month period to increase the opportunity to enroll those seen infrequently and to minimize the effect of any seasonal bias on recruitment or results. During recruitment times, research staff screened all available patients for eligibility. We recruited only patients receiving care in these primary care settings, both to assure that our sample was representative of low-income individuals typically seen in urban core primary care clinics [12].

Eligible participants had to be uninsured or on Medicaid, meet low-income eligibility criteria (<150% of household federal poverty level), be 50 years of age or older and not up-to-date with screening, and have an appointment for an office visit on the day of recruitment. Individuals with an acute medical illness, current gastrointestinal bleeding, a history of adenomatous polyps, colorectal cancer, an inherited polyposis/non-polyposis syndrome, inflammatory bowel disease, or a first degree relative with CRC prior to age 60 were excluded. Individuals with another household member enrolled in the study were also ineligible, as were individuals who had previously enrolled in the study.

Research staff informed patients about the study verbally and administered the screening survey to all interested patients. Health center staff members from each clinic were fully informed about the study, eligibility criteria, and enrollment process, and could refer patients to kiosks in clinic waiting areas where research associates were available to facilitate eligibility screenings. Recruitment procedures were planned so as to avoid any disruption to clinic flow. Primary care providers, clinic staff, and study staff were blinded to assignment to tailored intervention to the extent feasible. Kiosk components, including assessment items, audio narrative and brief multimedia instructional video clips were equivalent in length between the two arms.

Following eligibility screening and informed consent, participants were directed to a computer kiosk located in a private room or a semi-private area of the waiting room and assisted by research staff with registering into the intervention program. They used headphones and entered responses on a touchscreen while interacting with the presentation. All participants were staged according to the adapted Precaution Adoption Process Model (PAPM) continuum [13], CRC screening barriers, fatalism, and self-efficacy. All participants were reimbursed with a \$20 gift card for their time to complete the touch screen assessment. The Institutional Review Board of the primary authors reviewed and approved all recruitment and study methods.

Baseline survey items included Precaution Adoption Process Model (PAPM) stage, perceived susceptibility to CRC, Self-efficacy for CRC screening, history of prior CRC screening, perceived FOBT/endoscopy barriers, and Implementation Intentions for CRC screening. Although many of the scales and instruments selected for the study had been used previously in low-income and minority groups, the complete baseline survey instrument was pre-tested during a touch screen usability testing phase with sixty individuals eligible for colon cancer screening based on U.S. Preventive Services Task Force (USPSTF) guidelines [14].

Demographic items assessed were age, gender, education, marital status, health insurance, income, employment status, and race/ethnicity and were largely taken from the Behavioral Risk Factor Surveillance System (BRFSS) survey. Participants were not able to identify multiple race/ethnicity categories due to tailored messaging requirements used within the touch screen system. With respect to race/ethnicity, study participants were asked to identify themselves as being Black/African American, Hispanic, White, or Others. Self-efficacy to complete CRC screening was assessed using items for FOBT and colonoscopy separately; “how confident are you that you can complete an FOBT/colonoscopy test?” Prior CRC Screening history was determined for FOBT, sigmoidoscopy, double contrast barium enema, or colonoscopy separately and included the interval to last test and whether the participant had undergone any CRC tests for diagnostic purposes. Questions assessing barriers to CRC screening were assessed separately for FOBT and endoscopy. Respondents were asked to report whether each listed barrier on the scale “does not apply at all, applies a little, applies somewhat, or applies very much.” We used an adapted Powe Cancer Fatalism inventory to evaluate beliefs toward early detection, treatment, and cancer myths (10 questions). Our adapted scale had adequate internal consistency (Cronbach’s alpha=0.65). Risk of developing colorectal cancer was assessed using a sum score of three items:

1. Risk of developing CRC.
2. Risk of developing CRC compared to the average person.
3. Worry about developing CRC [15].

## Analysis

Touch screen computer data was automatically transferred to an excel™ database, then transferred to an Access™ file for cleaning. All analysis was completed using SAS™ v.9.2. We calculated frequencies and proportions for variables in each ethnic/racial group. We applied Chi-squared and Kruskal-Wallis tests to evaluate the relationship between ethnicity/race (divided into four groups) and each of the socio-demographic factors, self-efficacy, CRC risk perception and CRC fatalism, as well as barrier scores with respect to colonoscopy and FOBT. For the primary outcomes of fatalism and perceived risk scores and self efficacy, post hoc comparisons were made between each pair of ethnic/racial groups by the Wilcoxon rank-sum test and proportional odds logistic regression using ethnicity/race as the predictor variable. Significance was determined at 0.05/6=0.008 level in post hoc comparisons.

## Results

Baseline analysis revealed significant differences in socio-demographic factors among participants, particularly Hispanics (table 1) where they were more likely to be married or living with a partner, employed full-time, and have a high school diploma or GED. Out of 470 participants, 63.6% were female and had a mean age of 57 years. In the sample, 42% were non-Hispanic Black, 27% Hispanic, 28% non-Hispanic White; and 39% had not completed High School.

The analysis also showed significant differences in response to CRC screening questions by race/ethnicity. The differences were marginally significant in self-efficacy ( $p=0.07$ ) but not significant in either barrier scores ( $p=0.98$  and  $0.43$  for Colonoscopy and FOBT, respectively). Compared to non-Hispanic whites and Hispanics, non-Hispanic blacks were more fatalistic (mean scores were 25.1, 23.6 and 23.7, respectively). In addition, non-Hispanic blacks perceived lower risks for colon cancer than non-Hispanic whites and Hispanics (mean scores were 4.61, 5.15, and 5.27, respectively). Self-efficacy did not show a significant association with ethnicity/race, however, non-Hispanic Blacks had a significantly greater self-efficacy for CRC screening than Hispanics (OR=1.66, 95% CI (1.08, 2.55),  $p=0.02$ ). In addition, Hispanics showed a trend for lower self-efficacy than non-Hispanic Whites (OR=0.64, 95% CI (0.40, 1.02),  $p=0.059$ ).

## Discussion

Among this sample of low-income and minority safety-net patients several differences between racial/ethnic groups were uncovered. Differences in cancer fatalism and perceived risk of CRC were significant. This suggests some groups among those served in safety nets may need more attention or specialized intervention than others. Non-Hispanic Blacks and Hispanics may require intensive programs that account for fatalistic beliefs to boost screening rates and reduce CRC mortality [16]. There was variance difference in self-efficacy for completing CRC screening between Non-Hispanic Blacks and Hispanics. This may suggest that Hispanics in safety-net clinics will benefit from activities that boost their confidence in their ability to follow through with completing a test. Perceived risk for colon cancer was significantly lower among Non-Hispanic Blacks when compared to Hispanics and Non-Hispanic Whites in this sample. This finding may suggest that these individuals while fatalistic about cancer in general, are more positive about CRC (prevention) outcome and thus confident to complete CRC screening. It may also suggest that non-Hispanic Blacks do not believe their rates of CRC are as high as that of other groups, which could help explain their lower rates of screening and later stage at diagnosis. This belief would require additional education to help people understand their risk. This type of education could play on the fact that there was higher self-efficacy for getting screened. Messaging could be tailored to provide the real prevalence and mortality rates, but also provide positive screening statements to bring more non-Hispanic blacks into the clinic for screening. Differences in cancer risk perception, self-efficacy and cancer fatalism among minority and low-income populations signifies the need for approaches that are culturally appropriate to address specific needs. Tailored interventions that incorporate use of multimedia materials may be most appropriate to accomplish the task of cultural tailoring on multiple components [16,17]. In this study, baseline information provided an initial analysis of how low income and ethnic/minorities view CRC risk, CRC fatalism and self-efficacy to complete screening. The study was limited by a truncated SES range, its regional focus on a single large urban area and its reliance on computerized survey assessment. Also, all results were based on self-report.

Future programs need to account for racial/ethnic differences in beliefs, preferences and perceptions of CRC screening [18-21]. Research can address whether these targeted approaches are more successful for advancing screening than generic programs that are “one size fits all.” Low income safety-net clinic patients are an important group to include in all prevention studies, as they often face significant health disparities and can provide important information on what is required to optimize health promotion programs.

## Acknowledgments

**Funding** This work was supported by the National Cancer Institute at the National Institutes of Health (grant number 3R01CA123245-03S1). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Cancer Institute or the National Institutes of Health.

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Table 1

## Participant Characteristics.

Variable	Level	Ethnic/racial group (N)				p-value <sup>†</sup>
		Hispanic (126)	Non-Hispanic White (132)	Non-Hispanic Black (198)	Others (14)	
Age (mean)		58.6	55.8	55.6	57.7	0.004
Gender	Female	65.1%	60.0%	65.7%	57.1%	0.67
Marital status	Married or with partners	56.4%	22.7%	24.2%	42.9%	<0.0001
	Divorced or separated	26.2%	43.9%	37.9%	35.7%	
	Others	17.5%	33.3%	37.9%	21.4%	
Education	High School /GED or below	88.1%	41.7%	54.0%	57.1%	<0.0001
Employment	Full/part-time or seasonal	31.0%	22.7%	33.3%	28.6%	<0.0001
	Look for a job, work at home, student, or retired	65.1%	50.8%	47.0%	35.7%	
	disabled	4.0%	26.5%	19.7%	35.7%	
Insured	No	86.5%	81.8%	67.2%	71.4%	0.0003
Having a regular doctor?	No	23.0%	25.8%	26.3%	21.4%	0.90
General health	Fair/poor	65.9%	46.2%	41.4%	50.0%	0.0002
	Good, very good, excellent	34.1%	53.8%	58.6%	50.0%	
Diabetes	Yes	46.0%	23.5%	27.8%	28.6%	0.0005
High blood pressure	Yes	50.0%	58.3%	64.7%	50.0%	0.06
Heart disease	Yes	6.4%	10.6%	7.1%	7.1%	0.58
Asthma	Yes	7.1%	19.7%	17.7%	14.3%	0.026
Fatalism score (mean)		23.6	25.1	23.7	23.9	<0.0001
Perceived risk of getting colon cancer	Low	55.6%	40.9%	53.0%	57.1%	0.023
	Moderate	34.1%	53.0%	43.4%	35.7%	
	High	10.3%	6.1%	3.5%	7.1%	
Perceived risk of getting colon cancer compared to people at same age	More likely	15.9%	13.6%	11.1%	21.4%	<0.0001
	About the same	61.1%	62.9%	40.9%	28.6%	
	Less likely	23.0%	23.5%	48.0%	50.0%	
How often do you worry about getting colon cancer	Rarely or never	36.5%	47.0%	58.6%	57.1%	0.002
	Sometimes	47.6%	46.2%	35.4%	35.7%	
	Often or all the time	15.9%	6.8%	6.1%	7.1%	
Perceived risk score (mean)		5.27	5.15	4.61	4.71	<0.0001
Self efficacy	Very likely	49.2%	56.8%	59.1%	71.4%	0.07 <sup>‡</sup>
	Likely	27.0%	31.8%	28.3%	21.4%	
	Unlikely	3.2%	0.8%	2.5%	0	
	Very unlikely	4.0%	2.3%	3.0%	0	
	Don't know	16.7%	8.3%	7.1%	7.1%	

Variable	Level	Ethnic/racial group (N)				p-value <sup>‡</sup>
		Hispanic (126)	Non-Hispanic White (132)	Non-Hispanic Black (198)	Others (14)	
Doctor recommended CRC?	Yes	53.2%	54.6%	48.5%	57.1%	0.68
Colonoscopy barrier scores <sup>§</sup>		2.01 (94)	1.98 (87)	1.98 (136)	2.03 (10)	0.98
FOBT barrier scores <sup>§</sup>		1.79 (46)	1.72 (56)	1.62 (77)	2.61 (3)	0.43

<sup>‡</sup> Chi-squared test except age, fatalism score, and perceived risk score (Mann-Whitney test)

<sup>‡</sup> collapsing “unlikely”, “very unlikely”, and “Don’t know” into one category

<sup>§</sup> mean score (sample size)