Factors Associated with Colorectal Cancer Screening among a Low-Income, Multiethnic, Highly Insured Population: Does Provider's Understanding of the Patient's Social Context Matter?

Maria De Jesus, Elaine Puleo, Rachel C. Shelton, Lorna H. McNeill,
and Karen M. Emmons

ABSTRACT *The primary aim of this paper was to explore whether provider's understanding of patient's social context is associated with screening uptake, independent of provider's recommendation. Baseline data were collected in 2004–2005 from a cluster randomized control trial in 12 low-income housing sites. Participants included 695 low-income, multiethnic adults aged 50 years and over who were primarily insured (97%). Provider's recommendation was significantly associated with current adherence to colorectal cancer (CRC) screening. Provider's understanding of patient's social context, as operationalized by how well participants felt that their provider knew (a) their responsibilities at work, home, or school; (b) their worries about health; and (c) them as a person and their values and beliefs, was also significantly associated with current adherence to screening, independent of provider's recommendation. Participants who reported that their provider knew them well on two or three items were significantly more likely to be current with CRC screening compared to those who reported their provider knew them well on only one or none of the items (odds ratio=1.56; 95% confidence interval=1.06, 2.29). Our findings indicate that provider's understanding of patient's social context, independent of provider's recommendation for CRC screening, contributed to adherence to CRC screening in this low-income, multiethnic population.*

KEYWORDS *Urban low-income population, Colorectal cancer, Social context, Provider's recommendation for CRC screening*

INTRODUCTION

Colorectal cancer (CRC) is the third most common cause of cancer and the second most common cause of cancer death in the USA. Although CRC incidence and mortality rates have been declining, reflecting improvements in early detection and treatment,¹ ethnic/racial and socioeconomic disparities still persist. These disparities are due, at least in part, to disparities in CRC screening uptake.^{2–10}

De Jesus and Emmons are with the Center for Community-Based Research, Dana-Farber Cancer Institute, Boston, MA, USA; De Jesus and Emmons are with the Department of Society, Human Development, and Health, Harvard School of Public Health, Boston, MA, USA; Puleo is with the Division of Biostatistics and Epidemiology, Department of Public Health, University of Massachusetts, Amherst, MA, USA; Shelton is with the Division of Cancer Prevention and Control, Department of Oncological Sciences, Mount Sinai School of Medicine, New York, NY, USA; McNeill is with the Department of Health Disparities Research, University of Texas M.D. Anderson Cancer Center, Houston, TX, USA.

Correspondence: Maria De Jesus, PhD, Center for Community-Based Research, Dana-Farber Cancer Institute, 44 Binney Street, LW 703, Boston, MA 02115, USA. (E-mail: Maria_DeJesus@dfci.harvard.edu)

Conceptual Model

This research is guided by the social contextual model put forth by Sorensen et al.,¹¹ which illustrates the role of social contextual factors in influencing health behaviors across multiple levels of influence. Provider's recommendation for CRC screening has consistently been one of the strongest predictors of CRC screening behavior.^{12–19} However, the association of screening status and the provider's understanding of patient's social context, independent of provider's recommendation for CRC screening, has not yet been examined. To address this gap, we examined the relative contribution of provider's understanding of patient's social context to current CRC screening adherence, independent of receiving a screening recommendation. We hypothesized that participants who had received a recommendation for CRC screening would be more likely to be current with CRC screening than those who had not received a recommendation. We further hypothesized that those who reported that their provider knew their social context well would be more likely to be current with CRC screening than those who reported that their provider did not know their social context well, controlling for provider's recommendation.

METHODS

Study Design and Sample

This study used baseline data collected in 2004–2005 from Open Doors to Health, a CRC prevention cluster randomized control trial. Twelve urban public housing sites in Boston were the primary sampling units, and individuals within housing sites served as secondary sampling units. Participants provided informed consent and completed an interviewer-administered survey in either English or Spanish. The study protocol was approved by the Harvard School of Public Health Institutional Review Board.

Study recruitment and sampling has been described in full detail elsewhere.^{20,21} Eligibility criteria included (1) residence in a participating housing site, (2) at least 18 years of age, and (3) fluency in English or Spanish. Baseline surveys were obtained on 1,554 participants. Analyses included Black, White, and Hispanic participants aged 50 years and over who had completed the baseline survey, including questions pertaining to CRC screening and provider's understanding of the patient's social context ($n=695$). Due to cognitive or other types of disabilities, 12% of participants completed a shorter version of the survey which did not include these questions. Ninety-seven percent of the overall sample had health insurance that covered CRC screening.

Measures

Provider's recommendation for CRC was assessed by asking participants whether a health provider ever told them that they should be screened for colon or rectal cancer (yes/no). Participants reported on their regular provider's understanding of their social context, operationalized as how well they felt their regular provider knew (a) their responsibilities at work, home, or school; (b) their worries about health; and (c) them as a person and their values and beliefs.^{11,22} Responses included *not at all*, *a little*, *somewhat*, and *very well* for each item. A point was given for each question for which the participants felt their provider knew their social context somewhat or very well, and a summary score (range, 0 to 3) was computed. A median split of two categories was then created (zero to one item=did not know

patient's social context well; two to three items=knew patient's social context well) for these analyses, based on the distribution of responses. Sociodemographic variables including age, race, gender, income, education, immigrant status, English as a first language, and number of doctor visits in the last year were also assessed. The outcome variable was CRC screening adherence.²³ Patients were considered current if they reported having a fecal occult blood test (FOBT) within 1 year of the survey, flexible sigmoidoscopy within 5 years, and/or colonoscopy within 10 years, as per American Cancer Association Screening guidelines.²⁴

Data Analysis

Based on the cluster design, data for all analyses were weighted up to the population size within each housing site (weighted sample size=1,029). Based on the bivariate associations and consideration of potential confounders, cluster randomized multivariable logistic regression models were estimated for the dependent variable, using SUDAAN 9.01 and SAS 9.1 statistical software.²⁵

RESULTS

Sociodemographic Analyses

Table 1 presents the demographics for the sample. Participants were predominately non-White, female, insured, and had low levels of education.

Bivariate and Multivariable Analyses for Current CRC Screening

Table 2 presents the bivariate analyses. Participants who had received a recommendation were significantly more likely to be current with their CRC screening compared to those who did not receive one ($p=0.001$). Similarly, participants who reported that their provider knew their social context well were significantly more likely to be current with CRC screening compared to those who reported that their provider did not know their social context well ($p=0.004$).

Table 3 displays the odds ratios and 95% confidence intervals for the adjusted multivariable model of current CRC screening. After adjusting for potential confounding factors, the association between receiving a recommendation and being screened remained significant ($p=0.001$). The association between provider's understanding of patient's social context and current CRC screening also remained significant after adjusting for age, number of times visited the doctor per year, and provider's recommendation.

DISCUSSION

The aim of this article was to examine whether the provider's understanding of the patient's social context was associated with current CRC screening, independent of receiving a recommendation to be screened among a sample of low-income, multiethnic adults. Consistent with previous findings,¹²⁻¹⁹ provider's recommendation emerged as a strong predictor of CRC screening. Additionally, as hypothesized, provider's understanding of patient's social context was significantly associated with CRC screening, independent of recommendation.

Several limitations must be noted. Participants were asked about screening recommendations made by any health care provider, while provider's understanding of patient's social context was assessed specifically for one's regular provider.

TABLE 1 Demographic characteristics of study sample (weighted *N*=1,029)

Age, mean (SE)	63.39 (0.31)
Race/ethnicity, <i>n</i> (%)	
Black	488 (47)
White	58 (6)
Hispanic	483 (47)
Gender, <i>n</i> (%)	
Male	296 (29)
Female	733 (71)
Income, <i>n</i> (%)	
<\$10,000	503 (53)
\$10,000 to <20,000	311 (32)
>+\$20,000	137 (14)
Education, <i>n</i> (%)	
Less than high school	592 (58)
Completed high school/vocational	220 (21)
At least some college	214 (21)
Immigrant status, <i>n</i> (%)	
Born in USA	487 (47)
Born in Puerto Rico	344 (33)
Not born in USA or Puerto Rico	197 (19)
English as first language, <i>n</i> (%)	
Yes	521 (51)
No	508 (49)
Provider’s understanding of patient’s social context, <i>n</i> (%)	
Provider knows patient’s social context somewhat or very well on 0 to 1 item	307 (30)
Provider knows patient’s social context somewhat or very well on 2 to 3 items	715 (70)
Provider’s recommendation for CRC screening, <i>n</i> (%)	
Yes	716 (70)
No	304 (30)
Average number of doctor visits/last year, <i>n</i> (SE)	7 (0.47)
Insurance type, <i>n</i> (%)	
Public (Medicare, Medicaid, MassHealth)	783 (77)
Public and private	32 (3)
Private only	183 (18)
No insurance	25 (2)
Type of screening, <i>n</i> (%)	
Colonoscopy	557 (54)
Flexible sigmoidoscopy	64 (6)
FOBT	78 (8)
Current screening, <i>n</i> (%)	
Yes	699 (67)
No	330 (32)

Although we considered restricting the recommendation question to the current regular provider, it is possible that another provider would make a CRC screening recommendation (e.g., a nurse at a blood pressure clinic), which would cue the patient to talk with their regular provider about screening. Currently, in most states, CRC screening requires a referral from one’s primary care provider. Thus, it is likely that there was high convergence between the referent for the provider and screening questions. This study is also cross-sectional, and thus, causal interpretations cannot be made. The results can only be generalized to similar populations. Of note, likely because

TABLE 2 Bivariate model predicting current CRC screening

	Bivariate analyses, OR (95% CI)
Demographics	
Age	1.03 (1.01, 1.05)**
Race	
Hispanic	1.28 (0.60, 2.74)
Black	1.47 (0.69, 3.13)
White	Ref
Gender	
Male	1.02 (0.72, 1.44)
Female	Ref
Income	
<\$10,000	1.30 (0.81, 2.09)
\$10,000 to <20,000	1.26 (0.76, 2.09)
>+\$20,000	Ref
Education	
Less than high school	1.29 (0.86, 1.95)
Completed high school/vocational	0.84 (0.52, 1.35)
At least some college	Ref
Immigrant status	
Born in USA	1.08 (0.71, 1.64)
Born in Puerto Rico	0.91 (0.57, 1.44)
Not born in USA or Puerto Rico	Ref
English as first language	
Yes	1.11 (0.81, 1.54)
No	Ref
Number of doctor visits/last year	1.73 (1.38, 2.17)*
Provider's recommendation for CRC screening	
Yes	4.63 (3.24, 6.60)**
No	Ref
Provider's understanding of patient's social context	
Provider knows patient's social context somewhat or very well on 0 to 1 item	Ref
Provider knows patient's social context somewhat or very well on 2 to 3 items	1.79 (1.26, 2.55)**

* $p < 0.05$; ** $p < 0.01$

of the high level of health insurance coverage among this sample of public housing residents, access to health care was not generally a barrier and thus may have impacted on the study findings. However, this is an ideal situation in which to study the association between provider's understanding of patient's social context and health care utilization because the results are less likely to be influenced by issues of access.

Our findings indicate that provider's understanding of their patients' social context may facilitate screening adherence. Although longitudinal data would be needed to assess any causal patterns, it is possible that providers who know their patients better are more effective at participating in the shared decision making that is an important part of addressing cancer screening. These providers may also be more effective at removing barriers to screening because they have a better understanding of their patients' social context. Thus, our findings are useful in emphasizing important aspects of patients' social context to which providers need to attend to in their clinical encounters in order to increase CRC screening.

TABLE 3 Multivariable model predicting current CRC screening

	Multivariable analyses ^a , OR (95% CI)
Demographics	
Age	1.03 (1.01, 1.05)**
Race	
Hispanic	
Black	
White	
Gender	
Male	
Female	
Income	
<\$10,000	
\$10,000 to <20,000	
>+\$20,000	
Education	
Less than high school	
Completed high school/vocational	
At least some college	
Immigrant status	
Born in USA	
Born in Puerto Rico	
Not born in USA or Puerto Rico	
English as first language	
Yes	
No	
Number of doctor visits/last year	1.03 (1.00, 1.05)*
Provider's recommendation for CRC screening	
Yes	4.50 (3.11, 6.52)**
No	Ref
Provider's understanding of patient's social context	
Provider knows patient's social context somewhat or very well on 0 to 1 item	Ref
Provider knows patient's social context somewhat or very well on 2 to 3 items	1.56 (1.06, 2.29)*

p*<0.05; *p*<0.01
^aAdjusted for age, number of doctor visits/last year, and provider's recommendation for CRC screening

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