

ASSOCIATION OF KNOWLEDGE, ATTITUDES, AND BEHAVIORS FOR COLON CANCER SCREENING IN HISPANIC PATIENTS

Purpose: The purpose of our cross-sectional study was to examine the association between sociodemographic, knowledge, attitude and behavior factors with colon cancer screening among low-income Hispanic patients from an urban family medicine clinic in San Antonio, Texas.

Methods: Using random stratified sampling, 804 patients were surveyed with 274 Hispanic patients meet the eligibility criteria for colon cancer screening (aged ≥ 50 years). A 10-page self-administered questionnaire in Spanish or English completed in the clinic waiting room included self-reported colonoscopy, sociodemographic characteristics, health status, knowledge, attitudes, and behaviors toward colon cancer screening. Associations between colonoscopy and patient characteristics were assessed using logistic regression.

Results: 62% of patients reported having been tested for colonoscopy. Older Hispanics (age mean = 59 ± 6.1 SD) were more likely to have a colonoscopy than younger Hispanics (age mean = 56 ± 4.8 SD) ($P < .001$). Bivariate analysis showed that patients who discussed colon cancer risk with their doctor ($P = .001$), did not smoke ($P = .004$), or encouraged family members or friends to be tested for colon cancer ($P < .001$) were more likely to be screened. Multiple variable logistic regression analysis showed that older age, having cancer, discussing the risk factors with their doctor, and encouraging family members or friends to get tested were significant predictors for colonoscopy testing in Hispanics.

Conclusions: Colonoscopy screening in a sample of low-income Hispanic patients differed by age and health experience. Intervention programs that increase colon cancer

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screening in Hispanics patients should concentrate on those aged < 60 . Patient education for knowledge, positive attitude, and behaviors may improve colon cancer screening. (*Ethn Dis.* 2013;23[3]:343-348)

Key Words: Knowledge, Attitudes and Behaviors, Colon Cancer Screening, Hispanics

INTRODUCTION

Colorectal cancer is the second most commonly diagnosed cancer in both Hispanic men and women¹ and Hispanics are less likely to have had a recent screening test for colorectal cancer than non-Hispanic Whites, 31.9% vs. 49.5%.^{1,2} Hispanics are more likely to be diagnosed with advanced colorectal cancer than non-Hispanic Whites and have a lower probability of survival after diagnosis after accounting for differences in age and stage.³ Moreover, uninsured Hispanics are less likely to have had recent colorectal cancer screening tests than their insured counterparts.¹

Routine cancer screening has become more frequent in developed societies in the past decades⁴⁻⁶ and screening is more common among people who are older, more educated, White, more affluent, those who do not live alone, and those with a personal and/or family history of cancer.^{4,6,7} A large proportion of colorectal cancers could be prevented through screening¹ to reduce colorectal cancer mortality through early detection and curative interventions.⁵ Indications for colonoscopy vary based on age, sex, and type of clinical setting and currently, colonoscopy is increasingly used both for

colorectal cancer screening and symptoms evaluation.^{8,9}

Positive attitudes play an important role in cancer screening among adults in the general population. People who have a positive opinion of screening tend to undergo screening more often.¹⁰ However, despite the high incidence of colon cancer, patients may offer behavioral resistance to applying the principles of its prevention.¹¹ Studies that examine the correlation of knowledge, attitude, and behavior for colon cancer screening in patients are limited. Previous studies suggest that access to cancer screening, patient clinical communication, knowledge about cancer risk, attitudes, healthy behaviors¹² and understanding of medical terms are important issues in cancer prevention for minorities.¹³⁻¹⁶ Communication of cancer risk to ethnically diverse populations has the potential to affect screening behavior.¹⁶⁻¹⁸ For these reasons, there is an ongoing need to better understand why Hispanics patients do or do not get colon cancer screening.

The purpose of our cross-sectional study was to examine the association between sociodemographic, knowledge, attitudes and behavior factors with colon cancer screening among low-income Hispanic patients from an urban family medicine clinic in San Antonio, Texas.

METHODS

Sample

The study sample was based on stratified random sampling of patient

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visits within each of three adjoining patient care modules, in an urban hospital-based family medicine residency clinic. The clinic is designed with three modules, each with 12 or 13 residents and 3 to 4 faculty physicians. We sought to enroll a sample that was representative of our patient population with regard to age, sex, and ethnicity. We surveyed a cross-section of all adult patients who attended the clinic in those module waiting rooms until the proportion responding met the clinic patient demographic profiles. Sampling included all adults, aged ≥ 18 , predominantly insured by Carelink (county based funding for uninsured patients) and Medicaid. Our final sample included only Hispanics who were aged ≥ 50 years. This study was classified as exempt from review by the Committee for the Protection for Human Subjects at the University of Texas Health Science Center at San Antonio.

The total number of survey participants was 804 patients of which 274 self-identified as Hispanic, were aged ≥ 50 and answered questions relating to screening for and knowledge, attitudes and behaviors (KAB) related to colon cancer. These 20 colon cancer questions were part of a larger 93-item self-administered questionnaire in Spanish

or English designed and pilot tested by residency faculty to determine the demographic profiles and cancer prevention needs for clinic patients. Patients received a \$10 dollar gift card for their participation.

Measures

Participants were asked to answer the following question to assess their history of colonoscopy: "Have you ever had a colonoscopy (a test that uses a scope in the rectum)?" (yes or no) and their response was coded for use as the outcome variable. Further, the knowledge, attitude and behaviors were assessed with a series of questions including true or false questions.

Sociodemographic factors included in our study were: age of respondents measured in years; sex; marital status (married, single, divorce or separated); education categorized as below and above high school; language of interview in Spanish or English, depending on the respondent's preference; employment; smoking; drinking; self-rated health; BMI; self report of any current cancer experience; and type of insurance coverage (Appendix 1).

Statistics

Statistical analyses focused on the association between sociodemographic factors, KAB items, and patient-reported colonoscopies. Differences across sociodemographic and colon cancer KAB factors were assessed with chi-square and *t* test statistics. In logistic regression models, we adjusted for age, any reported cancer, and behavior questions predicting colonoscopies. Adjusted odds ratios and 95% confidence intervals generated from multivariate logistic regression analysis were reported. All analyses were done using the IBM SPSS program Version 18.

RESULTS

Characteristics of our sample are presented in Table 1. One hundred sev-

enty one (62%) reported having had a colonoscopy. Mean age was 58.2 ± 6 , 175 (64%) female, 107 (40%) had less than a high school education and 78 (29%) chose to take the survey in Spanish.

Bivariate Results

Table 1 shows patient characteristics and their bivariate associations with colonoscopy. Older Hispanics (age mean = 59 ± 6.1 SD) were more likely to have a colonoscopy than younger Hispanics (age mean = 56 ± 4.8 SD), (OR 1.12, 95% CI = 1.07–1.18) ($P < .001$). Smoking behaviors had a significant association with colonoscopy screening; nonsmokers (66%) were more likely to have colonoscopies than current or former smokers (43%), (OR 2.56, 95% CI = 1.33–5.0) ($P = .004$). No differences were seen in the rates of colonoscopy by sex, marital status, years of education, language of interview, employment, drinking, self-rated health, BMI, or medical insurance.

Table 2 shows selected KAB items whose bivariate associations with colonoscopy had a $P \leq .25$. Patients who reported being screened were more likely to discuss risk factors with their doctor (OR 2.27, 95% CI = 1.37–3.85) ($P = .001$), more likely to have additional tests for colon cancer using hemoccult cards (fecal occult blood test) (OR 5.12, 95% CI = 2.77–9.48) ($P \leq .001$), and more likely to encourage family members or friends to be screened for colon cancer (OR 3.85, 95% CI = 2.27–6.67) ($P < .001$). There was no significant association between colonoscopy and the knowledge of the family history of the disease, testing to check early signs of the disease, or eating healthy foods to prevent cancer.

Multiple Variable Results

Table 3 shows the logistic regression analysis of patients having colonoscopies for colon cancer prevention. Older age (Adjusted OR 1.13, 95% CI = 1.07–1.20), having cancer (Adjusted OR 5.42, 95% CI = 1.32–22.1), discussing the risk factors with their doctor (Adjusted OR, 2.51 95% CI = 1.38–4.57), and encouraging family

Table 1. Characteristics of patients with and without colonoscopies, N = 274

	Yes	No	Total	Odds Ratio	P
	n=171 (62%)	n=103 (38%)	N=274	(Confidence Interval)	
Age, mean ± SD	59.4 ± 6.1	56.0 ± 4.8	58.2 ± 6	1.12 (1.07–1.18)	<.001
Sex				1.11 (.66–1.86)	.67
Female	108 (62%)	67 (38%)	175 (64%)		
Male	63 (64%)	35 (36%)	98 (36%)		
Marital status				1.24 (.76–2.03)	.38
Single, divorce, separated	87 (60%)	58 (40%)	145 (53%)		
Married	84 (65%)	45 (35%)	129 (47%)		
Years of education				1.32 (.79–2.18)	.28
<High school	63 (59%)	44 (41%)	107 (40%)		
≥High school	104 (65%)	55 (35%)	159 (60%)		
Language of interview				1.29 (.74–2.24)	.36
English	119 (61%)	77 (39%)	196 (71%)		
Spanish	52 (67%)	26 (33%)	78 (29%)		
Employment				1.14 (.65–1.98)	.64
Not employed	113 (63%)	67 (37%)	180 (70%)		
Employed	52 (66%)	27 (34%)	79 (30%)		
Smoking				2.56 (1.33–5.0)	.004
No	152 (66%)	78 (34%)	230 (84%)		
Yes	19 (43%)	25 (57%)	44 (16%)		
Drinking				1.45 (.81–2.59)	.25
No	121 (60%)	79 (40%)	200 (74%)		
Yes	49 (69%)	22 (31%)	71 (26%)		
Self-rated health				1.08 (.65–1.78)	.75
Fair or poor	73 (62%)	45 (38%)	118 (44%)		
Good or excellent	95 (64%)	54 (36%)	149 (56%)		
BMI, mean ± SD	31.5 ± 6.9	31.5 ± 7.2	31.5 ± 7	.99 (.96–1.04)	.93
Medical insurance				.71 (.41–1.22)	.21
Medicare/Medicaid	63 (68%)	29 (32%)	92 (35%)		
Carelink	104 (61%)	67 (39%)	171 (65%)		
Any reported cancer				3.03 (.85–10.85)	.07
No	140 (61%)	91 (39%)	231 (93%)		
Yes	14 (82%)	3 (18%)	17 (7%)		

members or friends to get tested (adjusted OR 2.86 95% CI=1.56–5.24), were significant predictors for colonoscopy testing in Hispanics.

DISCUSSION

Our study examined the associations between knowledge, attitudes and behaviors and colon cancer screening, specifically colonoscopy, among Hispanic patients from an urban family medicine clinic. We found that only 62% of eligible patients reported having been screened

by colonoscopy. Multiple variable modeling determined that older age, having cancer, discussing the risk factors with their doctor, and encouraging family members or friends to get tested were significant predictors for colonoscopy testing in Hispanics.

Consistent with previous studies, our data shows that older age,^{10,19} patients with a cancer diagnosis or a family history of cancer were more likely to be screened for colon cancer.^{10,17,20} As people grow older they are more likely to experience cancer either first hand or through relatives or

close associates. This immediacy to cancer may cause a heightened awareness of the importance of screening. This assertion may also be supported by the finding that colon cancer screening was more associated with patients who did not smoke vs those who did. The non-smokers may be more aware of cancer because of their age and life experience and they may be former smokers who have quit to avoid increasing their cancer risk.

While older age can be associated with greater likelihood of screening, it does not appear to be due to improvements in

Table 2. Selected knowledge, attitude, and behavior characteristics of patients with and without colonoscopies

	Yes	No	Total	Odds Ratio (Confidence Interval)	P
Knowledge of family history of the diseases				1.48 (.79–2.80)	.21
Yes	128 (61%)	83 (39%)	211 (79%)		
No	39 (70%)	17 (30%)	56 (21%)		
Get colonoscopies to check early signs for colon cancer				.41 (.87–1.99)	.25
Yes	163 (62%)	98 (38%)	261 (96%)		
No	8 (80%)	2 (20%)	10 (4%)		
Discuss your risk for colon cancer with your doctor				2.27 (1.37–3.85)	.001
Yes	108 (71%)	44 (29%)	152 (56%)		
No	62 (52%)	57 (48%)	119 (44%)		
Ever tested for colon cancer using hemocult card (FOBT)				5.12 (2.77–9.48)	<.001
Yes	82 (84%)	16 (16%)	98 (37%)		
No	84 (50%)	84 (50%)	168 (63%)		
Encourage family members to be tested for colon cancer				3.85 (2.27–6.67)	<.001
Yes	132 (73%)	48 (27%)	180 (66%)		
No	38 (42%)	53 (58%)	91 (34%)		
Eat healthy foods to prevent cancer				.64 (.32–1.28)	.21
Yes	148 (64%)	82 (36%)	230 (86%)		
No	21 (54%)	18 (46%)	39 (14%)		

health insurance coverage in the older segment of our sample. Previous studies reported that individuals who completed a colon cancer screening were more educated and had insurance.²¹ Having medical insurance coverage was not significantly related with screening, even after our patients were categorized in Medicare/Medicaid vs. Carelink groups. Carelink is a medical payment plan for low-income residents in Bexar County who do not have any type of insurance coverage. Thus, everyone who visits our clinic had some access to care.

An association between positive behaviors toward cancer screening and actual screening practices has been reported by others.^{22–24} Patients in our sample who responded positively with

the behavior questions were also more likely to report a colon cancer screening.

Contrary to other studies, no positive attitude question was significantly related to screening in our study. Negative attitudes were seen more frequently among men and the most socioeconomically disadvantaged.¹⁰ There was a non-significant trend in our low-income sample for negative attitudes on some items to be associated with lack of screening.

Despite the fact that education was not statistically significantly related to screening, 65% of the patients with high school education or above reported having screening for colon cancer compared with 41% of those with less than high school education that have not had

a colonoscopy. However, this trend was not significant in our sample.

The findings in our study identified how effective interventions need to be tailored to Hispanic patients that promote the benefits of colonoscopies in primary care settings. First, colonoscopies should be advised for patients between the 50–60 years old; physicians and advocates should work to address the benefits of screening for this age group. Second, patients should be educated about the risk of family history of polyps or colon cancer to prioritize screening for colonoscopies. Third, patients should be made aware about early signs and symptoms (rectal bleeding or a positive fecal occult blood test) as an indication for screening.

We have several limitations in our study. First, the use of the waiting room survey means that we will not have a completely random sample of our patient population. Waiting room surveys are weighted toward frequent visitors to the family practice clinic; we may have missed low-frequency users.

Another limitation of our study is that it was based on self-reported data, therefore, responses might be subject to

Table 3. Logistic regression predicting odds of patients having colonoscopies for colon cancer prevention (n=243)

Variables	OR (95% CI)	P
Age (continuous)	1.13 (1.07–1.20)	<.001
Cancer	5.42 (1.32–22.1)	.018
Discussing your risk with your doctor	2.51 (1.38–4.57)	.003
Encouraging a family member or friend to get tested	2.86 (1.56–5.24)	.001

Nagelkerke R² = .261.

recall and social desirability bias. Further, our sample included participants enrolled while in the clinic waiting rooms and it is possible that participating patients were more invested in their health and therefore more likely to participate in the study (volunteer bias) limiting generalizability.

However, our study has several strengths as well. Data were obtained from a usually underrepresented population in clinical research and as the data were collected from actual clinics the results should be more generalizable to primary care practice.

Our finding that 62% of those eligible in a low-income urban Hispanic patient sample completed a colonoscopy is similar to other studies that show Hispanics are underrepresented for colonoscopies.⁸ In our sample, Hispanics who had a colonoscopy were either older, had cancer, had an opportunity to discuss the risk factors with their doctors, or encouraged family members to be tested, also similar to prior findings.

Our study is important in that it elucidates factors that influence low-income urban Hispanics to be screened when they have access to care. The population in our study has access to care, similar to what we expect in the future for all Americans. However, in addition to access, other barriers, described in this article, are responsible for a reduced rate of this important screening test.

In conclusion, the results of our study show that the rate of colon cancer screening among Hispanics patients continues to be low. These results support the need to develop interven-

tion programs that increase and promote colonoscopy screening in this population. Better patient education and communication of the benefits of early detection should be addressed to improve colon cancer screening in low-income Hispanic patients.

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AUTHOR CONTRIBUTIONS

Design and concept of study: Otiniano, Wood, Poursani, Katerndahl, Siddiqui, Nadeau
Acquisition of data: Otiniano, Wood, Poursani, Katerndahl, Siddiqui, Nadeau

We found that only 62% of eligible patients reported having been screened by colonoscopy.

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APPENDIX 1

Measures

Smoking was measured by asking respondents if they were current/former smokers or never smoked. Alcohol consumption was ascertained based on history of current frequency and volume of consumption in one day of 4 or more drinks of beer, wine, or liquor during a past year prior to the interview. Self-rated health was categorized as Excellent/good vs. fair/poor. Obesity was measured by the Body Mass Index (BMI), which was calculated by dividing respondents' weight (measured in pounds) by the square of height (measured in inches). A respondent was categorized as obese if he or she

had a BMI of 30 or more.²⁵ Patients were asked to report if they currently had any cancer and specifically any breast, lung or colon cancer. Respondents were also asked if they had health insurance coverage (including Medicare/Medicaid benefits or Carelink). Health insurance coverage was classified as having or not having any coverage.

The ten true/false colon cancer knowledge items were:

1. Colorectal cancer—cancer of the colon or rectum—is the second leading cause of cancer death in the United States.
2. Colon cancer is a man's disease.
3. Colorectal cancer can develop anywhere in the large intestine, also called the colon
4. Age doesn't matter when it comes to getting colon cancer.
5. Smoking and alcohol consumption will not put me at risk for colorectal cancer.
6. Symptoms for colorectal cancer may include cramping or stomach pain.
7. Screening for colorectal cancer is only useful for finding cancer once you have it.
8. A colonoscopy is the only test available for colorectal cancer screening
9. A family history of the disease puts you at greater risk for developing colorectal cancer yourself.

10. Colorectal cancer can develop with few or no symptoms.

The five attitude items for colon cancer were:

1. If a person wanted to get a colonoscopy, they would have a hard time getting an appointment.
2. Getting a colonoscopy is not worth the hassle of waiting for the appointment, cleaning out the colon, getting the procedure, and recovering from the procedure.
3. If I was beginning to develop colon cancer, I would want to know right away.
4. It is important for people to get colonoscopies to check for early signs of colon cancer.
5. Doctors should recommend that people get colonoscopies to check for early signs of colon cancer.

The three behavior questions for colon cancer were:

1. Have you ever discussed your risk for colon cancer with your doctor?
2. Have you ever encouraged a family member or friend to get tested for colon cancer?
3. Do you eat healthy foods (fruits and vegetables) to prevent colon cancer?