



Interlibrary Loan/Document Delivery  
 Health Sciences Library  
 University of North Carolina at Chapel Hill

Phone: 919-966-4998  
 OCLC: NOH

Ariel: 152.2.37.156

Fax: 919-966-1537  
 DOCLINE: NCUNCA

**Warning Concerning Copyright Restrictions**

The Copyright law of the United States (Title 17, United States Code) governs the making of photocopies or other reproductions of copyright material. Under certain conditions specified in the law, libraries and archives are authorized to furnish a photocopy or other reproduction. One of these specified conditions is that the photocopy or reproduction is not to be "used for any purpose other than private study, scholarship, or research". If a user makes a request for, or later uses a photocopy or reproduction for purposes in excess of "fair use", that user may be liable for copyright infringement. This institution reserves the right to refuse to accept a copying order if, in its judgement, fulfillment of the order would involve violation of copyright law.

~ Please include the information below for resends ~

Resend requests received after 3 business days may be delayed due to reshelving of materials.

OCLC or Docline ILL request # \_\_\_\_\_

Page(s) to resend: \_\_\_\_\_

(4)

**SAVE AS Williams6.**

Brouse CH, Basch CE, Wolf RL, Shmukler C. Barriers to colorectal cancer screening: an educational diagnosis. *Journal of Cancer Education*. 2004;19(3):170-173.

\$8.00

*R L C*

rebeccawilliams@unc.edu

## Barriers to Colorectal Cancer Screening: An Educational Diagnosis

COREY H. BROUSE, EDD, CHARLES E. BASCH, PHD,  
RANDI L. WOLF, PHD, MPH, CELIA SHMUKLER, MD

**Abstract**—*Background.* Colorectal cancer (CRC) is a largely preventable disease through early detection and treatment, yet screening rates remain low and mortality rates remain high, particularly among low-income, minority populations. This study was conducted to identify barriers to CRC screening. *Methods.* Repeated telephone contacts were conducted with 226 individuals from 52 to 80 years of age, who had not recently received CRC screening. The contacts were intended to educate and encourage participants to obtain CRC screening. Within this context, CRC screening barriers were identified and categorized using an educational diagnosis as specified in the Precede-Proceed Framework. *Results.* Findings showed that the most frequently observed barrier was lack of familiarity with CRC screening guidelines and tests. Availability and accessibility to screening tests was a barrier that was difficult to overcome for many participants. The majority of participants faced two or more barriers. *Conclusions.* This study suggests a need for public health education about CRC screening guidelines and tests and greater accessibility to CRC screening. *J Cancer Educ.* 2004; 19:170-173.

Colorectal cancer (CRC) is the second leading cause of all cancer deaths in the U.S.,<sup>1</sup> causing approximately 60,000 deaths annually.<sup>2</sup> Many of these deaths are preventable through early detection and treatment,<sup>3,4</sup> and screening for CRC is recommended by the U.S. Preventive Services Task Force, among others.<sup>5,6</sup> Nevertheless, rates of CRC screening are unacceptably low, particularly for minority populations<sup>7</sup> who are at high risk for CRC mortality: CRC death rates are substantially higher for blacks (28.2 CRC deaths per 100,000 population) than for whites (20.8 per 100,000) or Hispanics (12.8 per 100,000).<sup>8</sup> Most cases of CRC are diagnosed among individuals who are over 50 years of age.<sup>9,10</sup>

There is limited understanding about barriers to CRC screening, particularly among high-risk minority populations, with many studies yielding inconsistent findings.<sup>11-29</sup> Some of the few factors that have been consistently positively associated with CRC screening are not amenable to

change through health education, including income,<sup>28,29</sup> education,<sup>28,29</sup> recommendation by physician,<sup>11,23</sup> and family history.<sup>19</sup> To increase rates of CRC screening, improved understanding of barriers is needed.

The purpose of this study, therefore, was to identify barriers to CRC screening that are amenable to change through health education in a low-income, minority population of individuals 52 to 80 years old. Barriers were observed in the process of implementing tailored telephone education (TTE) to increase CRC screening in the context of a randomized trial to evaluate alternative educational approaches, the Healthy Colon Project.<sup>30,31</sup> We chose to classify the barriers using an educational diagnosis as specified in the Precede-Proceed Framework, which is a widely used approach for health education program planning.<sup>32</sup> The barriers classified according to this framework are those which are amenable to change through health education. The intention was to use this information to help guide the development of health education interventions to increase CRC screening.

### MATERIALS AND METHODS

The Healthy Colon Project<sup>30,31</sup> is a National Cancer Institute funded randomized controlled trial designed to test whether a TTE intervention would increase the rate of CRC screening beyond the rate observed with the distribution of standard print material among a low-income population with health insurance. This report is based on telephone

---

Received from the Department of Health Promotion and Wellness, SUNY Oswego (CHB); from the Department of Health and Behavior Studies, Teachers College, Columbia University (CEB, RLW); and from the Disease Management and Wellness Program, New York (CS).

This research was supported by Grant CA81932 from the National Cancer Institute of the National Institutes of Health. Additional support was provided by Dorothy Beck and Beth and Michael Kasser.

Address correspondence and reprint requests to: Corey H. Brouse, Department of Wellness and Health Promotion, SUNY Oswego, Oswego, NY 13126; phone: (315) 312-3400; e-mail: <cbrouse@oswego.edu>.

conversations with 226 participants comprising the TTE group. The participants in this study were members of a union-sponsored health benefit fund with several hundred thousand members in the New York City metropolitan area. All of the participants were between the ages of 52 and 80, had not had recent CRC screening or gastrointestinal disease, and agreed to participate in the study.

The demographic characteristics of the sample are shown in Table 1. There were more than twice as many women as men (69.9% vs. 30.1%). Almost half of the respondents were 55 to 59 years of age, the majority were high school graduates, almost two thirds were married, and almost all were employed full-time. About three fourths had an annual household income greater than \$30,000 per year. The majority of the sample was black (67.7%).

The TTE involved multiple contacts with each participant. The frequency and extent of contacts varied based on the needs and interests of the respective participant. In general, the TTE included an assessment of knowledge, beliefs, readiness to contact their physician to obtain CRC screen-

ing, and attempting to elicit a verbal commitment to obtain CRC screening. For every participant the tone of the intervention was casual and conversational. The participants determined the flow of conversation, and the topic was not confined to colon cancer. The focus of the intervention was to create a sensitive and trusting relationship. While the intervention protocol was not highly structured, it was guided by certain health education principles<sup>33</sup> and had some common elements for each participant (e.g., assessment of knowledge, beliefs, and stage of readiness).

The health educator maintained handwritten notes to document the educational process, which included descriptions of the barriers encountered. The measurements used for this manuscript were these handwritten notes taken by the health educator during and after each telephone interaction. The notes for the 226 participants were then reviewed, and barriers that were encountered in each case were identified.

Data analysis involved classifying each of these barriers into one of the three categories used for educational diagnosis as specified in the Precede-Proceed Framework: (1) predisposing, (2) enabling, and (3) reinforcing. Predisposing factors, which influence an individual's motivation to practice a given behavior, include knowledge, beliefs, attitudes, and values. Enabling factors, which influence an individual's ability to act on motivation, include an individual's skills and availability and accessibility to resources. Reinforcing factors, which support an individual's choices or help to maintain a behavior, are related to the knowledge, beliefs, and practices of significant others. The frequency and percent of each category and subcategory was determined. To check coder reliability, 40 cases were reviewed and coded by a second rater. There was 100% agreement between the two raters.

## RESULTS

A total of 439 barriers were identified. Of the 226 participants, at least one barrier to CRC screening was identified, except for six people for whom no barriers were identified and the individual who reported CRC screening after the first contact (see Table 2). Approximately 30% (n = 68) evidenced a single barrier, while more than 40% (n = 92) evidenced two barriers, and almost 25% (n = 53) evidenced three barriers. Only seven of the respondents evidenced four barriers.

Lack of knowledge proved to be the barrier that was most frequently observed. But there was little variation in the nature and scope of misconceptions. In the overwhelming majority of cases (124 of 126), there was a lack of familiarity with CRC screening tests and guidelines.

Barriers to CRC screening in the form of beliefs were found for 22 of the 226 participants. The majority of beliefs that hindered the participant to proceed with CRC screening were perceptions that CRC screening tests are repugnant ("These tests are gross") or painful ("Don't these tests hurt?"). Some participants believed they were not at risk, such as the woman who said, "Only men need to worry about this!"; others believed that if something were wrong, it would cause too much worry ("What would I tell my children if they found some-

TABLE 1. Sociodemographic Characteristics of Sample (N = 226)

Characteristics	%	n
Gender		
Men	30.1	68
Women	69.9	158
Age		
52-54	26.1	59
55-59	47.8	108
60+	26.1	59
Marital status		
Single/never married	6.6	15
Married/living together	63.3	143
Divorced/separated	21.2	48
Widowed	8.0	18
Refused	0.9	2
Highest education		
<High school	11.9	27
High school graduate	46.0	104
Some college/technical school	31.9	72
College or beyond	10.2	23
Work status		
Part-time	6.6	15
Full-time	93.4	211
Annual household income		
<\$30,000/year	22.6	51
\$30,000-\$50,000/year	50.4	114
>\$50,000/year	24.3	55
Do not know	0.4	1
Refused	2.2	5
Race		
Black	67.7	153
White	13.7	31
Hispanic	6.2	14
Asian	6.2	14
Other	5.3	12
Refused	0.9	2

TABLE 2. Barriers to Colorectal Cancer Screening  
(N = 439)

Barrier	%	n
Predisposing		
Knowledge	29	126
Beliefs	5	22
Values	24	105
Enabling		
Skills	3	13
Availability/accessibility to resources	21	90
Reinforcing		
Social support from primary care physician	15	66
Social support from family	2	9
Social support from friends	<1	2
No barriers experienced	1	6

thing?"). There were also instances of beliefs related to fear ("What will happen if they find something?").

Values proved to be a barrier to screening in 105 of the 226 participants. Values as barriers were conceived as factors that took precedence over contemplating CRC screening. The three main values that were obstacles to CRC screening were (1) dealing with other health problems (n = 42), (2) dealing with the catastrophic events of September 11, 2001 (n = 19), and (3) a death or illness in the family (n = 9). Some participants did not value the sponsor or source of communication, and some did not value CRC screening at all.

Enabling factors in terms of lack of skills was a barrier for 13 of the 226 participants. This category was most heterogeneous, with 10 of these individuals experiencing mutually exclusive skill deficits, including inability to follow fecal occult blood test (FOBT) directions, navigate automated telephone systems at the provider's office, communicate with a provider about the tests, and follow dietary restrictions recommended in the FOBT kit. The second subcategory of barriers was availability/accessibility to resources, which was observed in 90 of the 226 participants. In almost all of these cases, the barrier revolved around the lack of time for an appointment with the provider, which was almost always necessary to obtain an FOBT kit and always necessary to obtain a referral for a flexible sigmoidoscopy or colonoscopy. Thus, lack of availability to FOBT kits was a major problem for a considerable portion of the sample.

Reinforcing factors were categorized as social support from (1) the primary care physician (PCP), (2) family, or (3) friends. Nearly one third (n = 66) of the participants reportedly experienced a lack of social support from their PCP, which served as a barrier to receipt of screening. This lack of social support was reportedly experienced in four main ways: (1) the PCP reportedly did not carry the FOBT kit (n = 12), (2) the PCP reportedly requested that the participant attend an office visit rather than receiving the FOBT by mail (n = 12), (3) the PCP reportedly administered a single stool test rather than a 3-day FOBT kit (n = 11), and (4) the PCP reportedly suggested a different test than the participant wanted (n = 10). Nine participants reportedly experienced

lack of social support from the family, and lack of social support from friends served as a barrier for only one participant.

## DISCUSSION

Interpretation of the findings must consider the study limitations. First, the barriers identified in this study were encountered within the context of implementing a telephone-based health education program to promote CRC screening versus conducting a survey on barriers. Studying barriers in the context of trying to promote change does, however, provide a realistic versus a hypothetical context. Second, the sample was relatively small and cannot be said to be representative of a large reference population, but this sample is significant because the participants were at risk for CRC, had not had recent CRC screening, and are an understudied ethnic minority group. Third, all of the data were based on the respondents' self-report, which may be misleading. For example, when a respondent reported that their PCP was not supportive, we did not attempt to verify this information. Fourth, a single researcher collected all of the data. Fifth, this approach to quantifying barriers, however, does not fully communicate the nature and scope of the experience of the various participants. For example, two participants indicating fear as a barrier may experience a very different level of fear, which, in turn, may make this issue more or less difficult to overcome.

Given these limitations, it is not possible to draw definitive conclusions about the frequency and pervasiveness of these barriers in urban populations or in other groups. Such conclusions would require a study design in which standardized measurements about the different barriers were taken from groups who had and had not been screened. Nevertheless, data from this quasi-qualitative study suggest that a number of barriers may impede higher rates of CRC screening, and if these findings were substantiated by further rigorous study they could provide insights into the design of effective CRC screening educational and behavioral interventions.

Based on the findings from this study, barriers were observed for all three categories within the Precede-Proceed educational diagnosis framework. One the most frequently observed barriers was a lack of knowledge about CRC screening tests and guidelines. Knowledge as a barrier was, for the most part, experienced at the beginning of the intervention period and was related to CRC screening tests and guidelines. Knowledge, unlike beliefs and values, was a relatively easy barrier to overcome. Once lack of knowledge was dealt with and misconceptions were clarified, participants were likely to make a verbal commitment to receive screening. Those who experienced barriers in the form of beliefs were likely to take longer to make a verbal commitment. Values were more likely to be experienced at different times throughout the intervention process. These generally reflected issues that took precedence over CRC screening because the participant valued it more.

While lack of knowledge was a prevalent barrier, it was comparatively easy to ameliorate through health education.

In contrast, barriers related to enabling and reinforcing factors, while observed less frequently, were much more difficult to overcome. What can be learned from the enabling factors is that the participants in this group, for the most part, have the skills to complete CRC screening, but there is difficulty with the availability and accessibility of the tests.

The reinforcing factors identified as barriers in this study are consistent with previous research pertaining to the strength of social support. For the participants of this study, when social support was lacking, the likelihood of receiving screening was reduced. This was especially true in the case of lack of social support from the PCP. Future research should be directed to determine ways in which these very important relationships can be strengthened.

There are several implications for increasing CRC screening that may be inferred from this study. First, there appears to be a widespread lack of knowledge about who should be screened, when, and what alternative screening tests are available and recommended by health authorities. Second, rates of CRC screening using the FOBT could be increased if the FOBT kits were more widely and easily available (based on the participants' self-report, which needs to be verified with more rigorous methods). Third, there may be little incentive for PCPs to refer their patients for 3-day FOBTs and to follow up to ensure that the tests are completed and returned in a timely way. This is likely to be a health policy and health-care financing issue more so than one related to continuing medical education.

#### ACKNOWLEDGMENTS

The authors thank the technical and support staffs at Teacher College, Columbia University's Herbert Irving Comprehensive Cancer Center, and the participants in the study.

#### References

- Landis SH, Murray T, Bolden S, Wingo PA. Cancer statistics, 1999. *CA: Can J Clin.* 1999;49:8-31.
- Greenlee RT, Hill-Harmon MB, Murray T, Thun M. Cancer statistics, 2001. *CA: Can J Clin.* 2001;51:15-36.
- Mandel JS, Bond JH, Church TR, Snover DC, Bradley GM, Schuman LM, Ederer F. Reducing mortality from colorectal cancer by screening for fecal occult blood: Minnesota Colon Cancer Control Study. *New Engl J Med.* 1993;328:1365-1371.
- Hardcastle JD, Chamberlain JO, Robinson MH, Moss SM, Amar SS, Balfour TW, James PD, Mangham CM. Randomised controlled trial of faecal-occult-blood screening for colorectal cancer. *Lancet.* 1996;348:1472-1477.
- U.S. Preventive Services Task Force. Screening for colorectal cancer: recommendation and rationale. *Ann Int Med.* 2002;137:129-131.
- Pignone M, Rich M, Teutsch SM, Berg AO, Lohr KN. Screening for colorectal cancer in adults at average risk: a summary of evidence for the U.S. Preventive Services Task Force. *Ann Int Med.* 2002;137:E132-E141.
- Mayberry RM, Coates RJ, Hill HA, et al. Determinants of black/white differences in colon cancer survival. *J Nat Can Inst.* 1995;87(22):1686-1693.
- U.S. Department of Health and Human Services. Healthy people 2010: national health promotion and disease prevention objectives. Available at: <http://www.health.gov/healthypeople>. Accessed July 20, 2001.
- Ries LA, Kosary CL, Hankey BF, et al. (eds). SEER Cancer Statistics Review 1973-1995. Bethesda, MD: National Cancer Institute, 1998.
- Cooper GS, Yuan Z, Rimm AA. Racial disparity in the incidence and case-fatality of colorectal cancer: analysis of 329 United States counties. *Can Epidemiol Biomarkers Prev.* 1997; 6(4):283-285.
- Brenes GA, Paskett ED. Predictors of stage of adoption for colorectal cancer screening. *Prev Med.* 2000;31:410-416.
- Lewis SF, Jensen NM. Screening sigmoidoscopy: factors associated with utilization. *J Gen Int Med.* 1996;11:542-544.
- Maxwell AE, Bastani R, Warda US. Demographic predictors of cancer screening among Filipino and Korean immigrants in the United States. *Am J Prev Med.* 2000;18:62-68.
- Kremers SP, Mesters I, Pladdet IE, van den Borne B, Stockbrugger RW. Participation in a sigmoidoscopic colorectal cancer-screening program: a pilot study. *Can Epidemiol Biomarkers Prev.* 2000;9:1127-1130.
- Beeker C, Kraft JM, Southwell BG, Jorgensen CM. Colorectal cancer screening in older men and women: qualitative research findings and implications for intervention. *J Comm Health.* 2000;25(3):263-278.
- Myers RE, Ross E, Jepson C, Wolf TA, Balslem A, Milliner L, Leventhal H. Modeling adherence to colorectal cancer screening. *Prev Med.* 1994;23:142-151.
- Thomas RJ, Clarke VA. Colorectal cancer: a survey of community beliefs and behaviours in Victoria. *Med J Aust.* 1998;169:37-40.
- Thomas RJ, Clarke VA. Community (mis)understanding of colorectal cancer treatment. *Aust N Z J Surg.* 1998;68:328-330.
- Schoen RE, Weissfeld JL, Trauth JM, Ling BS, Hayran M. A population-based, community estimate of total colon examination: the impact on compliance with screening for colorectal cancer. *Am J Gastroenterol.* 2002;97:446-451.
- Zack DL, DiBaise JK, Quigley EM, Roy HK. Colorectal cancer screening compliance by medicine residents: perceived and actual. *Am J Gastroenterol.* 2001;96:3004-3008.
- Collett JA, Olynyk JK, Platell CE. Flexible sigmoidoscopy screening for colorectal cancer in average-risk people: update of a community-based project. *Med J Aust.* 2000;173:463-466.
- Sarna L, Chang BL. Colon cancer screening among older women caregivers. *Can Nurs.* 2000;23:109-116.
- Clavel-Chapelon F, Joseph R, Goulard H. Surveillance behavior of women with a reported family history of colorectal cancer. *Prev Med.* 1999;28:174-178.
- Shapiro JA, Seeff LC, Nadel MR. Colorectal cancer-screening tests and associated health behaviors. *Am J Prev Med.* 2001;21:132-137.
- Shvartzman P, Rivkind E, Neville A, Friger M, Sperber AD. Screening intention and practice among first-degree relatives of colorectal cancer patients in southern Israel. *Isr Med Assoc J.* 2000;2:675-678.
- Weitzman ER, Zapka J, Estabrook B, Goins KV. Risk and reluctance: understanding impediments to colorectal cancer screening. *Prev Med.* 2001;32:502-513.
- Wender RC. Barriers to screening to colorectal cancer. *Gastrointest Endosc Clin N Am.* 2002;12:145-170.
- Hoffman-Goetz L, Breen NL, Meissner H. The impact of social class on the use of cancer screening within three racial/ethnic groups in the United States. *Ethn Dis.* 1998;8:43-51.
- Screening for colorectal cancer—United States, 1997. *MMWR.* 1999;48:116-121.
- Brouse CH, Basch CE, Wolf RL, et al. Barriers to colorectal cancer screening with fecal occult blood testing in a predominantly minority urban population: a qualitative study. *Am J Public Health.* 2003;93(8):1268-1271.
- Wolf RL, Zybert P, Brouse CH, et al. Knowledge, beliefs, and barriers relevant to colorectal cancer screening in an urban population: a pilot study. *Fam Comm Health.* 2001;24(3):34-47.
- Green LW, Kreuter MW. Health Promotion Planning: an Educational and Environmental Approach. 2nd ed. Mountain View, CA: Mayfield Publishing Company, 1991.
- Basch CE. Preventing AIDS through education: concepts, strategies, and research priorities. *J Sch Health.* 1989;59:296-300.