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Culturally Targeted Patient Navigation for Increasing African American's Adherence to Screening Colonoscopy: A Randomized Clinical Trial

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Abstract

Background—Patient navigation (PN) has been an effective intervention to increase cancer screening rates. This study focuses on predicting outcomes of screening colonoscopy (SC) for colorectal cancer among African Americans using different PN formats.

Methods—In a randomized clinical trial, patients over 50 years of age without significant comorbidities were randomized into three navigation groups: Peer-PN (n = 181), Pro-PN (n = 123) and Standard (n = 46). Pro-PNs were health professionals who performed culturally targeted navigation whereas Peer-PNs were community members trained in PN who also discussed their personal experiences with SC. Two assessments gathered sociodemographic, medical, and intrapersonal information.

Results—SC completion rate was 75.7% across all groups with no significant differences in completion between the three study arms. Annual income over \$10,000 was an independent predictor of SC adherence. Unexpectedly, low social influence also predicted SC completion.

Conclusions—In an urban African American population, PN was effective in increasing SC rates to 15% above the national average, regardless of PN type or content.

Impact—Because PN successfully increases colonoscopy adherence, cultural targeting may not be necessary in some populations.

Keywords

Colorectal cancer screening; patient navigation; minorities

Introduction

Colorectal cancer (CRC) is the third most commonly diagnosed cancer in African Americans and its incidence and mortality rates are higher than all other ethnic groups. One factor that may contribute to this trend is the lower rate of CRC screening participation which is critical to the prevention and early detection of CRC. If precancerous polyps in the

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colon and rectum are identified (through colonoscopy or flexible sigmoidoscopy screening) and removed (through polypectomy), patients can live normally with no further treatment required. Current data indicate that the removal of precancerous polyps decreases CRC incidence by 75–90% (1). Although screening colonoscopy (SC) (one of several methods of screening normal risk adults aged 50 or older) is recommended by the American Cancer Society (ACS), the U.S. Multisociety Task Force on Colorectal Cancer, and the American College of Radiology (2), CRC screening rates in general, and colonoscopy specifically remain low; especially among African Americans (3).

Patient navigation (PN) (Freeman et al. (4)) involving a specifically trained person within the health care setting who helps the patient obtain medical care, has received considerable attention as a way to improve cancer care among minority patients. Most published PN programs assist patients in obtaining follow-up of suspicious findings and treatment. Previous studies and national programs have reported that PN for individuals with abnormal findings or cancer diagnoses is beneficial and results in more timely treatment and resolution (5, 6).

Recently, PN has been expanded to assist with obtaining cancer screening. Studies, mainly focused on breast and cervical screening, report that PN increases screening adherence (see review (7)). Although a handful of recent studies have examined the effectiveness of PN for CRC screening, few have focused solely on PN for SC. Related studies (e.g. Lasser, et al. (8) and Percac-Lima et al. (9)) showed significantly higher rates of colonoscopy completion in navigated over non-navigated groups; however completion rates for both groups were still below 40%. Our group was among the first to introduce PN to facilitate colonoscopy completion among *minority* primary care patients, increasing adherence from 40% to 66% (10).

Peers as Navigators

Research in public health and health education confirms the benefits of peer educators in healthcare interventions (11–13). In cancer education, peers increased smoking cessation and were more cost effective (14). For breast cancer, peer-led education programs increased mammography and self-examination among African Americans (15, 16). We hypothesize that racially-matched peer navigators can model ways of coping with anxiety about colonoscopy screening, and successful engagement with mainstream health care. This hypothesis was informed by Reference Group-Based Social Influence Theory (17); an important element is informational social influence (the extent to which referents or peers from one's racial group, age group, or gender serve as a sources of credible information). In the context of CRC screening, one source of information is a peer's own experience with colonoscopy. Through a peer navigator's self-disclosure about colonoscopy as a "similar other", the patient may obtain information relevant to his or her own screening expectations. The information provided by a peer navigator may serve to model attitudes and behaviors associated with successful adherence, such as effective communication with healthcare providers and screening self-efficacy. Peer navigators can also model strategies to overcome barriers identified among African Americans, such as limited CRC knowledge, low perceived CRC risk, CRC fatalism, and medical mistrust (18–24).

Targeted interventions have been developed based on demographic, behavioral, and psychosocial characteristics shared by members of subgroups (25). Our conceptualization of PN for increasing SC adherence suggests the importance of determining intrapersonal barriers which affect understanding of the consequences of adherence to SC (26), guided by Cognitive-Behavioral Theory (27–29). Thus, PN is a strategy to reduce the aversive consequences associated with screening behavior. Our PN approach systematically addresses the consequences or "punishments" as represented by intrapersonal barriers,

including colonoscopy-specific fear, worry, anxiety and perceived disadvantages of colonoscopy (30–36).

Thus, combining PN with culturally targeted messages (CTPN) to overcome system barriers and help people understand the importance of SC may have a greater impact than PN alone. This study sought to examine the impact of three forms of PN. The standard of care (STD) focused on the basic facts of screening and provided logistical assistance to patients (e.g. making an appointment, reminder calls). We investigated enhancing STD through cultural targeting including: 1) emphasis on the CRC problem among African Americans and the relevance of colonoscopy, 2) discussion of culturally specific facts (for African Americans) and personal colonoscopy barriers and 3) modeling effective coping modeling by a peer navigator (someone who has completed colonoscopy) to increase patient self-efficacy. In addition, we examined the effectiveness of a peer delivering the CTPN (Peer-PN) versus professional (health educator) navigation (Pro-PN). Thus, in this randomized clinical trial (RCT) we examined PN, delivered in three ways (Peer-PN, Pro-PN and STD), to address the low adherence to physician recommended SC by African American patients. We also examined the potential impact of socio-demographic, medical and intrapersonal factors as predictors of screening completion

Methods

Study Setting and Recruitment

In this IRB-approved RCT, African American primary care patients referred for SC by their primary care physician (PCP) at a non-acute medical visit were recruited at Mount Sinai's primary care clinic between May 2008 and December 2011. PCPs and medical assistants referred their patients. Interested patients met with a research assistant to discuss the study and to sign informed consent. The baseline assessment was also conducted as an interview during this meeting.

African American patients over 50 years old without active gastrointestinal symptoms, significant comorbidities, or a history of inflammatory bowel disease or CRC were included. Patients must not have undergone colonoscopy within the past five years (based on the clinical practice at our institution) or have been current with other forms of CRC screening (e.g. FOBT, flexible sigmoidoscopy). After recruitment, referrals were reviewed by the Division of Gastroenterology (GI) to confirm medical eligibility and evaluate any contraindications to colonoscopy or sedation.

We received 589 referrals to the study. Of these, 532 (90.3%) consented and were enrolled.

Non-Navigated Participants

Of the 532 enrolled patients, 15 were ineligible (e.g. no working phone). Further, during the medical clearance process, some patients were deemed ineligible for direct referral (e.g. uncontrolled diabetes, cardiac concerns) and were referred to our GI clinic and were not randomized (N=106). Participants with medical clearance who were randomized to one of the study arms but were never reached for their scheduling call, had their referral returned to their PCP (Non-navigated; N=61) and were excluded from further analyses.

Navigated Participants

Randomization and PN assignments were made by the Project Coordinator using our statistician's randomization chart. All navigation services (and subsequent assessments) were conducted by telephone. There were two navigation call scripts. The first included a culturally targeted (CT) message designed to convey the importance of CRC prevention for

African Americans and asked about patients' concerns. The second message was a STD script to simply schedule the procedure and answer any questions. The protocol also included being navigated by either a professional (Pro-PN) or community member (Peer-PN). Overall, 350 participants were navigated. Based on our preliminary data of the projected different SC completion rates for each group, we used *a priori* power calculations to determine that participants should be randomized in a ratio of 3:2:1 (Peer-PN (N=181); Pro-PN (N=123); STD (N=46)) to best ensure statistical power for the anticipated effects. For STD, we assumed that screening uptake would be 40% while Pro-PN would be 66% and Peer-PN would be 68%. With this size sample, power for the comparison of Peer-PN to STD would be 0.94 and Pro-PN to STD would be 0.87.

Patient Navigators

Five African American Peer-PNs and four African American Pro-PNs were recruited and trained (37). Peer-PNs (paid hourly) were eligible for the position if they were over age 50 and had recently undergone colonoscopy screening. Pro-PNs (salaried staff) all held a Bachelor's degree, had research experience, and had worked with minority communities. Additional details about the training of the navigators, their characteristics, and payments have previously been published (see Shelton et al. (37)).

Intervention Protocols

Culturally Targeted Message—For the two CT groups (Peer-PN and Pro-PN), all navigators were African American to maintain racial concordance. Each call included information about how CRC specifically impacts African Americans (e.g. “black Americans are more likely to get colon cancer than people in other racial and ethnic groups”) and asked participants about any concerns. The calls made by the Peer-PN also included their own story of completing their colonoscopy to model effective coping. In the STD group, there was no mention of culture or barriers. Everyone received information about the importance of CRC screening and specific instructions for colonoscopy preparation.

Telephone Calls—The overall structure of each intervention group was the same. All participants received three scripted phone calls: a scheduling call, a call two weeks before their colonoscopy date, and a call three days prior to the procedure. Following the first call, written instructions for the bowel preparation were mailed. During the follow-up calls, PNs reminded participants of their appointments, confirmed receipt of mailed information, reviewed bowel preparation instructions, assessed transportation needs, and provided education and support. Peer-PNs also discussed their own colonoscopy experience. In the STD group, calls were conducted by the Pro-PNs. That is, the same Pro-PNs conducted the navigation for two groups. To minimize contamination, written scripts were used. In addition, throughout the study we listened to 10% of the audio-recorded calls for fidelity purposes to ensure compliance with each condition and different staff members completed the assessments.

Assessments

In addition to the three telephone calls, there were two assessments. Time 1 was completed at the time of consent (baseline), face-to-face as an interview. The Time 2 assessment was completed over the phone two weeks prior to the scheduled colonoscopy, immediately following the reminder call. Each assessment took 20–30 minutes to complete and participants were paid \$20 for each. There were three main categories of variables: 1) demographic characteristics; 2) medical care and CRC knowledge and; 3) intrapersonal factors that have been reported as potential barriers or facilitators for CRC screening. Table 1 shows the timing for each assessment.

Demographic Characteristics

At Time 1, participants completed a general socio-demographic questionnaire regarding age, race/ethnicity, employment status, income, and education.

Medical Care and CRC Knowledge

Participants answered questions regarding their health behaviors, knowledge of CRC, and health care providers relationship.

Health Behaviors—Participants answered questions about their health habits including postponing medical care, not following doctor's advice, and frequency of previous year medical care.

Interpersonal Communication (with referring MD)—An 8-item measure assessed participants' level of comfort and satisfaction in their communication with the doctor/provider who referred them for the colonoscopy. The measure was adapted from prior literature (38) to be specific to SC. Participants rated how strongly they agreed/disagreed on a 5-point Likert scale (1=strongly disagree and 5=strongly agree) with statements about physician communication (e.g., "I can easily talk about personal things with my doctor").

CRC Knowledge—Our own measure for assessing CRC knowledge (39) was used and included ten true-false statements (e.g. "A person could have colorectal cancer without having any symptoms").

Colonoscopy completion was assessed via medical record review.

Intrapersonal Factors

Fear of Colonoscopy—Participants' fear of CRC screening was assessed using a 6-item measure developed by Manne et al. (40). Based on a 5-point Likert scale (1=not at all fearful and 5=extremely fearful), participants were asked to indicate how fearful they felt regarding the preparation, procedure, and results.

Fatalism—The Powe Fatalism Inventory (41) was adapted to measure CRC fatalism. The inventory consisted of five yes/no items about the implications of CRC diagnosis (e.g. "I believe that if someone gets colorectal cancer, his/her time to die is near").

Pros and Cons about Colonoscopy Screening—A 17-item measure, adapted from prior research (35), asked, on a 5-point Likert scale, how strongly participants agreed/disagreed (1=strongly disagree and 5=strongly agree) about the pros or cons of getting a colonoscopy (e.g. "It would be inconvenient to have a colonoscopy at this time.")

Ethnic Identity—The 8-item Centrality subscale of the Multidimensional Inventory of Black Identity was used to measure participants' ethnic identity, how they feel about it, and how much their behavior is affected by it (42). Participants indicated on a 5-point Likert scale how strongly they agreed/disagreed (1=strongly disagree and 5=strongly agree) with statements about their identity and role in the Black community (e.g. "In general, being Black is an important part of my self-image.").

Medical Mistrust—The 6-item suspicion subscale of the Group Based Medical Mistrust Scale was used to measure assessed participants' beliefs about the care they and people of their racial and ethnic group receive from the health care system (43) and asked participants to indicate on a 5-point Likert scale how strongly they agreed/disagreed (1=strongly

disagree and 5=strongly agree) with statements regarding trust or suspicion of health care staff (e.g. “People of my ethnic group should be suspicious of information from doctors and health care workers.”).

Collective Self-Esteem—Collective self-esteem was assessed using an 8-item measure drawn from previous literature (44). Participants indicated on a 5-point Likert scale how strongly they agreed/disagreed (1=strongly disagree and 5=strongly agree) with statements about the importance of gender and age to their self-image (e.g. “My gender is an important reflection of who I am”).

Self-Efficacy—A 10-item measure, adapted from previous literature (45), assessed participants’ confidence in their ability to complete a colonoscopy. Participants indicated on a 5-point Likert scale how strongly they agreed/disagreed (1=strongly disagree and 5=strongly agree) with statements about performing specific tasks related to getting a SC (e.g., “I can get a colonoscopy even if I don’t know what to expect.”).

Social Influence—A 4-item measure (36) evaluated social influence on participants’ medical decisions; rating how strongly they agreed/disagreed with statements about the influence of their families and close friends (e.g. “My close friends think I should have a colonoscopy”) on a 4-point Likert scale (1=strongly disagree and 4=strongly agree).

Cancer Anxiety—Two questions, adapted from research (46) assessed CRC anxiety. For example, “Is thinking about colorectal cancer emotionally stressful?” on a 3-point scale (1=not at all and 3=very much).

Cancer Worry—Vernon et al.’s. (36) 3-item scale assessed colonoscopy worry. Participants indicated on a 4-point Likert scale how strongly they agreed/disagreed (1=strongly disagree and 4=strongly agree) with statements about screening consequences (e.g. “I am afraid of having an abnormal colonoscopy result”).

Perceived Risk of CRC—Participants were asked three questions adapted from the 2005 Health Information National Trends Survey (HINTS) (47) regarding their perceived risk for getting CRC. For example, “Compared to the average (man/woman) your age, would you say you are...?” with three answer choices rating the relative likeliness of getting CRC. Responses were averaged to generate mean scores for each medical factor and intrapersonal variable.

Statistical Analyses

All analyses were performed using SPSS Statistics V19. The univariable analysis described participant characteristics, medical care, CRC knowledge and intrapersonal factors. Chi-square compared equality of proportions for demographic variables. One-way analysis of variance (ANOVA) tested equality of means.

Based on the univariable results, a binary logistic regression model was developed to examine the association between SC completion and significant predictor variables, after adjusting for participant characteristics, medical care, CRC knowledge and intrapersonal factors. Variables that were significant at the 0.2 level in the bivariable analyses were considered for the multivariable model. Variables were retained in the multivariable model if they were significant at the 0.1 level (to indicate trend) or if they exhibited a confounding effect. The statistical significance in the final multivariable model was set at 0.05. All statistical tests were 2-sided.

Results

Of the 589 patients recruited for this study, there were no significant age or gender differences between those who consented (N=532) and those who refused to participate (N=57). There were also no significant differences in age or gender between eligible, randomized participants who were navigated (N=350) and those who were unable to be reached for navigation (N=61).

Colonoscopy Completion Rates

There were no significant differences in colonoscopy completion rates among the three study arms (N=350; Peer-PN [74.0%], Pro-PN [76.4%] and Standard [80.4%]), suggesting that all forms of PN are highly effective. Thus, the focus of this report is on potential predictors of colonoscopy completion, regardless of study arm.

Socio-demographic Characteristics of Completers and Non-Completers

Comparative analyses of socio-demographic features of colonoscopy completers versus non-completers are shown in Table 2. Unemployed patients were significantly less likely to complete the SC than employed patients ($p = 0.022$, OR = 0.524, CI = 0.300, 0.918). Participants with annual incomes of less than \$10,000 were significantly less likely to get a colonoscopy than those who earned over \$10,000 annually ($p = 0.017$, OR = 0.536, CI = 0.319, 0.899). Insurance status was also related to colonoscopy completion. Patients insured through Medicare or Medicaid were significantly less likely to get their screening than patients with private or self-pay insurance ($p = 0.019$, OR = 0.466, CI = 0.244, 0.892). There were no notable differences in gender, age, marital status, or education level between those who completed versus non-completers.

Medical History and Health Behaviors of Completers and Non-Completers

Table 2 also displays comparative results related to medical history and health behaviors of colonoscopy completers versus non-completers. Participants who indicated that they had put off or did not seek care for a medical problem in the previous 12 months were significantly less likely to get colonoscopy screening compared to participants who had not postponed treatment or were not sure ($p = 0.005$, OR = 2.11, CI = 1.25, 3.57). Patients who reported incidents of not following doctors' advice in the previous year were significantly less likely to complete their SC ($p = 0.039$, OR = 1.75, CI = 1.02, 3.00).

Intrapersonal Characteristics

Table 3 shows the comparative results of intrapersonal variables of colonoscopy completers versus non-completers. Data from the Time 1 (baseline) assessment reveal that participants who indicated lower levels of self-efficacy were less likely to complete the screening procedure ($p = 0.036$). Participants who did not get screened had significantly higher levels of fear about the colonoscopy ($p = 0.012$) and more cancer worry ($p = 0.027$). In addition, participants who more strongly identified with their ethnicity were more likely to complete ($p = 0.34$). There were no significant differences in any of the intrapersonal factors at the Time 2 (2-weeks prior to the scheduled colonoscopy appointment) assessment between participants who completed their screening and those who did not complete.

Multivariable Regression

A 5-variable model was created to predict colonoscopy completion (Table 4). Income was the strongest unique predictor of colonoscopy completion (odds ratio, 2.835). Participants with annual incomes of more than \$10,000 were two and a half times more likely to complete than those who made less than \$10,000 annually. Higher self-efficacy was the

second predictor of colonoscopy completion ($p = 0.022$; odds ratio, 2.396) where by higher self-efficacy increased completion. Social influence also predicted SC adherence (odds ratio, 0.514). For each single unit increase in participants' social influence score, the odds of getting a SC decreased by about 50%. Additionally, greater identification with one's ethnic group increased SC adherence ($p = 0.031$; odds ratio, 1.656) by over 60%. Finally, participants with increased fear of the colonoscopy procedure were less likely to complete by about 70% ($p = 0.029$; odds ratio, 0.699).

Discussion

This study of 350 African Americans randomized to one of three PN groups assessed adherence to SC. Although results from studies of PN programs demonstrated improvement in adherence rates of CRC screening among minorities (8–10, 48–51), more knowledge about different types of PN programs and their respective influence on promoting colonoscopy completion among African Americans can provide significant guidance for future PN protocols.

The current study investigated a Peer-PN who provided a culturally-targeted approach and additional insight into one's experience of undergoing a colonoscopy versus a Pro-PN who only applied a culturally-targeted approach versus a Standard-PN who provided basic information and logistical preparations for colonoscopy. Contrary to our hypothesis that using a Peer-PN with a culturally-targeted approach would be more advantageous in promoting adherence to colonoscopy than other types of PN, our results revealed no significant differences among the three PN interventions. Thus, the use of Reference Group-Based Social Influence Theory to support the inclusion of peer navigators was not borne out to the extent that they were selected on the basis of age and personal history of colonoscopy. However, it is important to note that all navigators were racially concordant with participants and it is possible that race alone as a reference group shared by navigator and patient is important to the navigation experience. In addition, Black identity was predictive of screening completion. Nonetheless, the use of a PN intervention was helpful in promoting adherence to SC as the rate of completion across the three groups was 75.7%, approximately 15% above the national average (52), suggesting that PN is beneficial overall, and suggesting that Cognitive-Behavioral Theory is useful in the conceptualization of CRC screening navigation programs for African Americans.

Although no statistically significant differences among the three types of navigation were detected, our findings did distinguish participants who completed a colonoscopy versus those who did not. Consistent with prior studies, completers were more likely to have higher socioeconomic status (employment, income $> \$10,000$), private or self-pay insurance (vs. Medicare and/or Medicaid), and medical visits in the recent past (32, 53). Assessment of intrapersonal factors revealed that statistically significant differences between the completers and non-completers existed at baseline (Time 1) regarding fear of colonoscopy, ethnic identity, self-efficacy, and cancer worry. However, the clinical relevance of these differences is not known. By Time 2, no significant group differences in intrapersonal factors remained. We speculate that the lack of differences in intrapersonal factors between the two groups may be attributable to the PNs effectively addressing the participants' questions about colonoscopies and concerns about cancer, thus, removing any intrapersonal factors which could have undermined SC adherence for all of the participants, regardless of PN type.

Logistic regression revealed that higher income was a significant predictor of screening adherence. Income has often been associated with other variables representative of socioeconomic status such as employment, education level, and insurance status. In this

sample, over 60% were unemployed and had less than a high school education. Low income could be related to poor adherence to screening through poor healthcare coverage and access. However, all patients had insurance coverage. Furthermore, approximately 92% had a regular physician. Therefore, the relation of poor income to poor health care coverage and access does not exist in our study. Our findings demonstrate that low income may be independently associated with poorer CRC screening rates by colonoscopy, at least in this urban sample.

Self-efficacy was the second strongest predictor of colonoscopy completion, suggesting that participants with inherent confidence in their ability to get the procedure were more likely to follow through with screening. This is an important finding for future implementation of PN. If patients' degree of self-efficacy can be identified early in the process, PN interventions can focus on increasing low levels of self-efficacy and PN resources can be appropriately reallocated in cases of inherent high self-efficacy.

Logistic regression unexpectedly revealed that colonoscopy non-completers were more likely to have had social influence from family or close friends who encouraged colonoscopy. Although controversial, the finding provides potential insight on reasons for not completing. Perhaps those with strong social influence received conflicting information about colonoscopies from close friends and family even though they were supportive of colonoscopies. Another hypothesis could be discrepancy between intrinsic and extrinsic support of colonoscopies among the subjects' family and friends. Perhaps the subjects' family and friends never adhered to colonoscopies but supported them for others. Further investigation of social influence is merited in future studies.

Stronger identification with one's ethnicity was found to independently predict colonoscopy completion. One aspect of the Multidimensional Inventory of Black Identity assessed participants' regard for other African Americans. Our finding may be the result of participants' positive regard and connection to their navigators, as all navigators were racially concordant with participants, suggesting that matching PNs to patients by ethnicity may add trust and aid in increasing SC adherence.

Fear of the colonoscopy procedure was also identified by logistic regression as a unique predictor of SC adherence. This finding presents another opportunity for targeted future PN interventions to address this barrier and help patients overcome fear, thus hopefully increasing screening rates.

Study limitations include the use of only one cultural group from an inner-city population in which all subjects had health care coverage and over 90% had a regular physician. Therefore, this study's colonoscopy completion rate may be greater than the rate in populations with less optimal health care coverage or in other minority groups. Future studies are encouraged to compare our findings with different cultural groups (e.g. Hispanics) or more diverse populations for greater generalizability. Additional limitations include our entry criteria of a 5-year interval for previous colonoscopy screening (which is the practice in our clinical setting) and relatively low alpha coefficients (Cronbach's <0.7) of several assessments of intrapersonal factors. Although a low alpha coefficient could be caused by heterogeneous dimensionality of the test, a short-length test could also reduce alpha values and underestimate reliability (54, 55). Our two lowest alpha coefficients (0.420 for CRC knowledge, 0.444 for cancer anxiety) had the fewest number of items per test. Future evaluations of similar intrapersonal values are recommended to add more items to test the same concept.

In summary, a large RCT was conducted using three different PN arms to assess potentially different colonoscopy completion outcomes and revealed no differences among the three

types of PN. Because the completion rate was greater than the average rate of endoscopic screening among African Americans (75.7% vs. 53%) (56), integration of PN services into primary care settings may be useful in promoting SC adherence. Our finding is consistent with results of a systematic review of intervention studies aimed to improve CRC screening rates: any PN protocol was effective in increasing rates of CRC screening by 15% (52). The fact that peers can be trained to be effective navigators may have financially beneficial implications to screening programs. As the current study assesses PN protocols among African Americans in an urban community, our findings provide new insight that any type of PN service may be beneficial in facilitating SC adherence in a population overburdened by CRC mortality.

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Table 1

Timing and content of assessments.

Measure		Time 1 (Baseline)	Time 2 (2 weeks prior to scheduled colonoscopy)
Demographic Characteristics	n/a	X	
Health Behaviors	n/a	X	
Intrapersonal Communication with Physician	0.868	X	X
History of Cancer	n/a	X	
CRC Knowledge	0.420	X	X
Fear of Colonoscopy	0.861	X	X
Fatalism	0.829	X	
Pros and Cons	0.637	X	X
Multidimensional Inventory of Black Identity	0.641	X	
Group-Based Medical Mistrust	0.855	X	
Collective Self-Esteem	0.559	X	
Self-Efficacy	0.843	X	X
Social Influence	0.895	X	
Cancer Anxiety	0.444	X	X
Cancer Worry	0.745	X	X
Perceived Risk for CRC	0.526	X	X

Table 2
Socio-demographic and medical factors of completers vs. non-completers of screening colonoscopy.

	Completers		Non-Completers		Total		p ^c
	N	% ^a	N	% ^a	N	% ^b	
Socio-demographic Factors							
Gender							
Female	175	73.5	63	26.5	238	68.0	0.165
Male	90	80.4	22	19.6	112	32.0	
Age							
49-64	199	74.0	70	26.0	269	76.9	0.167
65+	66	81.5	15	18.5	81	23.1	
Marital Status							
Married	49	80.3	12	19.7	61	17.5	0.348
Not Married	215	74.7	73	25.3	288	82.5	
Employment Status							
Employed	98	83.1	20	16.9	118	33.7	0.022
Unemployed	167	72.0	65	28.0	232	66.3	
Education Level							
Grade 13	95	77.9	27	22.1	122	35.0	0.478
Grade 12	169	74.4	58	25.6	227	65.0	
Income							
10,000	90	68.2	42	31.8	132	42.3	0.017
>10,000	144	80.0	36	20.0	180	57.7	
Insurance Status							
Medicare/Medicaid	191	72.6	72	27.4	263	75.1	0.019
Private/Self Pay	74	85.1	13	14.9	87	24.9	
Insurance Status							
Medicare	76	78.4	21	21.6	97	27.7	0.037
Medicaid	115	69.3	51	30.7	166	47.4	
Private	71	85.5	12	14.5	83	23.7	

	Completers		Non-Completers		Total		p ^c
	N	% ^a	N	% ^a	N	% ^b	
Self Pay	3	75.0	1	25.0	4	1.1	
Study Arm							
Peer	134	74.0	47	26.0	181	51.7	0.648
Pro	94	76.4	29	23.6	123	35.1	
Std	37	80.4	9	19.6	46	13.1	
Medical Factors							
Regular Doctor							
Yes	244	76.0	77	24.0	321	91.7	0.665
No	21	72.4	8	27.6	29	8.3	
Since When Regular Doctor							
Before 2008	88	75.2	29	24.8	117	40.5	0.765
2008+	132	76.7	40	23.3	172	59.5	
First Year at Clinic							
Before 2001	68	73.9	24	26.1	92	32.1	0.788
2001+	147	75.4	48	24.6	195	67.9	
Number of Doc Visits							
0	14	93.3	1	6.7	15	4.3	0.104
1+	251	74.9	84	25.1	335	95.7	
Put Off Medical Problem							
No/Not Sure	206	79.5	53	20.5	259	74.0	0.005
Yes	59	64.8	32	35.2	91	26.0	
Did Not Follow Doc Advice							
Yes	58	67.4	28	32.6	86	24.6	0.039
No or Not Sure	207	78.4	57	21.6	264	75.4	
Trust Doctor							
Agree	252	76.8	76	23.2	328	95.3	0.189
Disagree/Not Sure	10	62.5	6	37.5	16	4.7	
Doctor Satisfaction							
Satisfied	248	76.1	78	23.9	326	95.3	0.922

N = 350

	Completers		Non-Completers		Total	
	N	% ^a	N	% ^a	N	% ^b
Dissatisfied/Neither	12	75.0	4	25.0	16	4.7

p^c

^aRow Percent

^bColumn Percent

^cp-value obtained from chi-square test

Table 3

Intrapersonal factors of completers vs. non-completers of screening colonoscopy.

Intrapersonal Factors - Time 1				
	Completers	Non-Completers		
	Mean ()	Mean ()	<i>p</i>^a	N
Fear of Colonoscopy	1.9387 (.96335)	2.2482 (1.03214)	0.012	349
Fatalism	0.1253 (.24884)	0.0934 (.23862)	0.304	345
Pros and Cons	2.5396 (.43089)	2.5882 (.35736)	0.348	350
Multidimensional Inventory of Black Identity	3.2501 (.65990)	3.0669 (.75519)	0.034	344
Group-Based Medical Mistrust	1.9417 (.66328)	1.9010 (.62899)	0.661	272
Collective Self-Esteem	3.2003 (.60311)	3.2229 (.73137)	0.822	272
Self-Efficacy	4.1952 (.51065)	4.0746 (.43981)	0.036	350
Social Influence	2.8620 (.75538)	3.0242 (.65814)	0.130	260
Cancer Anxiety	1.6154 (.69585)	1.7923 (.73364)	0.078	273
Cancer Worry	2.2268 (.68199)	2.4444 (.72166)	0.027	274
Perceived Risk for CRC	1.6869 (.58101)	1.5882 (.59904)	0.178	349
Intrapersonal Factors - Time 2				
	Mean ()	Mean ()	<i>p</i>	N
Fear of Colonoscopy	1.9339 (.86265)	1.9927 (.86761)	0.688	272
Pros and Cons	2.6110 (.46880)	2.5305 (.34911)	0.295	270
Self-Efficacy	4.0474 (.48159)	4.0798 (.50918)	0.694	272
Cancer Anxiety	1.6609 (.72325)	1.7162 (.81258)	0.680	211
Cancer Worry	2.3257 (.67903)	2.4054 (.75415)	0.525	211
Perceived Risk for CRC	1.7879 (.57545)	1.7764 (.66834)	0.909	272

= Standard Deviation

^ap-value obtained from independent-samples t-test

Table 4

Logistic regression predicting odds of colonoscopy completion.

	<i>p</i>	Odds Ratio	95% C.I. for Odds Ratio	
			Lower	Upper
Income				
10,000		1.00	1.00	1.00
>10,000	0.002	2.835	1.469	5.472
Self-Efficacy	0.022	2.396	1.136	5.057
Social Influence	0.023	0.514	0.289	0.913
Multidimensional Inventory of Black Identity	0.021	1.656	1.046	2.622
Fear of Colonoscopy	0.029	0.699	0.507	0.964