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Colorectal cancer is the third most common cancer in the United States and the second leading cause of cancer deaths. African American men are at the greatest risk for developing and dying from colorectal cancer. Using the Health Belief Model and the theory of Social Support as a framework, a cross-sectional, correlation design was used to gather data from a convenience sample of 52 older African American men. Measures used for this study were Champion's Health Belief Model Scale as adapted by Jacobs, the Multidimensional Scale of Perceived Social Support and a self designed tool for intent to screen for colorectal cancer as suggested by Ajzen.

The mean age of participants was 61 years. The majority of men were employed, married, had at least one additional person in the household, were high school graduates, and 63% had had a previous colonoscopy.

Older African American men reported mixed findings on construct scale scores. Seriousness was rated as low with susceptibility and barriers rated just below average. Benefits, self-efficacy, social support and rated above average or high. No significant correlations were found between the HBM constructs, social support and past colonoscopy and intent to screen. Seriousness and barriers were significant with past colonoscopy with an independent t-test. While multiple regressions did show a significant increase between model scores, significance was small and social support did not add to the variance in intent to screen for colorectal cancer.

HEALTH BELIEF MODEL, SOCIAL SUPPORT, AND INTENT
TO SCREEN FOR COLORECTAL CANCER IN
OLDER AFRICAN AMERICAN
MEN

by

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Approved by

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To my husband John for his constant support and love during this lengthy journey.
Thanks Boo!

APPROVAL PAGE

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CHAPTER I

BACKGROUND

Introduction

Too many Americans die from colorectal cancer with over 52,000 deaths expected in 2009(American Cancer Society [ACS], 2009). Approximately 153,000 new cases of colorectal cancer are expected to be identified in 2009 alone. This is disturbing because colorectal cancer is one of the most preventable cancers Americans face today. Because it is the third most common cancer diagnosed in men and women and the second leading cause of cancer deaths, examining factors that lead to improvements in early detection of colorectal cancer is vital.

Background and Significance

Nationally, colorectal cancer affects men and women in almost equal numbers. However, males have higher incidence and mortality than females, and African American males have the highest incidence and mortality of all races and gender, in the U.S. (Surveillance Epidemiology and End Results [SEER], 2008). Colorectal cancer incidence in males compared to females is 59 to 43/100,000 respectively, with African American males at the greatest risk, 71/100,000 compared to White males at 59/100,000 (SEER). Mortality for males and females is 23 and 16/100,000, respectively, with African American males having a mortality rate of 32/100,000 compared to White males who

have a mortality rate of 22/100,000 (SEER). The ACS estimates 7,980 new cases of colorectal cancer in African American males with 3,460 deaths (ACS, 2009).

Additionally, African American males are more likely to have colorectal cancer diagnosed at a later stage (Sharma and O'Keefe, 2007), possibly due to the fact that more colorectal cancers in African American males are proximally located (Thornton, Morris, Thornton, Flowers, and McCashland, 2007), making identification more difficult. Thus, African American males are at the greatest risk for colorectal cancer incidence and death than women or other races or ethnic groups. On a more positive side, there are 1 million survivors of colorectal cancer in the U.S. who have a 90% chance of a five year survival rate if CRC is found early. Unfortunately, only 39% of colorectal cancers are found early and this limits the survival of these people (Greenwald, 2006; Ueland, Hornung, & Greenwald, 2006).

Screening for Colorectal Cancer

The first step in early detection of colorectal cancer is identification of people at risk so they may be targeted for early screening. Risk factors for colorectal cancer include persons 50 years of age or older, African American race, high fat diet, physical inactivity, obesity, smoking, and alcohol use. Additional risk factors include personal history of colon polyps or colorectal cancer, family history of colorectal cancer or polyposis, and chronic inflammatory bowel diseases (ASC, 2008). Controlling for certain risk factors is possible by modifying lifestyle factors such as diet, physical activity, weight control, and tobacco and alcohol use. However, since lifestyle changes are difficult and additional risk

factors cannot be controlled, the best alternative is screening for detection of colorectal cancer. Death from colorectal cancer can be prevented or delayed with awareness of risk factors and symptoms associated with colorectal cancer followed by preventive screening. Unfortunately only 57% of those meeting screening guidelines for colorectal cancer are actually being screened (Greenwald, 2006; National Cancer Institute, 2010).

Both the ACS (2008) and the Centers for Disease Control ([CDC] 2007) support guidelines for colorectal cancer screening, as does the U.S. Preventive Services Task Force (2002). According to these guidelines, regular screening should begin at age 50 for those at normal risk and before age 50 for those at higher risk. Normal risk is defined as those 50 years of age and older with no symptoms and higher risk is defined as those with personal or family history of polyps or colorectal cancer or personal history of IBD even though no symptoms may be present. Screening consists of one of four tests: (a) fecal occult blood test (FOBT); (b) flexible sigmoidoscopy, to view the lower portion of the colon only; (c) colonoscopy, to view the entire colon; and (d) barium enema, x-ray of the colon with barium contrast, performed every 5 years (ACS, 2008; CDC, 2007). In the presence of symptoms, colonoscopy should be performed immediately.

The majority of individuals who meet screening guidelines are within the age for Medicare benefits. Prior to 1997, individuals on Medicare/Medicaid seeking screening for colorectal cancer were forced to pay out of pocket if they had no additional insurance to cover cost of screening. The Balanced Budget Act of 1997 (Library of Congress, 2009) incorporated major provisions for Medicare/Medicaid which included payment for screening colonoscopy for high risk individuals. However, this did not meet the needs of

all individuals within the screening guidelines; the majority of whom are Medicare/Medicaid participants. Further legislation has since provided for screening colonoscopy for all Medicare/Medicaid individuals meeting screening guidelines, did away with deductibles on screening colonoscopy for Medicare/Medicaid participants, as well as mandating that primary care providers must offer referrals for colorectal cancer screening for individuals meeting screening guidelines. Despite these changes in payment for colorectal cancer screening, screening rates remain low.

Healthy People 2020 goals of increasing quality and years of healthy life and eliminating health disparities denote several objectives specifically focused on colorectal cancer; objective C-5 , “reduce colorectal cancer mortality to 14.5 deaths per 100,000”, C-9 “reduce invasive colorectal cancer”, C-16 “increase proportion of adults who receive a colorectal cancer screening based on the most recent guidelines in 2008”, and C-18.3 “Increase the proportion of adults who were counseled by their providers about colorectal cancer screening.” (Healthy People 2020, 2010).

Educating Americans to understand colorectal cancer and the need for screening and upholding current legislature requiring health care providers to offer referrals for colorectal cancer screening are several ways in which *Healthy People 2020* seeks to meet these objectives. Identifying factors that influence screening behavior is critical in colorectal cancer prevention. Exploring perceptions relevant to colorectal cancer screening behaviors may lead to targeted education to foster screening behaviors in others.

Identifying why a person does or does not seek colorectal cancer screening is imperative to increasing the use of colorectal cancer screening and thus decreasing mortality related to colorectal cancer. While studies have focused on barriers related to colorectal cancer screening that include adults 50 years of age and greater, males and females and specific race/gender such as Whites and African American, there is limited research that focuses primarily on men, particularly African American men, and colorectal cancer screening behaviors. Because African American men are at a higher risk for colorectal cancer, focusing studies on colorectal cancer screening in African American men is imperative to increasing colorectal cancer screening and thereby reduce mortality from colorectal cancer in this population.

Purpose

The purpose of this study was to examine factors that may influence screening behaviors for colorectal cancer in older African American men. Most specifically, this study: (a) examined relationships among Health Belief Model constructs, construct of social support, and intention to screen for colorectal cancer in older African American men, and (b) examined the relationships among HBM constructs, level of perceived social support, and colorectal cancer screening intentions in older African American men.

Conceptual Framework

Health Belief Model

The Health Belief Model (HBM) was developed in the 1950s as a theory to address the phenomenon of why healthy individuals did not take advantage of preventive health screenings (Janz, Champion, & Strecher, 2002 ; Rosenstock, 1974). The HBM was based on the work of social psychologist Kurt Lewin. Lewin theorized that behavior resulted from the struggles of individual self perceptions and the environment; behavior was influenced by positive and negative life perceptions based on underlying psychological needs (Lewin, 1951). Therefore, behavior depends upon two concepts: (1) the value placed by an individual on a particular outcome and (2) the individual's estimate of the likelihood that a given action will result in that outcome (Maiman & Becker, 1974).

Hochbaum, Kegeles, Leventhal, and Rosenstock, psychologists for the U.S. Public Health Service, developed the HBM, a value-expectancy model, as a way to understand an individual's action in not participating in a preventive health program; a preventive health program that may be free or of little cost to the individual (Janz, Champion, & Strecher, 2002; Rosenstock, 1974). Value-expectant theories hold the premise that the value and expectation of an outcome will lead to a specific behavior being performed (Janz et al.; Maiman & Becker, 1974). The basic tenets of the HBM are based on the belief that people can and will adapt good health attitudes and actions if a negative health outcome can be avoided (Becker, Maiman, Kirscht, Haefner, & Drachman, 1977). Further, the model posits that a person will take a health-related action not only in

avoidance of a negative health condition but also if a person has a positive expectation that taking a recommended action will help one's self avoid a negative health condition and he believes that one's self can take a recommended health action (ETR, 2007; Rosenstock, 1974).

Rosenstock (1974) originally identified and empirically tested four concepts of the HBM. These four concepts were perceived susceptibility, perceived severity, perceived benefits, and perceived barriers as they relate to preventive health behavior. Since its original conception, two additional concepts have been added to the HBM; Self-efficacy and Cues to Action (Janz et al, 2002). For purposes of this study, Cues to Action will not be addressed.

Perceived Susceptibility. Perceived susceptibility defines how likely an individual feels they may or may not contract or develop a specific disease; “susceptibility refers to the subjective risks of contracting a condition” (Rosenstock, 1974, pg 3). Perceived susceptibility can range from not contracting the given disease to a definite threat of contracting the disease.

Perceived Seriousness. Perceived seriousness can be viewed by each individual according to degree of clinical and emotional consequence from development of disease. Consequence may include mild discomfort, disability, or death. Consequence may also encompass an individual's social sphere; family, job, peers. An individual may perceive seriousness of disease as to how it affects self or how it may affect those around them.

Perceived Benefits. The likelihood and type of action taken to a perceived threat is dependent on an individual's perceived benefit of taking an action. One must see an

action as beneficial or effective against preventing a perceived threat before action will be taken (Janz et al., 2002). The beneficial effects may also be weighed against the level of perceived threat; benefits that are deemed minimal against a low perceived threat may lead to no action being taken. Perceived threat may be high, but if an individual perceives no benefit from taking an action, none will be taken. High level of threat and high level of benefit will result in action taken.

Perceived Barriers. However dependent on the level of perceived threat or how beneficial an individual may perceive an action, perceived barriers may interfere with an individual's willingness to take appropriate action. Individuals may perceive barriers due to cost of action, potential harm, inconvenience, or time consuming, among others (Janz et al., 2002).

As with perceived susceptibility and perceived seriousness, perceived benefits and barriers may be dependent on the individual's knowledge level and social norms. Awareness of benefits associated with preventive action as well as alternatives to perceived barriers will allow an individual to make informed decisions on whether or not to take an action.

Self-Efficacy. Bandura (1977a; 1977b) defined self-efficacy as a belief in one's personal capabilities to produce a health outcome; the conviction that one can successfully execute the behavior required to produce an outcome (pg 79; pg. 193). However, self-efficacy as a concept for use in the HBM was not a part of the original schematic. Self-efficacy was not recognized in the earlier focus on the development of the HBM due to target groups at that time being studied in their response to a single,

simple behavior (Janz et al., 2002). Use of the HBM in studies of lifestyle behavior change, a long term behavior change, suggested the need for study of how an individual perceived his ability to make a needed change. Early identification of self-efficacy for use in the HBM placed self-efficacy as either a benefit or a barrier. Rosenstock, Strecher, and Becker (1988) identified that self-efficacy should be added to the HBM as a freestanding concept. This allowed for more focused study of a persons ability to take action without the constraint of being grouped as a benefit or barrier; this also allowed for “new and more-productive lines for research and practice” (Rosenstock et al., pg 179).

Social Support

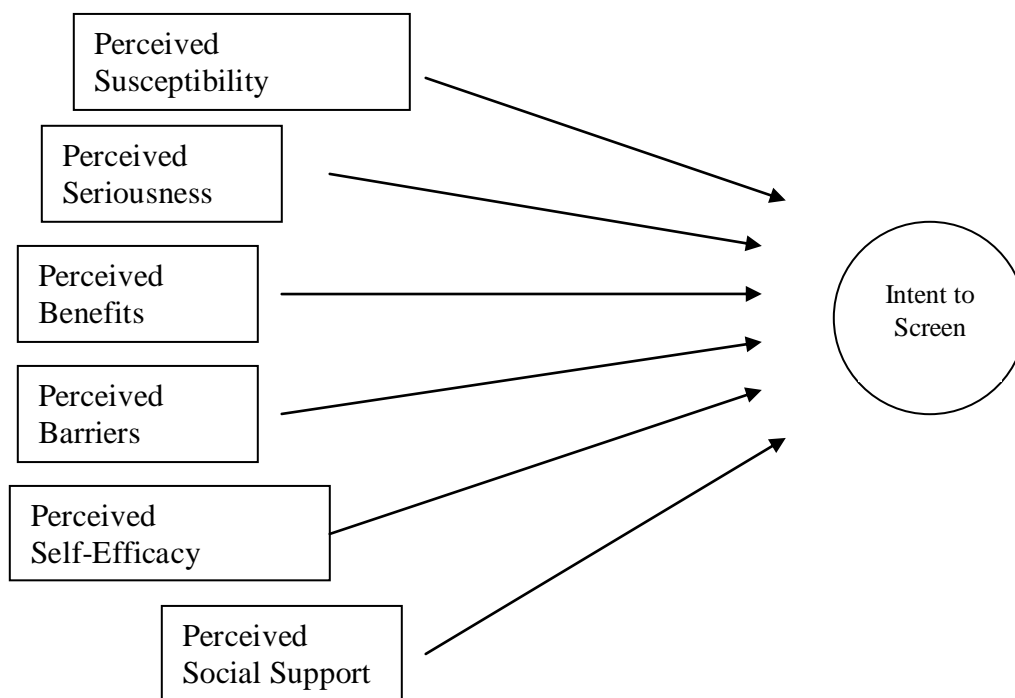
The concept of social support has been defined in many ways. Murawski, Penman, and Schmitt (1978) identified an early concept of social support as “protective psychological processes [that are] the nature, strength, and availability of the social supports provided by the primary groups most important to the individual” (p.366). Gottlieb (1985) identified a blended definition of social support as the “feedback provided via contact with similar and valued peers” (p.9). Heaney and Israel (2002) defined social support as “aid and assistance exchanged through social relationships and interpersonal transactions” (p.187). One major factor noted among all of the various definitions is that some type of relationship transaction occurs between individuals (Zimet, Dahlem, Zimet, & Farley, 1988).

Social support is a function of social networks and social relationships. Social networks can occur in many settings such as community, work, religious, and familial settings; characteristics of social network members, such as age, race and socioeconomic

status may also define the social network (Heaney & Israel, 2002). Social support is an interaction between individuals, intended to provide one of four types of support: emotional, instrumental, informational, and appraisal support. Each type offers support in a different way; however, it is often difficult to distinguish a specific type of social support interaction due to the overlapping role of support. (Figure 1.)

Figure 1

Conceptual Framework: Health Belief Model, Social Support, and Intent to Screen



Specific Aims

The specific aims of this study are:

1. Identify health belief constructs related to colorectal cancer in older African American men.

Question 1. What are the relationships among perceptions of susceptibility, severity, benefits, barriers and self efficacy and colorectal cancer screening in older African American men?

2. Identify the relationships among HBM constructs, perceived social support, and intent to screen for colorectal cancer in older African American men.

Question 2. Are perceived susceptibility and seriousness of colorectal cancer and benefits, and barriers to screening related to intention to be screened for colorectal cancer?

Question 3. How much variance in intention to screen for colorectal cancer is explained by health belief constructs?

Question 4. Does perceived social support add to the variance in intention to screen for colorectal cancer beyond the variance explained by HBM constructs?

Theoretical Definitions

- Colorectal cancer- cancer of any portion of the colon, including the rectum and anus

- Susceptibility- to what level a participant feels a they are likely to develop colorectal cancer
- Seriousness- to what level a participant feels a diagnosis of colorectal cancer may affect their life
- Benefits- to what extent a participant feels having a colonoscopy to screen for colorectal cancer will benefit them
- Barriers- participant identified reasons that may block one from having a colonoscopy to screen for colorectal cancer
- Self-Efficacy- participant identified ability to seek and receive a colonoscopy to screen for colorectal cancer
- Social support- aid, assistance, and or information exchanged through social relationships and interpersonal transactions; can occur between two individuals or in groups or communities
- Older African American men- African American age 50 and older
- Colorectal cancer screening- receiving a colonoscopy for detection of colorectal cancer.

- Intent to screen- participants self-reported statement of likelihood to obtain colonoscopy for colorectal cancer screening, influenced by social support, susceptibility, seriousness, benefits, barriers and self-efficacy.

Assumptions

Assumptions underlie the methods for this study. The first assumption was that an individual's personal beliefs can be identified. Secondly, it was assumed that identified beliefs could be tested using proposed instruments. Lastly, it was assumed that individuals would be truthful in response to questions related to beliefs of health prevention practices and intentions.

Summary

Colorectal cancer is the third leading cause of cancer death in Americans. Unfortunately, African American men are at greater risk for both incidence and mortality related to colorectal cancer. Therefore, the purpose of this study is to examine factors that may influence screening behaviors for colorectal cancer in older African American men. Jacobs' revision of Champion's Health Belief Model Scale and the Multidimensional Scale of Perceived Social Support was used to guide this study. Results from this study will be used to develop interventions to enhance colorectal cancer screening in older African American men.

CHAPTER II

LITERATURE REVIEW

Colorectal cancer often has devastating consequences on those affected with the disease (National Cancer Institute, 2010). Emotional, physical and financial burdens, and ultimately, death can all be distressing outcomes of a colorectal cancer diagnosis. Fortunately, a diagnosis of colorectal cancer does not have to be the burden it once was. Steps to delay or prevent colorectal cancer deaths such as preventive screening can greatly reduce the devastating consequences and mortality from colorectal cancer. This section will explore colon screening options available and current research pertaining to colorectal cancer screening.

Screening Guidelines and Tests

Both the ACS (2008) and the CDC (2007) support guidelines for colorectal cancer screening, as does the U.S. Preventive Services Task Force (2008). According to these guidelines, regular screening should begin at age 50 for those at normal risk and before age 50 for those at higher risk. Normal risk is defined as those 50 years of age and older with no symptoms, and higher risk is defined as those with personal or family history of polyps or colorectal cancer or personal history of Inflammatory Bowel Disease even though no symptoms may be present. Screening consists of one of four main options:

Fecal Occult Blood Test (FOBT)

This test detects hidden blood in stool that may be shed from polyps or cancer. FOBT is non-invasive and inexpensive which makes it feasible for yearly use and for screening a large number of people at a reasonable cost. A study by Hendon and DiPalma (2005) found that mortality from colorectal cancer was less in those using yearly FOBT than the general population. Over a 13-year period, mortality in participants using FOBT was 5.88 in 1,000 compared to 8.83 deaths per 1,000 in those in the control group (Hendon & DiPalma). Disadvantages to the FOBT include dietary restrictions prior to testing, obtaining three separate stool samples at the time of testing, and inaccurate results. A negative result does not always indicate the absence of polyps or cancer, and a positive result does not always indicate the presence of colorectal cancer. Nevertheless, use of FOBT is recommended yearly.

Flexible Sigmoidoscopy (FS)

This screening test is performed using a short, flexible, lighted tube to view the lower portion of the colon. It is fairly quick to perform, can be performed in a physician's office, is cost effective and allows for biopsy of any abnormalities found. However, since the FS only views the lower portion of the colon, polyps or cancers in the mid to right colon can be missed. This is especially important in African American men who have a higher incidence of proximal or right sided polyps and colorectal cancers (Thornton, Morris, Thornton, Flowers, and McCashland; 2007). Additional disadvantages include discomfort during the procedure requiring sedation, dietary restrictions, and bowel

cleansing prior to the procedure. Hendon and DiPalma (2005) found a 70% reduction in rectal cancer mortality with use of FS. Recommendation for FS is every five years.

Colonoscopy

A colonoscopy is currently considered to be the most reliable test for detecting colon polyps and cancer. A colonoscopy views the entire colon, using a lighted, flexible scope. Biopsy and/or removal of polyps or cancer are sometimes possible during a colonoscopy. Disadvantages of screening with a colonoscopy include dietary preparation and bowel cleansing. A major disadvantage identified with a colonoscopy is the high cost of the procedure. Often, there is some out of pocket cost involved with this screening procedure, and this cost can increase depending on whether additional procedures such as biopsies or polyp removal are performed. Recommended use of colonoscopy is every 10 years.

Additional Screening Tests

Three new screening tests for colorectal cancer have emerged. First is computed tomography colongraph (CTC), more commonly known as a 'virtual colonoscopy'. This new technique allows for radiological scanning for colon abnormalities. Benefits of using CTC are less embarrassment to the patient and no sedation required which makes the procedure safe for those people too unstable for a colonoscopy procedure. Two big drawbacks of CTC are the high cost of the procedure and the additional need for a colonoscopy for possible biopsy and removal of abnormalities should any be found. Thus, the additional testing may require additional preparation time and loss of work. A risk associated with CTC includes possible perforation of the colon as air is introduced

into the colon. CTC is currently expensive to perform and is not covered by Medicare (Bazensky, et al., 2007; Wilkins & Reynolds, 2008). A study by Kim et al. (2007) found that CTCs were comparable to colonoscopies for the detection of neoplasms and had fewer numbers of complications than colonoscopies.

Another type of screening is fecal DNA. This test identifies genetic alterations in carcinomas that can be found in stool samples. Studies found the fecal DNA test to be four times more sensitive than the Fecal Occult Blood Test for detection of invasive cancers and polyps with high grade dysplasia (Imperiale et al., 2004).

Lastly, Pillcam Colon is an invasive test that involves swallowing a pill size camera that stores images of the intestinal tract. As with the other invasive screening tests, bowel cleansing is required. In two separate studies, the Pillcam Colon was found to be less effective in the detection of colon polyps versus detection via colonoscopy (Eliakim et al., 2006; Schoofs et al., 2006; Van Gossum et al., 2009). Advantages of Pillcam Colon are no sedation and no hospitalization required. Disadvantages are possibility of short battery life resulting in incomplete viewing of the intestinal track and inadequate viewing due to poor patient prep (WebMD, 2009).

Financial Effects of Colorectal Cancer and Screening

It has been estimated that the annual expenditures associated with colorectal cancer in 2000 were \$7.49 billion (Yarbroff et al., 2008), with the cost estimated to double by 2014. This figure could be even higher when including both direct and indirect costs of colorectal cancer (Redaelli, Cranor, Okano, & Reese, 2003). These cost estimates include

care for colorectal cancer treatment incurred with late stage diagnosis of colorectal cancer; preventive screening can reduce late stage colorectal cancer diagnosis. A large part of cost for colorectal cancer is chemotherapy treatment. Treating colorectal cancer diagnosed in late stages would incur more cost versus cancers found in early easily treatable stages; the assumption being that treatment cost would continue to rise while screening cost could remain stable (Lansdorp-Vogel et al., 2009). Many Americans age 50 and older have poor socioeconomic status; many are at or below a \$25,000.00 yearly income level (U.S. Census Bureau). This may lead to difficult choices involving preventive services over other necessary needs, especially when preventative services have some cost incurred by the recipient.

The major economic facilitator of CRC screening has been the addition of Medicare provisions for preventive screening beginning with the Balanced Budget Act (BBA) of 1997 (Library of Congress, n.d.). The BBA of 1997 allowed for Medicare beneficiaries to receive a screening colonoscopy according to screening guidelines (MedPac, nd) beginning in fiscal year 2000. Without this provision, fewer people would be able to afford screening by sigmoidoscopy or colonoscopy. Therefore, more people would put off screening until symptoms appeared, making recovery from cancer difficult. However, even with the Medicare provision, many people lack necessary funds to obtain colorectal cancer screening. While it is true that a Fecal Occult Blood Test is free from most health care providers, the most current referral practice is for the use of screening colonoscopy. While Medicare does cover preventive screening, prior to 2007, screening under Medicare Part B had a deductible allowed. Therefore while screenings were covered, a

20% deductible applied. In 2007, the Part B deductibles for preventive colorectal cancer screenings were dropped. Still, physicians may charge over the accepted amount of Medicare payment with the beneficiary responsible for any additional amount. The advent of preventive colorectal cancer screening in Medicare beneficiaries has more than likely led to increased screening. Unfortunately, studies relevant to screening among Medicare beneficiaries included data from 2000 to 2003. In each, screening levels showed no significant increase over screening levels prior to the BBA of 1997 (Holmes-Rovner, Williams, Quillian, Butler, & Given, 2002; Ko, Kreuter, & Baldwin, 2002; Shih, Zhao, & Elting, 2006). One must keep in mind however that data were collected soon after the 2001 Medicare screening policies were put in place. Lack of awareness of screening payment could have a factor in the findings of continued low screenings among Medicare recipients.

Even though out of pocket expenses may occur with colorectal cancer screenings, screening for colorectal cancer via colonoscopy is still more cost effective than other screening methods. Redaelli et al. (2003) identified a 1995 study showing that an initial colonoscopy detected more participants with adenomas than those with flexible sigmoidoscopy combined with barium enema. Gross et al. (2006) looked at the SEER database linked with Medicare and found that in beneficiaries 67 years of age and older using colonoscopy for screening found early stage proximal lesions that may not otherwise have been found using flexible sigmoidoscopy. These findings suggest that using screening methods other than colonoscopy could incur costs greater than a

colonoscopy alone, require additional prep and time allowance, but most importantly could increase mortality from colorectal cancer.

African Americans and Colorectal Cancer Screening

Race has been identified as one barrier to colorectal cancer screening. Several studies relevant to colorectal cancer screening have included race/ethnicity as a variable (Ananthakrishnan, Schellhase, Sparapani, Laud, & Neuner, 2007; Fenton et al. 2008; Kelly, Dickinson, Degraffinreid, Tatum, & Paskett, 2007). Many of these studies have shown that African Americans are less likely to be screened for colorectal cancer than Whites. Factors were identified as possible barriers to screening based on demographic data. Ananthakrishnan et al. studied screening rates among Medicare recipients in three different states. Findings showed that non-Whites, with 66% of non-Whites being African American, were less likely than Whites to have been screened with either FOBT or colonoscopy and that non-White recipients were more likely to identify as low income.

African American men and women were found to have inadequate knowledge of colorectal cancer in a study of knowledge, perceptions and behaviors in African Americans (Green & Kelly, 2004). Average years of education were 10.3. Test scores on a colorectal cancer Knowledge test ranged from 56-100 points with a mean score of 78. Only 38% correctly identified that colorectal cancer is not usually fatal. Importance of susceptibility and need for screening for colorectal cancer were significant. Peterson, Dwyer, Mulvaney, Dietrich, and Rothman (2007) report that 52 % of African American studied had limited health literacy compared to only 48% Whites. Educational level was

at or below 12th grade and 65% of all groups studied reported yearly income of less than or equal to \$15,000.00.

Poverty levels among African Americans are high. Twenty percent of African Americans live at or below the poverty level (The Office of Minority Health, 2008). African Americans most at risk for colorectal cancer, those age 50 years and older, are at a poverty level of 23%; if Social Security income were not counted, that number would increase to 60% (American Association of Retired Persons, 2008). This translates into no or decreased health care due to lack of funds for care or co-payments. Therefore, if one has to choose which areas of health care to utilize, screenings that incur some form of cost would be last on the list. Ahmed, Lemkau, Nealeigh, and Mann (2001) identified that the poor suffer higher rates of medical problems and are more likely to die earlier. In a study of poor urban Americans of all races, they found that inability to pay for medical care was second to lack of information of free medical care as to why participants did not receive or seek medical care. Sarfaty and Feng (2005) studied education of minorities in relation to colorectal cancer. A Maryland state program aimed at reducing colorectal cancer was utilized. Free screening colonoscopy was offered to those who applied via phone, after a one-on-one education session with an educator or were referred by a physician. Fifteen percent of participants were African American. The screening rate for all participants increased from 13% to 52%. Overall, those most likely to screen were those referred by the physician. Less likely were those in the educator group. While screening did increase, it was seen as in relation to a free screening colonoscopy being

offered; despite education it is most likely that screening rates in this population would again decline if no further free screening was offered.

There is also some genetic component to colorectal cancer in African Americans. Family history of colorectal cancer is one identified risk factor for colorectal cancer. While no data were found that supports one race/ethnicity as having a higher risk of family history over another, two articles did identify that tumor location in colorectal cancer could be a genetic factor. Thornton, Morris, Thornton, Flowers, and McCashland (2007) found that African Americans were more likely to have polyps limited to the proximal colon compared to whites. Sharma and O'Keefe (2007) cited studies that identified colorectal tumors by severity grade. African Americans were found to have a higher percentage of high grade colorectal tumors. While this higher percentage could be due to stage at which diagnosis was made, other factors such as socioeconomic and health behaviors were also identified as possible reasons for high grade tumor. However, the majority of these high grade tumors were found in the proximal and transverse colon. This trend in location could play a part in mortality for African Americans if appropriate screening modalities are not used. In this case, appropriate screening would be a colonoscopy to allow viewing of the entire colon.

Barriers to healthcare in African American men may ultimately lead to barriers for colorectal cancer screening. A study of healthcare barriers in African American men found several identified barriers. Ravenell, Whitaker, and Johnson (2008) found that among African American men aged 16 to 75, several barriers were identified as to why African American men did not seek healthcare services. Participants were from multiple

sub populations including those from churches, homeless, HIV-positive, trauma survivors, and substance abusers. Barriers identified were lack of health awareness, unsure how to undertake certain health behaviors, fear, fatalism, medical mistrust, cost, previous experience, and cultural differences.

Discrepancies were identified among White and non-White Medicare beneficiaries with an increase in reported colonoscopy screening among Whites over non-Whites (Ananthakrishnan, Schellhase, Sparapani, Laud, and Neuner, 2007; Fenton et al., 2008). Ethnic or cultural differences were cited as possibly influencing beneficiary choice or provider recommendation.

Diet may also play a role in development of colorectal cancer. Those in more rural, low socioeconomic areas may be less likely to eat diets high in fiber and grains and more likely to eat diets high in fats and red meat. Urban, high socioeconomic groups were more likely to eat diets high in fiber and less red meat. Satia-Abouta et al. (2003) conducted a study of diet and colorectal cancer incidence among African American and Whites. Findings showed that among African Americans, those with diets high in carbohydrates and saturated fats and low in fiber had an increased risk in colorectal cancer.

Another barrier to colorectal cancer screening identified from the literature was fear/mistrust of medical personnel. For African American men this may stem from the Tuskegee Syphilis study, possibly the worst example of unethical treatment of study participants in American medical history (Fyffe, Hudson, Fagan, & Brown, 2008; Holmes-Rovner et al., 2002; Smedley, Stith, & Nelson, 2003).

Health Belief Model

The HBM has been used to study individual's health beliefs and actions pertaining to many different health situations. The earliest of these studies dealt with breast cancer screening and mammography. While the HBM has been used in colorectal cancer screening studies, Rawl, Menon, Champion, Foster, and Skinner (2000) looked at beliefs about colorectal cancer screening in individuals with a first-degree relative diagnosed with colorectal cancer. Perceived benefits to colorectal cancer screening included: finding cancer early, a decreased chance of dying from colorectal cancer, freedom from worry of colorectal cancer and reassurance that one is cancer free. Multiple barriers were identified with the four most often identified being: lack of public awareness of colorectal cancer and need of screening, concerns about efficacy of specific screening test, fear of diagnosis of cancer and embarrassment.

Janz, Wren, Schottenfeld, and Guire (2003) found that perceived risk and barriers were most indicative of screening practice. Those who identified a perceived risk were more likely to screen than those who did not identify risk. Barriers were found to be the biggest deterrent to screening; embarrassment and no need to screen were the two most often cited barriers. Salience and coherence were identified as a strong predictor of screening and included in discussion of HBM constructs; however, since each were noted separately from benefits, it is unclear of their fit within the HBM constructs. Physician recommendation was identified as a major cue to action but not all participants identified that a physician recommendation was made.

Perceived barriers, perceived benefits, perceived self-efficacy and provider recommendation (cue to action) were associated with FOBT and colonoscopy use (Menon et al., 2003) among a workplace group invited to receive free colorectal cancer screening. Included in the program were employees 40 years of age and retirees and their dependents. This was an ongoing colorectal cancer screening program with less than optimal participation. Researchers sought to understand why employees were not taking advantage of the screening opportunities. Benefits, barriers and self-efficacy were reported by participants as high or low. As expected, participants identifying benefits and self-efficacy as high were more likely to have had a FOBT or colonoscopy. The same was seen with barriers, those reporting high barriers reported not having taken advantage of FOBT or colonoscopy. The only identified cue to action was physician recommendation. It would be assumed that the development and implementation of the cancer screening program itself would be a cue to action. However this was not identified as such.

Menon, Belue, Skinner, Rothwell, and Champion (2007) studied a person's belief of colorectal cancer screening in relation to their current stage of screening behavior for FOBT or sigmoidoscopy; precontemplation, contemplation, and action. Perceived susceptibility, barriers, benefits and self-efficacy were studied. Perceived susceptibility was consistent for all stages and both screening tests. Perceived benefits were identified more by those in the action stage of screening. Those individuals in the action stage also had higher perceived self-efficacy of completing the screening exam for sigmoidoscopy than those in contemplation. Perceived barriers were most evident for individuals in the

precontemplation stage for both screening tests. Multiple barriers were identified for both tests. Not having symptoms and unable to do test were barriers most cited for FOBT while time, pain and cost were identified with the sigmoidoscopy.

Intent to Screen

Macrae et al. (1984) studied individuals visiting health care providers on their acceptance and compliance with FOBT. While the majority of participants accepted a Hemocult test card, only half of those accepting complied with use and returned card for testing. Of the six HBM constructs only two showed any correlation with acceptance or compliance. Real and perceived susceptibility were indicative of acceptance of Hemocult test card but not of compliance in use of card. While barriers were identified, they were no more predictive of compliance than noncompliance.

Wardle et al. (2000) looked at older adults' interest in screening as part of a flexible sigmoidoscopy screening trial. Four of the six HBM constructs were tested. A high level of interest was stated by participants. Perceived risk and severity were associated with interest in screening. Benefits and barriers were identified by questions rated as attitudinal. Those rating positive attitudes as high were more likely to identify interest in screening; inversely, those rating negative attitudes as high were more likely to decline screening.

Intent to screen by siblings of individuals diagnosed with colorectal cancer (Manne et al., 2003) found that perceived severity, benefits and barriers had a direct association with

intent to screen. Constructs from other models were also studied and found to play a part in mediating the benefits and barriers of intent to screen.

Focus groups were used to study factors that influence colorectal cancer screening decisions by Wackerbath, Peters, and Haist (2005). The findings of this study were interesting. As with much qualitative research, data findings were grouped into themes. Themes however were not grouped as per HBM constructs as one would expect; discussion did hint at how themes may correlate with HBM constructs. Another interesting finding was how participants identified dual meanings for some factors; that a specific factor could be seen as a benefit or a barrier. For example, knowing someone who had colorectal cancer was seen by some as a benefit to making a decision and by others as a barrier to making a decision due to fear of possibility of cancer being found in self. Also, among those identifying benefits and barriers, for some, multiple factors may be needed to see screening as a benefit where it only takes one barrier to make a decision not to screen, and vice versa. Though not identified as such in the results or discussion, some participants described cues to action as being a single factor, such as a recommendation from a provider.

In a study by Gipsh, Sullivan, and Dietz (2004), participants rated susceptibility for colorectal cancer as low even though severity was rated high. This, coupled with benefits being only slightly higher than barriers, led investigators to conclude that participants were not likely to access preventive screening.

Special Populations

Often, studies on colorectal cancer screening focus on specific groups of people; groups specific to gender, race, culture or geographic location. Green and Kelly (2004) found that among low income African American, males felt more susceptible to getting colorectal cancer than females, yet females rated higher on colorectal cancer being a serious disease. Females also identified more barriers to colorectal cancer than males with both groups identifying benefits to colorectal cancer screening. Among respondents, half had participated in colorectal cancer screening at some point in the past. African American women were studied by Frank et al. (2004). Findings showed that this group did not perceive that they were susceptible to colorectal cancer, yet perceived colorectal cancer to be serious. Less than half of respondents reported a benefit to colorectal cancer screening. A majority of the women identified barriers to screening. Frequency of screening in this group was less than 35%. African American men had varied responses to perceived susceptibility in a focus group study on prostate and colorectal cancer screening (Fyffe et al., 2008). Barriers were identified as high and many responded with fear and mistrust of healthcare as two highly ranked barriers.

Gorin (2005) looked at colorectal cancer screening in urban Hispanic women using FOBT. Screening was free to women utilizing a national free breast health program. The majority of women participating in the study chose to comply with screening via FOBT. Women returning test cards were found to have fewer perceived barriers. Perceived threat was low among compliers and moderate among non-compliers. Cues to action such as

physician recommendation or family or friend recommendation were not identified as a factor to screening.

Ng, Tan, Teo, Seah, and Phua (2007) studied colorectal cancer screening beliefs in Singapore and found that perceived susceptibility was low and perceived severity was high. Barriers were high with cost identified as significant. Family member encouragement was a significant cue to action.

Education

The HBM was used to guide questionnaire use in a test/retest pilot study of an educational program for increasing colorectal cancer knowledge (Barnes & Thomas, 1990). Knowledge level in posttest scores were roughly the same in each of the three different study groups, two receiving information about colorectal cancer and one receiving nutrition information. Perception about diagnosis and treatment of colorectal cancer was positively correlated with education. Ueland et al. (2006) developed educational material based on the HBM constructs. Following an educational session, participants showed significant increase in beliefs of colorectal cancer screening and prevention. Greenwald (2006) studied use of an educational model on change in participant's beliefs on colorectal cancer screening. Posttest results showed an increase in perceived susceptibility and benefits of colorectal cancer. Participants were able to identify lack of knowledge as barriers to colorectal cancer screening and specific cues to action. Participants also identified an increase in perceive ability to obtain a colorectal cancer screening test. A study by Peterson et al. (2007) it was found that participants with

limited health literacy reported more barriers to completing colorectal cancer screening. However there was no association between health literacy and completing colorectal cancer screening.

Social Support

The concept of social support has been defined as a natural resource available in most communities through which community members offer and receive support to one another (Eng, Parker, & Harlan, 1997). Eng and Young (1992) identified social support as “the pivotal concept and focal point of the model linking LHA intervention effects to behavioral changes in individuals, organizational changes in agencies, and social changes in communities” (p30). Freidson (1970) discussed an individual’s idea of health and its relation to his/her social life and social structures. He defined social life as one’s cultural content as well as people’s relations to one another. Social structures are communities that can be identified as family, work, neighborhoods or social clubs (Freidson). These social structures may have strong significance in how one views health. Members of a social structure may seek advice or information from one or many in relation to health. Israel (1985) points out that social support and social networks are but two of several psychosocial factors empirically identified as predictors of health behavior and health status. Use of natural helpers within social networks can be applied to different communities to advance health education and status.

CHAPTER III

METHODS

Design

The purpose of this study was to examine factors that may influence preventive screening behaviors for colorectal cancer in older African American men. A descriptive, cross-sectional design was used to identify the perceptions related to intent to obtain colorectal cancer screening in older African American men. Additionally, a correlation design was used to study relationships among Health Belief Model constructs, social support, and intent to screen.

Protection of Human Subjects

Approval for this study was requested and granted from the Institutional Review Board (IRB). Participant involvement and time requirements were explained when participants were approached for involvement in study. Verbal and written explanations of the study purpose, confidentiality and anonymity rights, and the right to withdraw from the study without penalty were shared with each participant. Signed consent forms were kept separate from survey forms to assure anonymity. Completed questionnaires have been kept in a locked file cabinet in the researchers' home office. Data entered into the statistical program is stored on the researchers home computer which is password protected. (Appendix C)

Setting

Data collection took place in a suburban area of south central North Carolina. This area is populated with approximately 30% African Americans. The majority of data collected were obtained through snowballing from one initial personal contact, with additional snowballing from one previous directed research participant.

Sample

A convenience sampling plan was used to obtain participants from a suburban area of south central North Carolina. Inclusion criteria consisted of: (a) African American men, (b) age 50 years and older, (c) English speaking, (d) oriented to time and place, and (e) able to understand the English language. Individuals answering the request for participation in the study were prescreened by the researcher for eligibility prior to data collection; prescreening consisted of explaining to each participant that by signing the consent form they were agreeing that they were African American and that that they were at least 50 years of age or older. Participants were then asked if they wished to continue in the study.

Data were collected using self-administered questionnaires. The researcher offered to read the questionnaires to each participant if needed.

Statistical Power

A power analysis was conducted using *nQuery Advisor* software to determine the needed sample size to answer the research questions. With an alpha level of .05, using regression test for 6 variables, power of .80 and an effect size of 0.25, an estimated sample size of 51 men was needed to detect if a significant relationship exists between the Health Belief Model constructs, social support, and intent to screen for colorectal cancer.

Instruments

The survey tool was comprised of three instruments: (a) Health Belief Model Scale (as adapted for colorectal cancer by Jacobs), (b) Multidimensional Scale of Perceived Social Support Instrument, and (c) Intent to Screen Form. (Appendix A). A Personal History Form was also utilized to capture demographics data (Appendix B).

Champion's Health Belief Model Scale

Champion's Health Belief Model Scale was originally developed to study breast self-examination in women (Champion, 1984). Citing the lack of a reliable and valid tool for measuring HBM concepts, Champion (1984) sought to develop a tool using reliable and valid scales for use in research. Scales were developed to measure five HBM concepts: susceptibility, seriousness, benefits, barriers, and motivation. Reliability and validity were verified for use of this tool in breast self-examination (references).

Jacobs (2002) adapted the Champion HBM scales for use in collecting data related to colorectal cancer screening by substituting ‘colorectal cancer’ for ‘breast cancer’ in the wording of questions. Internal reliability for subscales on the original breast cancer scale was determined using Cronbach alpha which ranged from 0.60 to 0.78. Test-retest correlations, Pearson r , ranged from .47 to .86 ($p < .001$). Relying on psychometric properties established by Champion, only content validity was retested for colorectal cancer scale using three experts. The instrument was then used to assess beliefs about colorectal cancer, screening intent and likelihood of a health maintenance visit of participants who were first-degree relatives of individuals diagnosed with colorectal cancer. Sixty seven percent of first degree relative indicated they currently participated in health maintenance visits. While most participants felt that colorectal cancer was a serious disease, they did not believe they were at risk for colorectal cancer and would only access screening if they felt a risk.

Multidimensional Scale of Perceived Social Support Instrument (MSPSS)

The MSPSS was designed by Zimet, Dahlem, Zimet, and Farley (1988) to measure perceived social support, to focus on the subjective assessment of adequate social support, and to study social support in three distinct areas; family, friends and significant others. Earlier instruments had focused only on objective assessment or did not include all areas of social support. Another feature of the instrument important to Zimet et al. (1988) was ease and speed of use. A Likert-type scale using a 7 point rating is used for each item. The Likert-type scale consisted of “1” for Very Strongly Disagree, “2” for

Strongly Disagree, “3” for Mildly Disagree, “4” for Neutral, “5” for Mildly Agree, “6” for Strongly Agree and “7” for Very Strongly Agree.. The MSPSS consists of 12 questions in the three factor groups; Family, Friends and Significant Other.

Internal reliability was tested using Cronbach alpha (reference). Reliability scores for the factor groups of Family, Friends and Significant Others were .87, .85, and .91 respectively with a total scale alpha of .88. Test-retest reliability was assessed with a total scale score for test-retest reliability of .85.

Construct validity was reported as adequately met on the basis of inverse correlations with anxiety and depression scores as measured on the Hopkins Symptom Checklist (HSC). Zimet et al. (1988) hypothesized that perceived social support would be negatively related to anxiety and depression symptoms (p36). The MSPSS scale was significantly negatively related to depression, $r = -.25$, $p < .01$

Intent to Screen

In this study, intention is a measure of a person's readiness to be screened for colorectal cancer. Intention is considered to be the immediate antecedent of behavior (Ajzen, 2006). Therefore, intention to perform a behavior is frequently used in research as a proximal measure for actual behavior when actual behavior is not readily apparent (Francis et al., 2004). Sieverding Matteredne, and Ciccarello (2010) measured intention by “Do you intend to participate in a cancer screening examination within the next 12 months” and “How likely is it (in percent from 0% to 100%) that you will attend a cancer screening examination within the next 12 months?” Cronbach alpha for the two measures

was .98. There was evidence for predictive validity in this study in that intention predicted colorectal cancer screening 12 months later. Ajzen's TPB manual for researchers suggests that intention be measured with three items with the following stem: "I expect to . . .," "I want to . . .," and "I intend to. . ." (Francis et al., 2004). In this study, intention was measured with these 3 items and the additional item "It is likely that I will be screened for colorectal cancer in the next 12 months" with responses from 1 "Definitely will not" to 5 "Definitely will".

Personal History Form

The Personal History Form was developed by the investigator to capture basic demographic data related to each participant (age, educational level, and income). In addition, this form captured information used to identify potential social support opportunities (marital status, living situation, attendance at place of worship, and employment status). Social support can take place in multiple settings, between two or more individuals (Freidson, 1970). Questions related to preventive health actions (annual health exam, flu shot, and digital rectal exam) and previous prostate and colorectal cancer screening were incorporated to support the construct of self-efficacy. People who participate in one form of preventive health screening are more likely to participate in additional health screenings.

Pilot Study

A qualitative pilot study was conducted in the months prior to data collection to assess the appropriateness of the consent form and survey tools among African American men. Focus groups were conducted on two separated occasions to try and meet an adequate level of significance. Flyers were placed in a local branch of the city library and two businesses within a three mile radius of the researchers' home. An announcement was also made the church of a coworker. Response was poor to the first focus group ($n = 3$) necessitating a second focus group; response was again poor ($n = 1$). However, the participants were eager to assess consent form and survey tools and were encouraged by research about colorectal cancer aimed at African American men. Each survey tool question was read to the groups as they read along. All participants agreed that the questions were easily understandable and inoffensive to them. Surprisingly, the question "Are you a member of any social clubs" was stated as being understood, with one participant even saying "like my Bible study class." However, on the personal history form in the current study, only three participants answered this question as either yes or no; the remaining participants did not answer. The original consent form included the term Black men as the target group. One participant felt this was appropriate to him with three participants preferring the term African American men. Therefore the wording in the consent form for the current study was changed to read African American men when needed. Two of the participants asked to be contacted when the data collection for the current study began and provided contact information. An additional suggestion was

made by participants as to appropriate refreshments to serve; coffee versus bottles of water.

Data Collection

Predominately African American churches were contacted by phone for permission to hand out recruitment flyers at social groups within the churches as well as permission to collect data on site. Phone messages were left requesting a return phone call to the researcher. However, no response was forthcoming from the contacted churches. Even when one contact within a church was made with a pastoral secretary, follow up by that church was not forthcoming. Therefore, no participants were obtained from churches as planned. Local businesses were contacted for permission to place recruitment flyers in predominate locations within each business with permission being granted. Additionally, two participants from the pilot study were contacted as they offered to assist in finding participants for the dissertation study. The researcher left a phone message requesting a return call from these two key informants. One pilot study participant responded to the request and agreed to participate in the study; additional participants were obtained through word of mouth within this participant's senior housing complex. The majority of participants were obtained by word of mouth, or snowballing. One participant was obtained by word of mouth via a coworker which lead to snowballing recruitment of the majority ($n=37$) of participants. One flyer was placed in a participant's subsidized housing complex, which lead to additional participants.

The consent form and data collection tools were given to each participant upon verification of meeting the inclusion criteria; verification was self report of age and race. Each participant self administered the data collection tools. Each participant was asked if he preferred having the consent form and data collection tools read to him; however, no participant requested this assistance. Upon completion of the data collection tools, each participant was given a \$20.00 gift card.

Data Analysis

Data Preparation

Data were entered into the Statistical Package for the Social Sciences (SPSS) for Windows, Version 18.0 (SPSS). The computerized data were then compared to the original data from each survey tool to assess for accuracy of entry. Frequency tables were run to monitor for missing data and outliers. Of the model variables, five items (1.4%) were randomly missing. Because of this low number of missing values, the mode of each item was imputed for the missing value so that all variables could be used in the final analysis. Further, only three participants responded to one specific question on the demographic form, “Are you a member of any type of social club? (such as Oasis club, bowling league, dance club);” therefore, that question was deleted from final data analysis.

Descriptive Data

Frequencies were run to assess characteristics of the sample. Frequencies and valid percents were assessed for nominal and ordinal data. Means, standard deviations, and ranges were measured for interval and ratio data.

Construct Measures

Scales were developed for each construct measured. Champions Health Belief Model survey (adapted for colorectal cancer screening) measured five constructs; Perceived Susceptibility, Perceived Seriousness, Perceived Benefits, Perceived Barriers, and Self-Efficacy. The Multidimensional Scale of Perceived of Social Support measured the level of social support perceived by the men. Intent to Screen measured one construct, intent to get a screening colonoscopy within six months. Factor analyses were conducted to assess the common underlying dimensions of the constructs. Cronbach's alpha was conducted on construct scales to assess internal consistency reliability (Table 1).

Table 1

Cronbach's alpha for Construct Measure Scales

Construct	Cronbach's alpha
Perceived susceptibility	.89
Perceived seriousness	.93
Perceived benefits	.86
Perceived barriers	.83
Self-Efficacy	.92
Social Support	.94
Intent to Screen	.94

CHAPTER IV

RESULTS

Results of descriptive data analysis for demographics of the sample, health belief, social support and intent to screen for colorectal cancer are addressed in this chapter. Examination of correlations of health belief model, social support, and intent to screen for colorectal cancer variables are reviewed. Results of two multiple regression analyses are also addressed—one regressed intention to screen on health belief model variables, and the second regressed intention to screen on health belief model variables and social support.

Sample

Participants ($n = 52$) were recruited by flyers and snowballing. Demographic data questions were separated into three sections: general data, social support data (Table 2) and preventive health data (Table 3).

Sample Characteristics

As per the study focus, all participants were men and African American. Age ranged from 50 to 85 years with a mean age of 61.38 (SD 7.87) years. Income was almost split between less than \$25,000 (46.6%) and between \$25,001 and \$50,000 (36.6%). Only five (9.6%) participants reported yearly income of over \$50,000. The majority of participants

(48.1%) reported having a high school education with 21.2% reporting having less than a high school education. College attendance to some degree was reported by 21.2% of participants with 7.7% having a college degree. A Protestant religion was identified by 75.4% of participants with 23.1% of participants citing other for religious affiliation. Four participants reported no religious affiliation. The majority of participants were employed within a major medical facility full or part time.

Table 2

Personal History Form: Mean, Frequencies, and Percent of Demographic Data

GENERAL DEMOGRAPHIC DATA	Mean	<i>n</i>	%
Age	61.38 (SD 7.87)		
Income (yearly) (n = 48)			
< \$25,000		24	46.1
\$25,001-\$50,000		19	36.6
>\$50,000		5	9.6
Education (n = 51)			
< High School		11	21.2
High School		25	48.1
Some college		11	21.2
College graduate		4	7.7
Religion (n = 50)			
None		4	7.7
Protestant		34	75.4
Other		12	23.1
SOCIAL DEMOGRAPHIC DATA			
Marital Status			
Never Married		8	15.4
Married/Living with partner		24	46.2
Divorced/Separated/Widowed		19	36.5
Living situation			
Lives Alone		23	44.2
One or more additional person in household		28	53.8
Employment			
Full Time		20	38.5
Part Time		2	3.8
Unemployed		2	3.8
Retired		13	25
Disabled		13	25
Attendance at Place of Worship			
Never		4	7.7
Occasionally		17	32.7
Regularly		28	53.8

Table 3

Personal History Form: Frequencies and Percent of Preventive Health Data

Last Physical Exam	<i>n</i>	%
Never	5	9.6
With in last year	36	69.2
> 1 year	5	9.6
> 10 years	1	1.9
? 9	1	1.9
Flu Shot		
Never	21	40.4
With in last year	19	36.5
> 1 year	4	7.7
> 10 year	1	7.7
Prostate Exam		
Never	14	26.9
With in one year	22	42.3
> 1 year	8	15.4
> 10 year	1	1.9
Did not answer	7	13.5
Digital Rectal Exam		
Never	15	28.8
With in one year	19	36.5
> 1 year	7	13.5
> 10 year	1	1.9
Did not answer	10	19.2
Colonoscopy		
Yes	33	63.5
No	17	32.7

Social Support

Marital status was similar between married/living with partner (46.2%) and divorced/separated/widowed (36.5%). Eight participants (15.4%) reported having never been married. The living situation was identified as living alone (46.2%) or having one or more additional persons living in household (53.8%). Employment was closely divided between full time (38.5%) and part time employment (3.8%), or no employment for one of three factors: unemployed (3.8%), retired (25%), or disabled (25%). Attendance at a place of worship was a regular occurrence with 53.8% of participants. Occasional attendance at a place of worship was identified by 32.7% of participants with 7.7% stated never attending a place of worship.

Preventive Health

The last physical assessment was reported as having been within the last year by 69.2% of participants, while 9.6% of participants reporting never having had a physical assessment. Six (11.5%) participants reported having had a previous physical assessment; 9.6% were greater than one year and 1.9% was greater than ten years. More participants (40.4%) reported never having had a flu shot than those having a flu shot with the last year (36.5%). Other participants reported having had a flu shot in the past with 7.7% greater than one year and 1.9% greater than 10 years. Prostate exams were reported by 42.3% of participants within the last year, and 26.9% reported they had never had a prostate exam. Nine participants reported having had a prostate exam in the past, but

greater than one year (15.4%) and greater than 10 years (1.9%). Digital rectal exams within the last year were reported by 36.5% of participants, and 28.8% of participants stated never having had a digital rectal exam. Eight participants reported having had a digital rectal exam in the past with 13.5% greater than one year and 1.9% greater than 10 years. It is important to note that 13.5% and 19.2% did not answer whether ever having had a prostate exam or digital rectal exam respectively. Since percentages of no answer given are higher for prostate exam and digital rectal exam questions than any other preventive health question, it should be noted that the participants may not have understood the meaning of these two exams, even though no participant asked for clarification of exam meaning. Past colonoscopy was identified by 63.5% of participants. Colonoscopy was defined on the questionnaire.

Regression Assumptions

Regression assumptions tested were that the a) residuals are normally and independently distributed at each set of values for the independent variables, b) there is a linear or straight line relationship between independent and dependent variables, and c) two or more independent variables do not have a nearly exact linear relationship (i.e., collinearity is not present). Prior to data analysis, data were screened for linearity and homoscedasticity, normality, and multicollinearity using data scatterplots and scatterplots of residuals, histogram, and correlations and collinearity diagnostics, respectively. Collinearity was assessed with variance inflation factor (VIF), and the analyses indicated

a lack of collinearity among the independent variables. Analyses provided evidence that regression assumptions were met.

Characteristics of the Model Measures

Perceived Susceptibility

A factor analysis revealed that the item “My chances of getting colorectal cancer are great” did not factor with the other 3 susceptibility questions. The factor loading was .45, commonality was .20, and the inter-item correlations with the other 3 items ranged from .21 to .29. Cronbach’s alpha for perceived susceptibility was .80. The item was removed from the scale, and Cronbach’s alpha increased to .89.

Perceived Seriousness

A factor analysis was computed with the 7 perceived seriousness items, and the factor loadings ranged from .69 to .93, and the inter-item correlations ranged from .43 to .85. All of the items were retained, and Cronbach’s alpha was .93 for the scale.

Perceived Benefits

A factor analysis for the 6 perceived benefits items revealed a one factor solution with factor loadings from .55 to .90, and inter-item correlations ranging from .28 to .90. Communalities ranged from .63 to .94, and Cronbach’s alpha was .86, and item-to-total correlations were from .45 to .78. All of the items were retained.

Perceived Barriers

A factor analysis for the 6 perceived barriers items revealed a two factor solution with factor loadings from .61 to .86, and inter-item correlations ranging from .28 to .72. Communalities ranged from .38 to .74. Cronbach's alpha was .83, and item-to-total correlations were from .48 to .75. All of the 6 items were retained.

Self-efficacy

A factor analysis for the 9 self-efficacy items revealed a one factor solution with factor loadings from .62 to .88, and inter-item correlations ranging from .30 to .83. Communalities ranged from .38 to .78. Cronbach's alpha was .92, and item-to-total correlations were from .55 to .83. All of the 9 items were retained.

Social Support

A factor analysis for the 12 item social support measure revealed a two factor solution with factor loadings on factor 1 from .68 to .90 and inter-item correlations ranging from .31 to .85. Communalities ranged from .48 to .89. Cronbach's alpha for the 12-item scale was .94, and item-to-total correlations were from .66 to .94. The 12-item scale was used as the measure of social support.

Intent to Screen

A factor analysis for the 4-item intent to screen measure revealed one factor with factor loadings from .87 to .97 and inter-item correlations from .66 to .95. Communalities ranged from .76 to .93. Cronbach's alpha for the scale was .94 and item-

to-total correlations were from .78 to .93. The 4-item scale was used as a measure of intent to screen.

Skewness and kurtosis were also assessed for scale measures. Social support, benefits and intent to screen were all negatively skewed with social support indicating that the men in general perceived a high level of social support.

Table 4 shows the range, means, and standard deviations of the model variables. Mean scores for model variables were somewhat surprising. Participants rated seriousness and susceptibility as lower than average indicating they did not perceive colorectal cancer as a serious disease or that it would affect them. Also, barriers were rated low indicating that participants perceived few barriers to screening. Benefits and self-efficacy were both rated above average. Participants perceived positive outcomes from screening and felt they were able to seek and participate in screening. Social support was rated as high indicating that participants felt they had others in their life from whom they could receive support. Intent to screen is also rated high. Participants felt that they would be likely to seek screening within the next six months.

Table 4

Range, Means and Standard Deviations of Model Variables

Variable	Range	Mean	SD
Seriousness	1-4	1.88	.96
Susceptibility	1-5	2.39	1.01
Benefits	1-5	3.67	.97
Barriers	1-5	2.22	.88
Self Efficacy	1-5	3.87	.84
Social Support	1-7	5.70	1.02
Intent to Screen	1-5	3.91	.92

Findings

Specific Aim 1

Identify health belief constructs related to colorectal cancer screening in older African American men.

Question 1. What are the relationships among perceptions of susceptibility, severity, benefits, barriers and screening self-efficacy and self reported past screening for colorectal cancer in older African American men?

Spearman Rho correlations were used to assess the relationships between perceived susceptibility, perceived seriousness, perceived benefits, perceived barriers, social support and past screening for colon cancer. Table 5 shows the correlation for perceived susceptibility, perceived seriousness, perceived benefits, perceived barriers, social

support past colonoscopy. No significant relationships were found between variables. However, Independent sample *t*-tests showed significant mean differences, $t(52) = 2.42$, $p = .02$, in barriers between those who did ($M = 2.03$, $SD = .88$) and those who did not ($M = 2.65$, $SD = .81$) have past colorectal cancer screening. Therefore men who reported past colon screening reported fewer perceived barriers to screening.

Table 5

Spearman's Rho Correlations among Colonoscopy and HBM Scales (N=50)

	Colonoscopy	Susceptibility	Seriousness	Benefits	Barriers	Self-efficacy
Colonoscopy						
Susceptibility	.94					
Seriousness	.03	.73*				
Benefits	.25	.37*	.36*			
Barriers	-.14	.42*	.53*	.22		
Self-efficacy	.22	-.11	-.18	.35*	-.11	
Social Support	.17	-.04	.02	.01	-.10	.08

* $p < .01$

Specific Aim 2

Identify the relationships among HBM constructs, perceived social support, and intent to screen for colorectal cancer.

Question 2. Are perceived susceptibility, seriousness, benefits, barriers, and self-efficacy to colorectal cancer screening related to intention to be screened for colorectal cancer?

Pearson's correlations among the independent variables and intention to screen were small and not significant among any of the variables (susceptibility $r = .16$, seriousness $r = .26$, benefits $r = .12$, barriers $r = -.20$, self-efficacy $r = -.21$). See Table 6.

Table 6

Pearson's Correlations among Colonoscopy and HBM Scales (N=50)

	Intent to Screen	Susceptibility	Seriousness	Benefits	Barriers	Self- efficacy
Intent to Screen						
Susceptibility	.17					
Seriousness	.03	.63*				
Benefits	.16	.32*	.42			
Barriers	-.11	.35*	.57*	.30*		
Self-efficacy	.06	-.28*	-.20	.25	-.09	
Social Support	.10	-.16	.03	.04	-.10	.35**

* $p < .01$

** $p < .05$

Question 3. How much variance in intention to screen for colorectal cancer is explained by the Health Belief Model constructs?

A multiple regression analysis was conducted to assess how well the HBM variables predicted the intention to screen for colorectal cancer. The predictors were perceived susceptibility, seriousness, benefits, barriers, and self-efficacy. The dependent variable was intention to screen for colorectal cancer. The R^2 was assessed to determine the

amount of variance in intent to screen for colorectal cancer explained by the independent variables. The R^2 was .28 indicating that 28% of the variance of intention to screen can be accounted for by the linear combination of independent variables. The variables that had the most influence on intention to screen were seriousness ($\beta = .49$, $p = .01$) and barriers ($\beta = .51$, $p = <.01$). The finding indicates that the more the men perceived colorectal cancer as serious disease, the greater their intention to seek screening. This also indicates that the more barriers they perceive the less their intention to seek screening. Perceived susceptibility, benefits and self-efficacy were poor predictors of intention to screen (Table 7).

Question 4. Does perceived social support add to the variance in intention to screen for colorectal cancer beyond the variance explained by HBM construct.

Perceived social support was added to the HBM variables in the regression equation and standardized β weights were assessed to determine the influence of social support on intent to screen for colorectal cancer. The R^2 was assessed for change from the previous model. In addition, the increase in R^2 for the second model above the R^2 from the first model was tested with an incremental F ratio to determine if social support significantly increased the explained variance in intent to screen for colorectal cancer. The β for social support was -.16 and not significant. However, the R^2 increased from .28 to .30. The R^2 change = .02, $F(6, 45) = 3.19$, $p = .01$. These results show that while the change in R^2 was significant, social support was not a strong predictor of intent to screen for colorectal cancer (Table 7).

Table 7

Multiple Regression Models

Variable	Model 1 β	Model 2 β
Perceived Susceptibility	-.07	-.10
Perceived Seriousness	.49*	.55**
Perceived Benefits	.14	.12
Perceived Barriers	-.51**	-.54**
Perceived Self-Efficacy	-.22	-.16
Social Support		-.16
R^2	.28	
F	3.56	
ΔR^2		.30
ΔF		3.19

* $p < .01$, ** $p < .01$

CHAPTER V

DISCUSSION

Many Americans die each year from colorectal cancer with African American men having the highest rates for mortality. Death from colorectal cancer can be greatly reduced with early detection from screening. The purpose of this study was to examine factors that may influence preventive screening behaviors for colorectal cancer in older African American men. This chapter discusses the findings of data collection as well as implications for nursing practice. Recommendations for future research are also discussed.

Interpretation of Results

Individual Characteristics

As per the study focus, all participants were African American men aged 50 years and older. Keeping to the guidelines for colorectal cancer screening, participants at these ages should have had at least an initial screening colonoscopy and for some, a second screening colonoscopy. Almost three-fourths of the participants in this study reported having had a colonoscopy. This is higher than the 2005 reported results of the National Cancer Institute (2010) citing that 43% of African Americans (men and women) age 50 and over had had a colonoscopy. Additionally, this is higher than the national goal, by states, of 50% of all people over age 50 having been screened by colonoscopy. The

North Carolina percentage of screening for colorectal cancer was 50-60%. Unfortunately, most data related to screening rates identifies Blacks/African Americans as a group and does not provide data by gender. This makes it difficult to correctly assess screening rates for African American males and to compare findings with national or state findings.

Age may also play a role in colorectal cancer screening in regards to insurance coverage. For those participants less than age 65, it is ideal that each would have access to health insurance through work or through a spouse's work. For those over age 65, Medicare coverage of colorectal cancer screening is available. Of all participants, those aged 65 years and older reported a higher percentage of colorectal cancer screening than participants younger than age 65. This could be due to payment for colorectal cancer screenings covered by Medicare insurance. Also, it is assumed that those receiving Medicare benefits would not be working and may have more time to access primary care physicians where referrals for colorectal cancer screening would be made. Additionally, if those receiving Medicare are retired, time constraints would not be as much of a problem as for those working. However, men aged 50 to 65 may not seek routine care or have a primary care physician. In addition, screening colonoscopies may not be fully covered by insurance plans, or may incur a large co-payment that individuals may not be able to meet. Additionally, in 2005, men were 30 percent more likely to be uninsured for the previous year, as compared to women, and within that group, African American men were 75 percent more likely to be uninsured than White men (Agency for Health Care Research and Quality, 2008). Studies have shown that that persons diagnosed with late stages of cancers (colon, breast, prostate, and melanoma) had no health insurance or were

covered by Medicaid or HMOs (Roetzheim et al., 1999; Roetzheim et al., 2000).

Therefore, the sample in this study is exceptional in that the men were likely to have had at least one colonoscopy screening.

The majority of participants listed a yearly income of less than \$25,000. This income is lower than the national median income for households (\$49,777), and lower than median income for African Americans (\$32,584) and those aged 65 years and older (\$31,354) (US Census Bureau). Even though their reported income was low, high school completion, when including those who reported college attendance, was higher than the national average of high school completion for African Americans (Rampell, 2010). Almost all of the participants reported having a religious affiliation. This finding is in line with reports of African Americans reporting a formal affiliation with a religious group (Pew Research Group, 2009). In addition, the majority of study participants reported protestant religions more often than other religions, again reflecting the religion most identified by the majority of African Americans nationally.

Social Support Characteristics

Social support characteristics were measured to assist in assessing the participants' level of social support; social support may be found in interaction between individuals or groups, such as home, work or social club environments. Being around others on a regular basis may lead to familiarity among peers and allow persons to discuss health related topics in a more positive way. Sharing one's own experiences of colorectal cancer screening may encourage others to also seek colorectal cancer screening; persons facing similar life experiences may encourage discussion of preventive health practices.

A majority of participants reported being married or living with a partner. This is consistent with U.S. Census Bureau (2008) statistics for African American males which found that 55% of African American males ages 50 and over were married. Whether married or not, a majority of participants reported having a least one or more additional persons living in the household. Having another individual in the household would allow one to assume that daily interaction between individuals would take place. This interaction may increase chances of discussion concerning preventive health practices and foster encouragement among individuals to access preventive health.

Employment status among participants was almost equally divided between those employed and those who were not employed. Employment status may play a part in seeking preventive health measures such as colorectal cancer screening due to frequent interaction with others. Attending worship services may also add to a person's social support network. The majority of participants reported attending worship services on a regular basis. This is consistent with a Pew Research Group report (2009) that 53% of African Americans attended religious services at least once a week.

Preventive Health

Studies have shown that persons participating in one form of preventive screening are more likely to participate in additional preventive health services (Tessaro, Mangone, Parkar, and Pawar, 2006). In this study, the majority of participants reported having had a physical exam with the past year. Additionally, influenza vaccine use within the last year was almost equal with participants who reported never having had a flu shot.

Findings for prostate exam, digital rectal exam were surprising. While a majority of participants reported having had prostate and digital rectal exams, many reported never having had either exam. Further, a number of participants did not answer for prostate or digital rectal exam. This leads the researcher to wonder if participants did not understand the meaning of prostate or digital rectal exam, though no participant asked for an explanation of the exam. Furthermore, participants may have been uncomfortable asking a female researcher for an explanation of these medical exams. A large majority of participants reported having had a colonoscopy in the past; it should be noted that the definition for colonoscopy was given on the survey tool. The number reporting colonoscopy use in this study is slightly higher than colorectal screening statistics reported by the CDC for 2006 (2010). Further, CDC statistics include screening by one of three methods: fecal occult blood test, flexible sigmoidoscopy, or colonoscopy. CDC statistics for colonoscopy only were not found.

Colorectal Cancer Screening

A majority of participants in this study had been screened for colorectal cancer by colonoscopy. Additionally, the mean score for intent to screen for colorectal cancer within six months was above average, indicating a moderately high level of intent to screen by colonoscopy within six months. Multiple studies have been completed related to colorectal cancer and screening. In most studies, screening was measured by any type of screening such as fecal occult blood test, flexible sigmoidoscopy, or colonoscopy, making it difficult to assess screening by colonoscopy (Vernon et al., 2004). In addition,

each form of colorectal cancer screening has a specific timeline attached making screening decisions even more confusing.

Many studies examined screening rates since the inception of Medicare payment and mandatory healthcare provider referrals. Data gathered between 2000 and 2005 showed no increase in screening rates among moderate to low income participants and women and Hispanics (Trivers et al., 2008) nor between races/ethnic groups or gender (Ananthakrishnan, Schellhase, Sparapani, Laud, & Neuner, 2007). Data from 1998 to 2002 showed low rates of colorectal cancer screening among both genders and Whites and African Americans (Beeker, Kraft, Southwell & Jorgensen, 2000) and rural participants, with African Americans less likely to be screened (Kelly, Dickinson, DeGraffinreid, Tatum, & Paskett, 2007). Sarfaty & Feng (2005) showed that while screenings in their study did increase, it was only with the offering of free screening to low and noninsured participants; It should be noted that this study was based on assessment of screening on data obtained in early 2000-2003. At that point in time, colonoscopy payment for average risk individuals had just begun for Medicare beneficiaries; copayment coverage by Medicare beneficiaries for colorectal screening was eliminated in 2005. It was not until 2003 that a law was passed that made preventive screening referrals by healthcare providers mandatory. Therefore, data of colorectal cancer screening gathered prior to these monumental changes in health coverage would not be expected to show much increase in screening use. More recent studies have shown an increase in colorectal cancer screening via colonoscopy with a decrease in fecal occult blood test and flexible sigmoidoscopy; disparities were still seen among whites and non-

whites and between men and women (Emmons et al., 2009; Fenton et al., 2008; Sonnenberg, Amorosi, Lacey, & Lieberman, 2008).

Only a limited number of studies of colorectal cancer screening use have been specific to African Americans; none were found specific to African American men. As with colorectal cancer screening studies in general, some studies among African Americans used older data. Jerant, Fenton, and Franks (2008) and Lawsin, DuHamel, Weiss, Rakowski, and Jandorf (2006), using data gathered between 1999 and 2005, found that screening rates were low using all types of screening or fecal occult blood test and flexible sigmoidoscopy respectively. Palmer, Midgette, and Dankwa (2008) found that 42% of participants in one study were compliant with colorectal cancer screening; however, colorectal cancer screening was not defined. Frank, Swedmark, and Grubbs (2004) studied colorectal screening among African American women only. Among this group, while 35% had had some form of colorectal cancer screening, only 27% reported screening by colonoscopy.

One study looked at when to stop colorectal cancer screening in the elderly. Pasetto and Monfardini (2007) studied at what age screening was no longer beneficial. Results showed that screening in ages > 75 was beneficial only when comorbidities were low and threat of neoplasm was high.

Health Belief Model

The health belief model identifies constructs related to one's perceptions of different health situations and the ability to handle or meet health challenge. In this study, the

health belief model constructs were assessed to identify possible relationships to past screening by colonoscopy and intent to screen by colonoscopy. Correlation analyses did not show any significant relationships between health belief model constructs and past colonoscopy nor intent to screen. An independent *t*-test, however, did show significant mean differences in barriers and those who reported having had a colonoscopy and those who reported not ever having had a colonoscopy. Further, a regression analysis found that the constructs with the most influence for intention to screen were barriers and seriousness. This suggests that men who reported having had a colonoscopy or those with higher scores for intent to screen identified fewer barriers to accessing prevent screening. It also suggests that perceived barriers and perceived seriousness of colorectal cancer had a greater influence for intent to screen than any other construct. This is consistent with work by Jacobs (2002) who found that first degree relatives of persons with colorectal cancer were more likely to participate in colon screening if perception of barriers was low and perceived seriousness was high. Ueland, Hornung & Greenwald (2006) found that while perceived seriousness increased after an educational program on colorectal cancer along with the increased need for prevention. Screening for colorectal cancer in persons with family history of colorectal cancer did not increase in those who perceived seriousness and susceptibility as only average risk (Palmer, et al., 2007) The health belief model was used to guide multiple research studies in relation to colorectal screening. Many studies looked at barriers to colorectal screening of any type (Holmes-Rovener, et al. 2002; Rawl, Menon, Champion, Foster, & Skinner, 2000; Janz, Wren, Schottenfeld, & Guire, 2003; Wackerbarth, Peters & Haist, 2005) with multiple barriers

being identified and intent to screen low. Low identified barriers and increased benefits and self-efficacy were predictive of use of fecal occult blood test and colonoscopy (Menon, et al., 2003). High scores for perceived severity and low perceived self-efficacy were found to be related to low intent to screen for colorectal cancer; however, benefits and barriers showed no relationship to screening (Gipsh, Sullivan, & Dietz, 2004; Hay et al., 2003). Later studies guided by the Health Belief Model focused on lack of knowledge (Greenwald, 2006), low health literacy (von Wagner, Semmier, Good & Wardle, 2009) and geographical location in relation to low health literacy (Campo et al., 2008) as barriers to colorectal cancer and used education interventions in hopes of increasing intent to screen. In each study, participants reported an increased desire to screen for colorectal cancer.

Only two studies were found that looked at colorectal cancer screening in African Americans that were guided by the health belief model; one of which studied only African American women. Green & Kelly found that African American men rated perceived risk as high and African American women rated barriers as high. However, screening by any method was high among participants. In African American women alone, Frank, Swedmark and Grubbs (2004) found that women who perceived greater susceptibility, benefits and self-efficacy had higher reports of screening compliance. One additional study was found that looked at barriers to health care and African American men but was not specific to colorectal cancer and did not identify use of the health belief model (Ravenell, Whitaker, & Johnson, 2008).

Social Support and Colorectal Cancer Screening

It was the expectation of this study that social support would add to a person's intention to screen for colorectal cancer. However, in this study, social support did not significantly add to a person's intent to screen. Very little research was found related to social support and colorectal cancer screening or even preventive screening. Social support was found to be associated with healthy diet and colorectal cancer screening in African American church members (Thrasher, Campbell & Oates, 2004). An increase in fecal occult blood test, pap smears, mammography, and healthy diet were seen when social support was encouraged among low income Latina women (Larkey, 2006). Honda and Kagawa-Singer (2006) found a relationship to adherence to colorectal cancer screening and family and friend social support in Japanese Americans. Fowler (2007) identified social support among African American women and mammography use; social support was also strongly tied to cultural awareness and responsibility.

Limitations and Future Research

Several study limitations need to be addressed. First, the majority of participants in this study were employed within a major medical facility and was employed full or part time. This may have skewed the data since it would be expected that those employed would have medical insurance to cover cost of colonoscopy. Also, working in a medical facility may be an additional encouragement to seek preventive screening. Additionally, it is expected that those aged 65 years and older have Medicare and therefore would have

no financial constraints to receiving colorectal cancer screening. This study did not address the issue of what specific barriers may be identified by those who had not been screened by colonoscopy. Identifying specific barriers may lead to ways to overcome these barriers and to increase screening rates. This study addressed colorectal cancer screening by colonoscopy only, since screening by colonoscopy has been identified as the gold standard for colorectal cancer screening. Other studies have identified colorectal cancer screening as any one of three ways, including fecal occult blood test, sigmoidoscopy, or colonoscopy. Therefore, screening rates may have been even higher if those not reporting colonoscopy had been screened with fecal occult blood test or flexible sigmoidoscopy. To further validate the findings of this research, additional studies of colorectal cancer screening and African American men that include the constructs of the health belief model needs to be undertaken. Lastly, many of the studies on colorectal cancer screening are several years old and reflect earlier screening habits. It would be beneficial to identify screening trends that may currently exist. Education and promotion based on older data may not accurately assist in increasing colorectal cancer screening.

Implications for Nursing

In this study, barriers to colorectal cancer screening and seriousness of disease were the health belief model variables found to be significant to intent to screen for colorectal cancer. Therefore, identifying barriers to screening and communicating the seriousness of colorectal cancer to the public may help to further preventive screening practices. Nursing is at the core of health care and is positioned to be in constant contact with

individuals accessing health care, thereby allowing nurses access to assess for barriers that may be present and disseminate needed information about colorectal cancer and screening.

Summary

Screening rates for colorectal cancer among African American men continues to be lower than those for Whites. However, as this study has shown, colorectal cancer screening rates among African American men who are employed or are receiving Medicare are higher than the national average screening rates.

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APPENDIX A
SURVEY TOOL
HEALTH BELIEFS

Read each statement carefully. Circle the number that tells how you feel about each statement.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. It is very likely I will get colorectal cancer in the future.	1	2	3	4	5
2. There is a good chance I will get colon cancer in the next 10 years	1	2	3	4	5
3. My chances of getting colorectal cancer are great	1	2	3	4	5
4. I am more likely than the average person to get colorectal cancer	1	2	3	4	5
5. The thought of colorectal cancer scares me	1	2	3	4	5
6. When I think about colorectal cancer, my heart beats faster	1	2	3	4	5
7. I am afraid to think about colorectal cancer	1	2	3	4	5
8. Problems I would have with colorectal cancer would last a long time	1	2	3	4	5
9. Colorectal cancer would hurt my life with my partner	1	2	3	4	5
10. If I had colorectal cancer my whole life would change	1	2	3	4	5

11. If I developed colorectal cancer, I would not live longer than 5 years	1	2	3	4	5
12. If I had regular check-ups to find colorectal cancer, I would feel good	1	2	3	4	5
13. If I had regular check-ups to find colorectal cancer, I wouldn't worry as much about cancer	1	2	3	4	5
14. Having regular check-ups to find colorectal cancer will allow me to find cancer early	1	2	3	4	5
15. If I have regular check-ups to find colorectal cancer, I will decrease my chance of dying from colorectal cancer	1	2	3	4	5
16. If I have regular check-ups to find colorectal cancer, I will decrease my chances of needing major or body changing surgery if colorectal cancer occurs.	1	2	3	4	5
17. If I have regular check-ups to find colorectal cancer, it will help me to find something that may be cancer early.	1	2	3	4	5
18. I do not like to talk about colorectal cancer.	1	2	3	4	5
19. Having regular check-ups to find colorectal cancer will make me worry about colorectal cancer.	1	2	3	4	5
20. Regular check-ups to find colorectal cancer will be embarrassing to me.	1	2	3	4	5
21. Regular check-ups to find colorectal cancer will take too much time.	1	2	3	4	5
22. Regular check-ups to find colorectal cancer will be unpleasant.	1	2	3	4	5

23. Having regular check-ups to find colorectal cancer will cost too much money.	1	2	3	4	5
24. I want to find health problems early.	1	2	3	4	5
25. Having good health is important to me.	1	2	3	4	5
26. I search for new information to improve my health.	1	2	3	4	5
27. I feel it is important to carry out activities that will improve my health.	1	2	3	4	5
28. I know how to get regular check-ups to find colorectal cancer.	1	2	3	4	5
29. I am sure that I could schedule regular check-ups to find colorectal cancer if I needed them.	1	2	3	4	5
30. If I were to develop colorectal cancer, I would continue to get regular check-ups.	1	2	3	4	5
31. I can recognize normal and abnormal changes in my bowel habits.	1	2	3	4	5
32. I will be able to find colorectal cancer early if I have regular check-ups.	1	2	3	4	5

Social Support Survey

Next, I am interested in how you feel about the following statements. Read each statement carefully. Circle the number that tells how you feel about each statement.

	Very Strongly Disagree	Strongly Disagree	Mildly Disagree	Neutral	Mildly Agree	Strongly Agree	Very Strongly Agree
	1	2	3	4	5	6	7
33. There is a special person who is around when I am in need							

34. There is a special person with whom I can share my joys and sorrows	1	2	3	4	5	6	7
35. My family really tries to help me	1	2	3	4	5	6	7
36. I get the emotional help and support I need from my family	1	2	3	4	5	6	7
37. I have a special person who is a real source of comfort to me	1	2	3	4	5	6	7
38. My friends really try to help me	1	2	3	4	5	6	7
39. I can count on my friends when things go wrong	1	2	3	4	5	6	7
40. I can talk about my problems with my family	1	2	3	4	5	6	7
41. I have friends with whom I can share my joys and sorrows	1	2	3	4	5	6	7
42. There is a special person in my life who cares about my feelings	1	2	3	4	5	6	7
43. My family is willing to help me make decisions	1	2	3	4	5	6	7
44. I can talk about my problems with my friends	1	2	3	4	5	6	7

Getting a Colonoscopy to Check for Colorectal Cancer

Read each statement carefully. Circle the number that tells how you feel about each statement.

	Definitely will not	Most likely will not	Neutral	Most likely will	Definitely will
45. I intend to have a colonoscopy to screen for colorectal cancer in the next 6 months	1	2	3	4	5
46. I will try to have a colonoscopy to screen for colorectal cancer in the next 6 months	1	2	3	4	5
47. I want to have a colonoscopy to screen for colorectal cancer in the next 6 months	1	2	3	4	5
48. How likely is it that you will have a colonoscopy to screen for colorectal cancer in the next 6 months?	1	2	3	4	5

APPENDIX B

PERSONAL HISTORY FORM

1. Age in years: _____

2. Marital Status: (check one)

- Married
- Living with partner
- Divorced/Separated
- Widowed
- Never married

3. Living Situation:

Total number of people in household _____
(including yourself and others living with you)

Of the number of people you listed, how many are:

Spouse? _____
 your dependent children under the age of 16? _____
 your parent- father? _____
 your brothers? _____
 your sisters? _____
 other relatives? _____
 nonrelatives? _____

4. Education (level of school completed, check one)

- less than 7th grade
- Junior High (9th grade)
- Partial High School (10th or 11th grade)
- High School Graduate
- Partial College (at least one year or specialized training)
- College graduate
- Graduate Degree

5. Income level (check one)

- less than 15,000.00
- 15,000.00 to 25,000.00
- 25,100.00 to 35,000.00

- 35,100.00 to 50,000.00
- 50,100.00 to 75, 000.00
- more than 75, 000.00

6. Religious Affiliation (check one):

- None
- Christian (Protestant)
- Catholic
- Jewish
- Other

7. Attendance at place of worship (check one):

- Never
- Occasional
- Regular

8. Current employment status (check one):

- Full time (32 hours or more a week)
- Part time (less than 32 hours a week)
- Occasionally- work when I want but no set hours
- Unemployed but looking for work
- Retired
- Disabled
- Student

9. Are you a member of any type of social club? (such as Oasis club, bowling league, dance club)

- Yes
- No

10. Do you get an annual:

- | | |
|----------------------|--|
| Physical Exam? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Digital Rectal Exam? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Prostate Exam? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Flu shot? | <input type="checkbox"/> Yes <input type="checkbox"/> No |

11. Have you ever had a colonoscopy? Yes No

A colonoscopy is where a doctor looks at the inside of your colon with a flexible tube that has a light and a camera on the end.

APPENDIX C

CONSENT FORM

UNIVERSITY OF NORTH CAROLINA AT GREENSBORO

CONSENT TO ACT AS A HUMAN PARTICIPANT: LONG FORM

Project Title: Health Belief Model, Social Support, and Intent to Screen for Colorectal cancer in Older African American Men

Project Director: Mary Griffin (doctoral student) and Carolyn L. Blue (faculty)

Participant's Name: _____

What is the study about?

This is a research project. This research project is looking for reasons why African American men who are 50 years old and older may or may not get checked for colorectal cancer. You will be a part of a group of older African American men who will be asked to fill out a survey. This survey asks about your beliefs about colorectal cancer. It asks about having someone to talk to about cancer. It also asks if you think you will get a test to check for colorectal cancer in the next six months. You will also be asked to fill out a survey about personal information such as your age, education, and how much income you have each year.

Why are you asking me?

I have asked you to be in this study because you are an African American man who is 50 years or older. African American men have a higher risk for getting colorectal cancer. They also have a higher risk of dying from colorectal cancer than other races, ethnic groups, or women. The chance of getting colorectal cancer goes up as you get older.

What will you ask me to do if I agree to be in the study?

You will be asked to fill out two forms if you agree to be in this study. One form will be asking about your beliefs about colorectal cancer. It also asks if you have someone that you talk to about problems or concerns and if you think you will have a test to check for colorectal cancer in the next six months. We will also ask about your age, income each year, education, and other personal information. It should take about 30 minutes to fill out the survey.

Are there any audio/video recording?

There will be no audio or video recordings made.

What are the dangers to me?

The Institutional Review Board at the University of North Carolina at Greensboro has determined that being in this study poses minimal risk to you. Bringing up the topic of cancer and colorectal screening may perhaps increase stress and feelings of embarrassment. If you have any concerns about your rights, how you are being treated or if you have questions, want more information or have suggestions for the study, please contact Eric Allen in the Office of Research Compliance at UNCG at (336) 256-1482. Questions, concerns or complaints about this project or benefits or risks associated with being in this study can be answered by Mary Griffin who may be contacted at 704-596-7120 or emailing her at mjgriff3@uncg.edu. You can also contact Dr. Carolyn Blue at 336-334-4903 or clblue2@uncg.edu

Are there any benefits to me for taking part in this research study?

You may benefit by knowing that it is good to be screened for colorectal cancer.

Are there any benefits to society as a result of me taking part in this research?

Knowing why older African American men may not get screened for colorectal cancer may help us develop ways to increase colorectal cancer screening by African American men. Screening may lead to a decrease in deaths due to colorectal cancer.

Will I get paid for being in the study? Will it cost me anything?

There is no cost to you except for possibly travel expenses to and from a meeting place to fill out surveys. You will be given a gift card of \$20.00 to a local chain store after you fill out the two survey tools to help pay for your gas and time.

How will you keep my information confidential?

Consent forms and surveys will be kept in a locked file cabinet in the researcher's home office. Information from the surveys will be entered into a computer and will also be stored on a jump drive and kept in a locked file cabinet drawer in the researcher's home office. All information obtained in this study is strictly confidential unless disclosure is required by law. The surveys will be shredded after five years. Information on the computer and jump drive will be erased after five years.

What if I want to leave the study?

You have the right to refuse to be in the study. You can also leave the study at any time without penalty. It will not affect you in any way if you leave the study. You also may request that any of your information be destroyed unless it has your name removed from it if you choose to leave.

What about new information/changes in the study?

If new information relating to the study becomes available, and this information may affect your desire to continue to be in the study, this information will be provided to you.

Voluntary Consent by Participant:

By signing this consent form you agree that you have read it or that it has been read to you. You also agree that you fully understand what the study is about, what you will be asked to do, benefits, and any dangers to you. You are willing to consent to take part in this study. All of your questions concerning this study have been answered. By signing this form, you are agreeing that you are 18 years of age or older and are agreeing to participate in this study described to you by Mary Griffin.

Signature: _____ Date: _____

Witness: _____ Date: _____

APPENDIX D

RECRUITMENT FLYER

YOU Can HELP!

By telling us what you know about colorectal cancer

We are trying to find out about screening for colorectal cancer in older African American men. The findings from the study may help us to develop ways to increase screening for colorectal cancer in African American men.

If you are a:
-Black male,
-Age 50 years and older,
-able to speak English,
and would like to volunteer,

Please contact
Mary Griffin, PhD Student
704-619-5950
Email: mjgriff3@uncg.edu
School of Nursing
The University of North Carolina at Greensboro

Being in this study will require about 30 minutes of your time. You will be asked to fill out a survey on your feelings related to colorectal cancer, if you have someone you can confide in, and if you will get screened for colorectal cancer. We can meet at your home or at a public place. You will be compensated for your time with a \$20.00 gift card to a local chain store.

