Increasing Practitioner Awareness of Racial Variations in Colorectal Cancer Screening Recommendations in African Americans

Andrea King

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Increasing Practitioner Awareness of Racial Variations in Colorectal Cancer

Screening Recommendations in African Americans

Andrea King

University of Massachusetts Amherst

College of Nursing

Capstone Chair: Dr. Anna L. Paskausky
Capstone 2nd Chair: Dr. Pamela Aselton
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Abstract

Background: According to the Center for Disease Control (2014), colorectal cancer (CRC) is the second leading cause of cancer-related deaths in the United States. African Americans are more likely to be diagnosed and die from this form of cancer than any other racial group.

Methods: This quality improvement project focused on educating providers on the importance of recommending colorectal cancer screening for African Americans staring at 45 years of age. A group of seven health care providers who provide health care services to active duty soldiers, dependents, retirees, and government employees were exposed to an educational session based on a toolkit developed by the American College of Gastroenterology. A repeated measure (paired t-test) determined if differences in knowledge after exposure to the educational toolkit were significant from pre-test scores.

Results: Based on a 100 percent point scale, participants scored an average of 49% before exposure to the training and an average of 86% after attending the training session. A repeated measure t-test determined that the 37% increase between pre-tests and post-test scores was statistically significant ($t=13.0, p=.0001$). Participants strongly agreed that the training was useful for increasing knowledge of evidence-based CRC screening recommendations in African Americans.

Conclusion: The training session were effective in increasing the knowledge of colorectal cancer screening for African Americans. Post-test findings suggest that the session met the goal of increasing awareness of early colorectal cancer detection for African-Americans. This quality improvement project can serve as a foundation for increasing provider awareness and knowledge of colorectal cancer screening in African Americans age 45-49 in other clinical settings.

Key Words: Colon Cancer, Screening, African America
Introducing and Background

According to the Centers for Disease Control and the American Cancer Society colorectal cancer (CRC) is the second leading cause of cancer-related deaths and the third most common type of cancer in the United States despite being preventable (Center for Disease Control [CDC], 2014; American Cancer Society, 2016 [ACS]). The ACS estimates that 136,830 people will be diagnosed and 50,310 will die from colorectal cancer during the 2017 calendar year. On average, the lifetime risk of developing colon cancer is about one in 20 (5%), however, this varies widely according to individual risk factors including age, race, diet, smoking, and family history of cancers (ACS, 2016). More than 90% of colorectal cancers occur in people older than 50 and the average age of diagnosis in the United States is 72 years. However, CRC can occur in young adults at an average rate 3% per year (Siegel, et al., 2017). Over the past decade, rates for colon cancer in adults 50 and older have been declining, while incidence rates (new cases) in adults younger than 50 years have been increasing (Siegel, et al., 2017).

Statistics have illustrated that African Americans have a higher risk of developing colorectal cancer when compared to other demographic groups (DeBarros & Steele, 2013). Significant health disparities exist in CRC morbidity and mortality rates, particularly for African Americans are 20% more likely to be diagnosed and twice as likely to die from CRC than Caucasians, Asians, Hispanics and Native Americans. The Colon Cancer Alliance suggests that disparities can be attributable, in part, to disproportionate screening (Lansdorp-Vogelaar, Kuntz, Van- Ballegooijen, Zauber & Jemal, 2012, ACS, 2016). Multiple studies support the importance of adhering to clinician recommendations to obtaining colorectal cancer screening, particularly among African Americans for whom the prevalence, incidence and mortality rates of CRC are significantly higher than other racial groups (Garcia, Buylla,
Nicolas-Perez & Quintero, 2014; Williams et al., 2016). African Americans are significantly more likely than any other racial groups in the United States to die from this form of cancer (Laiyemo et al., 2010; Bass et al., 2012).

Brittain, Loveland-Cherry, Northouse, Caldwell and Taylor (2012) reported that African Americans suffer a 20% greater incidence and 45% higher mortality rates compared to non-Hispanic whites. Prior to 1980, African Americans had comparatively lower incidence and mortality rates (Lansdorp-Vogelaar, Kuntz, Van-Ballegooijen, Zauber & Jemal, 2012). However, this trend has changed significantly over the past few decades. African-Americans are more likely to be diagnosed during advanced stages when fewer treatment options are available and consequently a lower chance of survival (Williams et al., 2016; Dimou Syrigos & Wasif, 2009). The 5-year survival rate for colon cancer was estimated at 56.6% for African-Americans versus 62.2% for White Americans (Siegel, Miller & Jemal, 2017).

Screening rates for CRC are also quite variable between racial groups. According to Seigle et al, (2017), CRC screening for African Americans over 50 years of age is estimated at 61.8% versus 65.4% for White Americans. Screening rates are lowest for Native Americans (54%), Hispanics (49.9%), and Asians (49.4%) while CRC diagnosis and related mortality are also significantly lower for these groups. The disparate rates of diagnosis, morbidity, and five-year survival and mortality among African Americans highlight the importance of supporting the practice of earlier screening for this population.

Colorectal cancer screening among African Americans closely relates to provider recommendations, patient beliefs, and awareness (Garcia et al., 2014; Williams et al, 2016). The clinic setting for this quality improvement project as yet to enact the recommended colorectal cancer screening guidelines to screen African Americans starting at age 45. The relationship
between provider recommendation and the patients’ decision to screen and has an impact on reducing morbidity and mortality from CRC in African Americans therefore is important to increase practitioner awareness on evidence-based recommendations for CRC screening of African-Americans.

Problem Statement

African Americans are significantly more likely to develop colorectal cancer at an earlier age than other racial groups (Laiyemo et al., 2010). Despite evidence-based recommendation by the American College of Gastroenterology to screen African Americans for colorectal cancer starting at 45 years of age, screening rates for this demographic group remains low (Williams et al., 2016). Low screening rates increases colorectal cancer morbidity and mortality rates in African Americans. The current recommended age to begin CRC screening of African Americans is 45, compared to age 50 for all other racial groups (Williams et al., 2016).

Review of the Literature

A comprehensive search of the literature using the term colorectal cancer in African Americans included the following databases: PubMed of the National Library of Medicine and Cochrane and Cumulative Index of Nursing and Allied Health Literature (CINAHL) for the period of 2006-2016. The search terms were then cross-matched with CINAHL and PubMed. Inclusion criteria required that papers were not repeated, published between 2006-2016, peer reviewed and written in the English language. This search retrieved 53 articles. Of those 12 publications met all inclusion criteria and were used for this literature review.

A synthesis of the literature on colorectal cancer among African Americans revealed that there are several contributing factors that have been consistently linked to low CRC screening rates in African Americans (Powe, Faulkenberry & Harmond, 2010). Factors contributing to this
INCREASING PRACTITIONER AWARENESS

include: poor knowledge of the benefits of colorectal cancer screening, fear, anxiety and lack of knowledge of screening guidelines and lack of provider recommendation (Williams et al., 2016; Garcia et al., 2014). Beliefs and attitudes of patients were most frequently cited as being associated with low colorectal cancer screening rates (Palmer, Midgette & Dankwa, 2008; Thompson, Bugbee, Meriac & Harris, 2013). Patient beliefs regarding personal risk, perceived benefits and perceived barriers significantly influenced participant colorectal cancer screening behaviors (Palmer, Midgette & Dankwa, 2008; Thompson, Bugbee, Meriac & Harris, 2013). Other studies also found that embarrassment, negative feelings about invasive procedures and mistrust of the medical system heavily influence intention to screen for colorectal cancer among members of the African American community (Brittain et al., 2012; Bass et al., 2011; Purnell et al., 2010).

Interventions

A review of the literature on colorectal cancer screening interventions among African Americans revealed that provider recommendations are associated with higher colorectal screening rates. The most effective intervention for increasing colorectal cancer screening rates rely on health care provider recommendations (Garcia et al., 2014). Providers have significant influence on patient decision-making (Dolan et al., 2014). According to Dolan et al., (2014) provider recommendation is associated with higher colorectal screening rates. An intervention described by Dolan et al., (2014) consisted of training physicians in communicating with ethnically diverse populations on the importance of being screened for colorectal cancer. A study done by Klabundle et al. (2006) reported that patients and physicians cited lack of patient awareness and physician recommendation as barriers to obtaining a colorectal cancer screening.
This study showed that only 10% of unscreened patients who had a primary care appointment within the last year actually received a provider recommendation.

Provider recommendation for colorectal cancer screening has a significant influence on increasing screening rates among African Americans (Maen, 2014). Results of a Veteran Administration System showed that African Americans were 1.3 times more likely than Whites to receive CRC screening when recommended by providers (Maen, 2014). Given this, others have sought to understand the effect of different approaches to educating providers on strategies to increase CRC screening rates including the effects of different educational approaches for increasing CRC screening rates which resulted in a significant increase in colonoscopy referrals and subsequent screening rates (Basch et al. 2015). Resnicow et al. (2014) noted in a study that 188 participants or 21.3% sought a colonoscopy within one year after being exposed to newsletters that highlighted information on colorectal cancer in African Americans.

Primary care providers have significant influence on patient decision-making around health care decisions such as colorectal cancer screening (Dolan et al., 2014). This DNP capstone quality improvement project consisted of delivery of an educational based intervention in a military health clinic in which the focus was to increase provider knowledge of racial variations related to colorectal cancer screening in African Americans starting at 45 years of age.

**Theoretical Framework**

Behavioral change is more likely to occur if the intervention is based on an evidence based theoretical framework. The Health Belief Model (HBM) guided this study and was developed by social psychologists Hochbaum, Rosenstock and Kegels in the 1950’s. This model attempts to explain and predict health behaviors by focusing on the attitudes and beliefs of individuals. The framework takes into account the socio-psychological, demographic and
structural variables that affect health beliefs and perceptions of susceptibility, severity, benefits and barriers to a disease in shaping health behaviors (Hochbaum, Rosenstock & Kegel, 1952) (See Appendix A).

Researchers typically apply The Health Belief Model (HBM) to examine behaviors among patient and vulnerable populations and infrequently to study medical practitioners. One case-control study used the HBM to study administrative personnel (n = 156) of a major Iranian medical school (Moattar, 2014). All participants were tested for their level of knowledge and perceptions of barriers in screening. While they were all at average risk of CRC cancer, the results of the study revealed that most of the subjects were not interested in colorectal screening tests and were likely to cite barriers for screening.

The most perceived barriers reported by the administrative personnel for CRC screening were lack of time and low perceived susceptibility respectively. Participants assigned to the experimental group attended an educational intervention program. Knowledge scores among the intervention group increased from the pretest (1.2 ± 4.7) to post-test (11.2 ± 1.9) which was significantly higher than the control group pretest (1.7±3.9) and post-test (2.6 ± 3.8) scores (Moattar, 2014). Results highlighted the importance of education and awareness of CRC screening among health care professionals. Results of the study indicate that the HBM framework is used a guide when developing, providing, and examining an educational intervention for changing CRC attitudes, knowledge, and behaviors of health care providers.

Provider perceptions also have a significant impact on colorectal cancer screening recommendations. According to Hudson et al (2012), lower rates of screening for CRC among African Americans were impacted by: provider perceptions of susceptibility, perception of disease severity and perceptions regarding the value of screening in reducing risk. Results of the
study showed that provider recommendations for colorectal cancer were influenced by the patient’s age, race, sex, education, previous refusal, socio-economic status, and patient knowledge of colorectal cancer screening. Personal obstacles including fear, mistrust, embarrassment, discomfort and fatalism (Bass et al, 2011).

Studies suggest that many African Americans commonly believe that health is dependent on fate and destiny. They are more likely to hesitate seeking medical treatment for fear of being diagnosed with a serious illness such as cancer and may seek medical screening for colorectal cancer, only if symptoms are present such as blood in the stool (Harper et al., 2013; James, Daley & Greiner, 2013; Lasser, Avanian, Fletcher & Good, 2008). The patterns of beliefs and attitudes regarding risk and susceptibility of CRC among African Americans were critical to this quality improvement project. The HBM was used as a theoretical guide for improving provider knowledge and attitudes regarding racial variations related to colorectal cancer and the importance of earlier screening for African Americans under 45 years of age.

**Project Design and Methods**

This quality improvement project aimed to increase practitioner awareness, provider recommendations for colorectal cancer screening and subsequently increase colorectal cancer screening rates among African Americans age 45-49 enrolled in a primary care clinic. The educational session was delivered through a power point presentation. (See Appendix B). A pre-test and post-test assessed knowledge of colorectal cancer screening guidelines for African Americans and effective strategies for increasing colorectal cancer screening rates. (See Appendix D). The pre-test and post-test was administered to providers who attended the training session. The tests were administered immediately before and after attending the training session. The tests were used to assess whether there was an increase in the level of knowledge and
attitudes regarding early CRC screening among African American patients at the clinic.

Following the post-test, participants completed an evaluation of the session to report their level of agreement on five items. Responses to the five statements were based on a five point Likert scale, allowing a score between 1 to 5 points per statement, for a total score of 5 to 25 points. Higher scores indicated a higher level of agreement.

**Setting and resources**

The setting for the targeted population health assessment is a military health clinic located on Camp Zama, Japan. Camp Zama, Japan, is a military installation that is operated by the U.S. Army. Camp Zama is located in the cities of Zama and Sagamihara, in Kanagawa Prefecture, Japan about 25 miles southwest of Tokyo.

**Population and Community.** There were several key stakeholders who were involved in the assessment, data collection and implementation of this project. The Community Health Promotion Council provided the foundation for engaging with stakeholders including various military community organizations. The Community Health Promotion Council (CHPC) was organized by the US Army to provide a comprehensive approach to health promotion and resilience. The CHPC identifies and recommends strategies to eliminate redundancies and voids in programs and services by evaluating population needs, assessing existing programs and coordinating targeted interventions. The doctor of nursing practice student (DNP) conducted the capstone project with the support of CHPC stakeholders.

The population consisted of active duty soldiers, dependents, retirees, Department of Army civilians and contractors. One hundred eight-nine males are between 45-64 years of age. Eleven males are age 65 and older. One hundred nineteen females are between the ages of 45-64. Thirty-one females are age 65 and older. The number of African Americans age 45-49
enrolled in the health care clinic, N = 28. The population of interest for the purpose of this project are the health care providers (physicians, nurse practitioners, registered nurses and medics) who deliver healthcare services at the clinical site.

**Organizational analysis of project site.** This Army Health clinic provides medical care to active duty soldiers and dependents, retirees, government employees and contractors. The clinic provides outpatient services such as pharmacy, lab, immunizations, preventive medicine, family practice, limited radiology, optometry, physical therapy, and behavioral health services. Clinical staff consists of three physicians, two nurse practitioners, two registered nurse case managers, six medics and two triage nurses.

**Facilitators and barriers.** There were several facilitators and barriers that influenced the implementation of the quality improvement project. A gap analysis revealed no clinic protocol to recommend colorectal cancer screening for African Americans starting at age 45 and no community-wide awareness campaigns for colorectal cancer screening. In the project site military health clinic there was an absence of documentation of provider recommendation for colorectal cancer screening in African Americans 45-49 years of age.

During implementation facilitators identified in the clinic included a captive audience of medical professional with direct contact with patients on a daily basis. Engagement with clinic stakeholders provided the opportunity for education and training of clinic healthcare providers about current colorectal cancer screening guidelines, assessment of risk factors, and influence of provider recommendation for colorectal cancer screening (Sarfaty et al, 2011).

**Goals, Objectives, and Expected Outcomes**

The goal of the quality improvement project was to increase practitioner awareness of race-based variations among African Americans in CRC morbidity, mortality and screening
recommendations. In order to meet this goal, the objective included the development of a presentation that provided training to healthcare providers on colorectal cancer screening guidelines for African Americans starting at age 45. This educational intervention was based on the use of a tool-kit developed by the College of Gastroenterology which was provided to the clinic staff.

**Implementation**

The quality improvement project focused on the knowledge, behaviors and attitudes of the health care providers in an effort to improve CRC screening awareness in African Americans. The sample (N = 7) included one physician, two nurse practitioners, three registered nurses and one medic who participated in the training intervention. Each participant was a medical professional that directly interacted with the patient population of interest. The session took approximately 60 minutes. The pre-test, post-test and evaluation questions took approximately 10 minutes to answer. All tests were completed in the training space, recorded on paper and returned to the doctor of nursing practice (DNP) student immediately after completion.

**Cost-Benefit Analysis**

Costs estimates for implementing the quality improvement project to increase colorectal cancer screening rates were minimal and only included the cost of printing handouts. There were no capital investments for this project. Staff training to increase awareness about variable colorectal cancer screening recommendations was provided by the DNP student. Training design included use of a toolkit designed by the American College of Gastroenterology which is included in Appendix E. The educational session was held within the clinical setting, which offset location costs.

The benefits for increasing practitioner awareness on colorectal cancer screening in
African Americans are potentially substantial. Increasing awareness on colorectal cancer screening can lead to an increase in provider recommendations. Screening can lead to a reduction in colorectal cancer morbidity and mortality and is a cost effective method (Carethers, 2015). According to Campbell, Coates and Chattopadhyay (2010), the estimated cost of colorectal cancer treatment will be $14.2 billion by 2020 up from $7.49 billion in 2000. The costs of treatment will increase as the population ages. The current costs of CRC treatment for African Americans is unknown. In a study by Wright et al, (2007) the costs of CRC treatment for African Americans was over 15% higher than White Americans. The costs of screening are significantly less than treatment and is less expensive than treatment at a later-stage of the disease (Williams et al., 2016). According to Campbell et al. (2010) regular screening for adults over 50 years of age can result in an average cost savings of $10,000-$30,000 per life year. Given the significant higher cost of treatment in African Americans, cost savings of colorectal cancer screening is assumed to be higher in this population. Screening for colorectal cancer averts treatment for the disease which in turn drastically reduces the direct medical costs for treatment, hospital days and loss of wages (Yabroff, Borowski & Lipscomb, 2013).

**Timeline**

The project, inclusive of approval, preparation, delivery, data gathering, and analysis took place over a 6-month period. The actual training session, pre-test, post-test and evaluation took place on the same day and required less than 90 minutes to complete from start to finish.

**Ethics and Human Subjects Protection**

The Human Research Protection Office at University of Massachusetts at Amherst reviewed the quality improvement project and indicated that Institutional Review Board approval was not required. Participation in the training was voluntary. Information regarding the purpose
of the quality improvement project, risks, benefits, privacy, confidentiality, anonymity and the voluntary nature of participation was provided to participants prior to delivery of the educational intervention. This allowed participants to make a personal and informed decision whether to participate in this quality improvement project. Authorization was granted from the clinics’ medical director to implement the quality improvement project in the military health clinic.

All participants received the same information and directions. No compensation was offered for participation. By completing the tests and rating forms, participants were assumed to offer their consent. To protect confidentiality and anonymity, no identifying information was asked on tests or rating sheet. Furthermore, answers were only reported in the aggregate. The laws and regulations including the Health Insurance Portability and Accountability Act (HIPPA), University of Massachusetts Institutional Review Board and agreements drafted by the clinic site were followed.

Data Analysis

The DNP student analyzed the differences between the level of knowledge in pre-tests and post-tests to identify whether the educational session was effective in changing the knowledge and attitudes towards CRC screening in African Americans age 45-49. Differences were compared using a paired t-test in SPSS software to determine whether the mean of a dependent variable (score) in the group is different before and after attending the educational session. Specifically, the paired t-test is used to determine whether the mean difference in knowledge between two groups is statistically significantly different. Mean scores were calculated based on the number of questions answered correctly. Each of the five questions was given equal weight, worth 20 percentage points for a total of 100 percentage points.
Results

Seven medical professionals participated in the training session. The majority of respondents were Registered Nurses (43%) followed by Nurse Practitioners (29%). One Medic (14%) and one Physician (14%) participated in the training. Seventy-two percent were licensed in nursing (See Table 1).

Pre-test scores based on five questions ranged between 20 and 60 percent while post-test scores ranged between 60 and 100 percent. Before exposure to the training, the average score for all participants was approximately 49 percent. After exposure to the training session, the average score for the entire participant group increased to 86 percent. A repeated measure estimated that this 37 percent increase was statistically significant (t=13.0, p=.0001). This direction of change clearly indicated that exposure to the informational session resulted in an improvement in knowledge scores. The pre-test and post-test scores and statistical outcomes are summarized in Table 2.

Table 1. Description of Respondent Occupations (N=7)

<table>
<thead>
<tr>
<th>Occupation</th>
<th>N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medic</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>Nurse Practitioner</td>
<td>2</td>
<td>29</td>
</tr>
<tr>
<td>Registered Nurse</td>
<td>3</td>
<td>43</td>
</tr>
<tr>
<td>Physician</td>
<td>1</td>
<td>14</td>
</tr>
</tbody>
</table>
Table 2. Comparison of average Pre-Test and Post-Test scores for all participants: T-test (N=7)

<table>
<thead>
<tr>
<th>Test</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Δ</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Test</td>
<td>7</td>
<td>48.57</td>
<td>15.73</td>
<td>37.14 (7.55)</td>
<td>13.00</td>
<td>.000</td>
</tr>
<tr>
<td>Post-Test</td>
<td>7</td>
<td>85.71</td>
<td>15.11</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notable variations were observed in the mean scores and gains made in scores by occupation. While the entire group experienced close to 40% points gains, differences in pre-test and post-test scores by occupation were identified (See Table 3). The entire group demonstrated significant gains in knowledge, however, the highest pre-test and post-test scores were achieved by the Physician and Registered Nurses.

Table 3. Pre-Test and Post-Test Scores by Profession: ANOVA (N=7)

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Pre-Test</th>
<th>Post-Test</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medic</td>
<td>20.0</td>
<td>60.0</td>
<td>4.143</td>
<td>.137</td>
</tr>
<tr>
<td>Registered Nurses (RN)</td>
<td>60.0</td>
<td>93.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nurse Practitioners (NP)</td>
<td>40.0</td>
<td>80.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physician (MD)</td>
<td>60.0</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Pre-test results revealed that few participants (14%) correctly answered the question regarding the recommended age for CRC screening in African-Americans. By comparison, 86% correctly answered the question on the recommended age for screening on the post-test. Likewise only 14% correctly identified lack of recommendations by a health care provider as
the reason for not being screened in the pre-test. Seventy-one percent of the respondents answered this question correctly in the post-test.

The proportion of respondents who identified the preferred prevention tests increased from 57% to 71%, while identification of the preferred colorectal cancer detection test increased from 29% to 100 percent. All respondents were aware that prevention of colorectal cancer is a priority over detection pre-test and post-test (See Table 4).

**Table 4.** Percent of Correct Answers by Question: Pre and Post Intervention (N=7)

<table>
<thead>
<tr>
<th>Question</th>
<th>Pre-test</th>
<th>Post-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommended Age for CC Screening African Americans</td>
<td>14%</td>
<td>85%</td>
</tr>
<tr>
<td>PCP recommendation most Common Reason for not screening</td>
<td>14%</td>
<td>71%</td>
</tr>
<tr>
<td>Preferred Colorectal Cancer Prevention Test</td>
<td>57%</td>
<td>71%</td>
</tr>
<tr>
<td>Prevention Before Detection</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Preferred Colorectal Cancer Detection Test</td>
<td>28%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Attending the educational information session significantly increased knowledge scores from 49% at pre-test to 86% at post-test. This 37-point difference was highly significant (t=13.0, p = .0001). There was variation in pre-test and post-test scores achieved by occupation. The physician (100%) and registered nurse (93%) achieved the great gain within pre-test and post-test scores. Participants unanimously identified prevention as being a priority over detection and able to identify the preferred detection test. After attending the information session, post-test responses suggested that 15% did not report the correct recommended screening age of 45 for African Americans, while 29% did not identify provider recommendations as being the most important influence on screening nor the preferred CRC prevention test.
After completion of the post-test, participants were asked to evaluate their level of agreement on five items. The ratings capture the range of the respondents’ agreement or disagreement (See Appendix C). Ratings were based on a five point Likert scale of 1 to 5 in which 1 = strongly disagree, 2 = somewhat disagree, 3 = neither agree nor disagree, 4 = somewhat agree 5 = strongly agree. Descriptive measures (means and standard deviations) were measured for each question using SPSS. Scores quantified the extent to which the evaluators agreed that the stated objective was achieved. Descriptive (mean scores) allowed for comparing the average level of agreement with achieving stated objectives.

Results revealed a generally high agreement that the training was effective in improving knowledge, attitudes and understanding (M=4.63). Agreement scores for each item were not equal, and ranged between 4.43 and 4.86. The strongest agreement was received for increasing the respondent’s knowledge of colorectal cancer recommendations for African-American patients (M=4.86), while the lowest level of agreement was received for the potential value of on the community and patient population (M=4.43). (See Table 5.)
Table 5. Evaluation of Training Session (N=7).

<table>
<thead>
<tr>
<th>Question</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>This training session increased my knowledge about colorectal cancer-screening recommendations for African Americans.</td>
<td>4.86</td>
<td>.378</td>
</tr>
<tr>
<td>This training session will likely effect the way in which I make colorectal cancer screening recommendations.</td>
<td>4.71</td>
<td>.488</td>
</tr>
<tr>
<td>This training session will likely help the way in which I communicate the importance of screening to the patients for whom I care.</td>
<td>4.57</td>
<td>.787</td>
</tr>
<tr>
<td>This training session changed some of my attitudes about race-based variations in colorectal cancer screening for African Americans.</td>
<td>4.57</td>
<td>.787</td>
</tr>
<tr>
<td>This training session could be valuable to the community and patients for increasing an understanding about the importance of earlier colorectal cancer screening.</td>
<td>4.43</td>
<td>.787</td>
</tr>
<tr>
<td>All</td>
<td>4.63</td>
<td>.645</td>
</tr>
</tbody>
</table>

Rating Scale: 1=Strongly Disagree, 2=Somewhat Disagree, 3=Neither Agree nor Disagree, 4=Somewhat Agree, 5=Strongly Agree

All scores indicated high value. Healthcare providers who participated in the education session strongly agreed on the evaluation survey that the session was effective for improving knowledge, attitudes and understanding of CRC screening. Participants evaluated the session as being most valuable for increasing knowledge about evidence-based CRC screening recommendation specific for African Americans. Although rated the lowest level of agreement, the session was evaluated to be valuable to the community and patients.
Discussion

The goal of the quality improvement project was to increase practitioner awareness of race-based variations among African Americans in CRC morbidity, mortality and screening recommendations; the results from this project support that the intervention of provider education was effective in achieving this goal. The Health Belief Model served as the framework for the development of the quality improvement project.

The Health Belief Model was used to develop the educational intervention for changing CRC attitudes, increasing knowledge, and behaviors of health care providers. The results are consistent with those of previous studies. The HBM was shown to be an effective guide in developing the presentation and pre-test and post-test. The findings of exposure to the educational session resulted in a significant increase in knowledge among the participants.

Providers also verbalized that common reasons patients were reluctant to obtain colorectal cancer screening were related to fear, anxiety and lack of knowledge, which have been shown to be consistent findings in the research. The findings also emphasize the importance of increasing provider knowledge on the American College of Gastroenterology’s guideline for initiating colorectal cancer screening in African Americans starting at age 45.

Participants scored an average of 38% higher on the post-test, which suggested that the informational session was successful in increasing awareness of CRC screening, in spite of the small sample size of the study group. Outcomes support the conclusion that the training session was effective in increasing the knowledge of recommending colorectal cancer screening for African Americans at 45 years of age.
Post-test findings suggest that the session met the goal of increasing awareness of early colorectal cancer detection for African-Americans. It is anticipated that the observed increases in CRC awareness among the participants will translate to changes in screening recommendation behaviors. Discussion of the quality improvement results were shared with the DNP student’s preceptor and clinic medical director.

**Limitations and Recommendations**

This quality improvement project could be used as a model for implementing similar educational interventions in other health care settings. Due to the limitation of a small sample size, it recommended that the project be implemented with a larger number of participants in the future. Furthermore, although exposure to the educational session was effective in increasing immediate knowledge, it isn’t known how effective it will be for how long. Future studies would therefore need to track colorectal cancer screening rates in African Americans age 45-49 to examine long-term impact as well as provider recommendations.

**Conclusion**

African Americans are diagnosed with CRC at an earlier age and present at more advanced stages (Brittain et al., 2012). The evidence clearly supports the need for earlier colorectal cancer screening among African Americans, however providers at the project’s clinical site do not follow the American College of Gastroenterology guidelines for recommending colorectal cancer in Africans Americans starting at age 45. Earlier screening among African Americans leads to increase in life-years, decreases colorectal cancer disparities and reduces healthcare costs. The key to increasing colorectal cancer screening rates and initiating colorectal cancer screening starting at age 45 in African Americans, is provider recommendation. Provider recommendation for screening is essential in addressing colorectal
cancer disparities among African Americans.
.
The objective of this DNP Project was to increase practitioner awareness of race-based variations in colorectal cancer screening recommendations for African Americans starting at age 45. Outcomes of this project were based on a pre-test and post-test comparison and a participant evaluation regarding the efficiency of the information session to enhance knowledge and encourage change in screening behaviors. The education session was effective in increasing provider awareness of the American College of Gastroenterology guidelines for CRC screening in African Americans.

This project could be expanded in efforts to sustain provider knowledge and increase colorectal cancer screening rates in African Americans. It is anticipated that increasing awareness of colorectal cancer screening guidelines and needs for the African American community will translate into better screening recommendation practices. In order to meet the projects long-term goal of increasing provider recommendation for colorectal cancer screening in African Americans 45-49 years of age, it is important that additional interventions be placed into practice and sustained overtime. Provider recommendation for colorectal cancer screening can be reinforced through the following efforts:

- Creating a short one-page description of evidence-based CRC screening recommendations to encourage ongoing awareness of variation in CRC screening recommendations and encourage participation among all members of the health care team.
- Community wide CRC awareness campaign during the March (National Colorectal Cancer Awareness Month)
- Placement of CRC screening brochures in the clinic lobby and exam rooms.
• Quarterly staff training on CRC and the importance of screening.

This quality improvement project can serve as a foundation for increasing provider awareness and knowledge of colorectal cancer screening in African Americans age 45-49. This project has the potential to help to increase colorectal cancer screening rates among African Americans age 45-49 who are enrolled in primary care clinics. Health care providers play an important role in patient education and decision making. Educating providers on patient and provider barriers to obtaining colorectal cancer screening can lead to further discussion and development of interventions to address these barriers.
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Appendix A
Health Belief Model Diagram

(Hochbaum, Rosenstock & Kegel, 1952).
Appendix B

Powerpoint Presentation Script

Slide 1
Good morning, my name is Andrea King. I am a registered nurse currently enrolled in the doctor of nursing practice program at UMASS Amherst. This morning I will be giving a presentation on Increasing Practitioner Awareness of Racial Variations in Colorectal Cancer Screening Recommendations among African Americans. Thank you all for taking time out of your busy schedules to attend this presentation.

Slide 2
Prior to getting started I would like for everyone to take a pre-test that assesses your current knowledge of CRC and current guidelines. The same test will be given after the presentation.

Slide 3
Colorectal cancer is the third most common cancer in the U.S. and the second leading cause of cancer related deaths in men and women (CDC, 2014).

Slide 4
Colorectal cancer incidence and mortality rates have been declining over the last 10-15 years. This can be attributed to an increase in colorectal cancer screening rates (Safarty et al., 2011).

Slide 5
Efforts to reduce the incidence and mortality of colorectal cancer are also part of the national effort to eliminate health disparities. Despite the decrease in colorectal cancer incidence and mortality, colorectal cancer health disparities exists for certain groups of people ((American Cancer Society, 2014).
Slide 6
Health disparities are adverse differences noted in healthcare outcomes that exist among specific groups in the U.S. (American Cancer Society, 2014).

Slide 7
African Americans have a disproportionately high incidence and mortality from colorectal cancer than any other race. African Americans have a 20% higher incidence and a 45% higher mortality than Caucasians (Brittain et al., 2012)

Slide 8-11
The following slides are graphs that show how many people out of 100,000 got colorectal cancer each year during the years 1999–2013. As indicated from the graph the incidence rate is grouped by race and ethnicity. In 2013, black men had the highest rate of getting colorectal cancer. Among women, black women had the highest rate colorectal cancer compared to white, Hispanic, Asian/Pacific Islander, American Indian/Alaska Native women (CDC, 2014).

Slide 12:
Increase in technology has led to better tracking and data analysis of colorectal cancer incidence, morbidity and mortality noted by age, race, socio-economic status and insurance. There has been a notable change in the age of new cases of colorectal cancer. An increase in the incidence of colorectal cancer before 50 years of age has been noted in all racial and ethnic groups. Health disparities within the African American community has played a significant role in early screening recommendations for this population. African Americans have a higher risk of developing colorectal cancer before 45 years of age than any other race (Williams et al., 2016).

Slide 13-14
There are significant barriers that contribute to health disparities. Primary barriers include: lack
of health insurance, lack of provider recommendation and lack of awareness (Brittain et al., 2012; Williams et al., 2016)

Slide 15-16

Patient barriers include: limited status of insurance, lack of knowledge of colorectal cancer, distrust of the medical community, to name a few. These barriers contribute to the growing health disparities among African Americans. All of these barriers have been identified through research and are important targets for interventions (Brittain et al., 2012; Williams et al., 2016).

Slide 17

Health care provider barriers to CRC screening are multifactorial. Lack of knowledge on current colorectal cancer screening guidelines, lack of time and patient refusal have been reported in the literature. Eight thousand eight hundred eighty-one patients were surveyed, 61% of patients reported that they their medical provider did not discuss CRC screening. Another study cited inadequate provider explanation about CRC (Sarfaty et al., 2011).

Slide 18

This slide shows provider barriers to adoption of CRC screening guidelines. Physician barriers to recommending screening of high-risk populations based on years in practice. Physicians who were in practice more than five years cited lack of reimbursement as barrier more often than physicians who were in practice less than five years. Lack of evidence for screening was cited as a barrier more often among physicians practicing less than five years versus physicians practicing more than 5 years (Williams et al., 2016).

Slide 19-22

As scientific evidence has accumulated, guidelines have changed. Outdated guidelines may still be guiding the practice decision of some practitioners. The American College of
Gastroenterology guideline changes addressed:

– The age to begin screening people at increased risk (45 years for African Americans)
– The digital rectal exam once a key assessment is no longer a recommended CRC screening strategy as evidence has not demonstrated its efficacy.

The American College of Gastroenterology updated its guideline in 2005. One of the recommendations is to screen African Americans starting at age 45. Different screening modalities include annual fecal occult blood tests, fecal DNA testing every 3 years, annual fecal immunochemical testing (FIT), colonoscopy every 10 years, CT colonography every 5 years and flexible sigmoidoscopy every 5 years. Colonoscopy is the preferred colorectal cancer prevention test (Lambert, 2009; Williams et al., 2016).

Slide 23-26

One fact that has remained consistent from community to community is the influence of a physician’s or other medical practitioner recommendation on the cancer screening decisions of their patients. This is an evidence-based finding that has been well-established. A recommendation from a medical provider is the most powerful single factor in a patient’s decision about whether to obtain cancer screening. While other factors also have impact (including health beliefs, social influences, insurance, and access to care), for those who have a medical provider, the providers’ advice is the single most persuasive factor. Lack of a provider’s recommendation is actually experienced as a barrier to screening (Klabundle et al., 2006).

Slide 27-28

Provider recommendation is key to increasing colorectal cancer screening rates and initiating screening starting at age 45 in African Americans. Provider recommendations is one of many strategies that are required not only in increasing CRC screening rates but eliminating health
disparities. Other strategies include: implementing an office protocol, placing educational materials in the waiting area, addressing barriers, recommend colorectal cancer screening for those at high risk, conducting community wide awareness campaigns and utilizing case managers as patient navigators. Patient navigators can help to increase colorectal cancer screening rates among minorities and decrease patient barriers. Providers often cite a lack of time to fully explain CRC and the benefits of screening. A referral to the case manager for those who require more time would help to ensure adequate explanation on CRC and the importance of screening. A patient navigator would provide the patient with individualized education and assistance with completing the CRC screening. This would include, scheduling, educations and identification of potential barrier to screening and ways to overcome them. The use of patient navigators for CRC has been shown to increase screening adherence among African Americans (Sarfaty et al., 2011).

Slide 29-31

Summary

CRC is the only gastrointestinal cancer that is preventable yet it remains one of the leading causes of malignancy related deaths (CDC, 2014). African Americans are diagnosed with CRC at an earlier age and present at more advanced stages (Brittain et al., 2012). The evidence clearly supports the need for earlier colorectal cancer screening among African Americans. Earlier screening among African Americans leads to increase in life-years and decreases colorectal cancer disparities. The key to increasing colorectal cancer screening rates and initiating colorectal cancer screening starting at age 45 in African Americans, is provider recommendation.
Provider recommendation for screening is essential in addressing colorectal cancer disparities among African Americans.

Slide 32-33
Appendix C

Education Evaluation Survey

1 Strongly Disagree
2 Somewhat Disagree
3 Neither Agree nor Disagree
4 Somewhat Agree
5 Strongly Agree

1. This training session increased my knowledge about CRC screening recommendations for African Americans.
   1 2 3 4 5

2. This training session changed some of my attitudes about race-based variations in CRC screening recommendations.
   1 2 3 4 5

3. This training session could be valuable to the community and patients for increasing an understanding about the importance of earlier CRC screening.
   1 2 3 4 5

4. This training session will likely effect the way in which I make CRC screening recommendations.
   1 2 3 4 5

5. This training session will likely help the way in which I communicate the importance of screening to the patients for whom I care.
   1 2 3 4 5
Appendix D
Pre-Test and Post-Test

1. At what age would you recommend starting to screen African American patients with no family history of colorectal cancer?
   a. 50
   b. 40
   c. 55
   d. 45

2. What is the most common reason for not getting a CRC screening exam?
   a. Lack of patient knowledge
   b. Lack of provider recommendation
   d. Personal/emotional obstacles (fear, mistrust, embarrassment)

3. What is the preferred colorectal cancer prevention test?
   a. Stool blood test
   b. Colonoscopy
   c. Flexible sigmoidoscopy
   d. Double-contrast barium enema

4. Cancer prevention tests are preferred over cancer detection tests
   a. True
   b. False

5. What is the preferred cancer detection test?
   a. Flexible sigmoidoscopy
   b. CT colonography
   c. Fecal Immunochemical Test (FIT)
Appendix E

Educational Toolkit

Test Your Knowledge of Colorectal Cancer Screening
AMERICAN COLLEGE OF GASTROENTEROLOGY

Q: What common cancer can you prevent with screening?
A: Colorectal Cancer

Colorectal cancer is the number 2 cancer killer in the United States, yet it is one of the most preventable types of cancer. Yes, colorectal cancer can be prevented—not just detected—through colonoscopy.

Colorectal cancer arises from pre-cancerous growths or polyps that grow in the colon. When detected early, polyps can be removed, halting their progression to colorectal cancer. While early detection of any cancer is important, prevention is powerful.

Q: What are the risk factors for Colorectal Cancer?
A: Lifetime risk of colorectal cancer is roughly equal in men and women.
• Colorectal cancer is most common after age 50, but it can strike at younger ages. The risk of developing colorectal cancer increases with age.

Q: Who is considered High Risk for Colorectal Cancer?
A: Colonoscopy is recommended for individuals of any age who are at higher than average risk for developing colorectal cancer by virtue of:
• Personal history of colorectal cancer or colorectal polyps
• A strong family history of the disease
• Inherited forms of colorectal polyps or cancer
• Predisposing chronic digestive condition such as inflammatory bowel disease (Crohn’s disease or ulcerative colitis)

Recommendations for how often colonoscopy should be performed vary for different subsets of high risk individuals, and they should consult with their physician.

Q: What are the symptoms of Colorectal Cancer?
A: Most early colorectal cancers produce no symptoms. This is why screening for colorectal cancer is so important. Some possible symptoms, listed below, do not always indicate the presence of colorectal cancer, but should prompt a visit with your physician and a check-up:
• New onset of abdominal pain
• Blood in or on the stool or a change in stool caliber or shape
• A change in typical bowel habits, constipation, diarrhea

Q: Why is Colorectal Cancer screening so important?
A: Screening tests can find polyps so they can be removed before they turn into cancer.

Most colorectal cancers develop from polyps, which are abnormal growths in the colon. If polyps grow unnoticed and are not removed, they may become cancerous. Screening tests can find pre-cancerous polyps so they can be removed before they turn into cancer.

The development of more than 75-90 percent of colorectal cancer can be avoided through early detection and removal of pre-cancerous polyps. *

Q: What screening tests do the experts recommend?
A: The 2009 Colorectal Cancer Screening Guidelines from the American College of Gastroenterology divide the options into cancer prevention tests and cancer detection tests. Cancer prevention tests are preferred over detection tests.

Preferred Colorectal Cancer Prevention Test: Colonoscopy
- Colonoscopy every 10 years is the preferred colorectal cancer prevention test. For normal risk individuals, the American College of Gastroenterology recommends colonoscopy every beginning at age 50, and age 45 for African Americans.

Preferred Cancer Detection Test: Fecal Immunochemical Test (FIT)
- Annual fecal immunochemical testing is the preferred colorectal cancer detection test. FIT is a relatively new test that detects hidden blood in the stool. If results are positive, a colonoscopy is performed.

Alternative Cancer Prevention Test: Fexible Sigmoidoscopy every 5 to 10 years

Alternative Cancer Detection Test: CT Colonography every 5 years
- CT Colonography or “virtual colonoscopy” is an X-ray designed to look for colon polyps and cancers. CTC is an alternative to colonoscopy every 10 years for patients who decline colonoscopy. If polyps are detected, a regular colonoscopy is required to remove these pre-cancerous growths.

Alternative Cancer Detection Tests: Fecal DNA Testing every three years or Annual Hemoccult Sensa®

Q: When should African Americans begin colorectal cancer screening?

Colonoscopy is the preferred method of screening for colorectal cancer and data support the recommendation that African Americans should begin screening at a younger age because of the higher incidence of colorectal cancer and a greater prevalence of proximal or right-sided polyps and cancer in this population. The guidelines were published in the March 2009 issue of The American Journal of Gastroenterology.

To learn more, visit:
http://patients.gi.org/topics/colorectal-cancer/

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