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Evidence-Based Colorectal Cancer Screening Staff Education

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

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Walden University
2020

Abstract

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MS, Walden University, 2014

BS, Clayton State University, 2007

Submitted in Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

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Abstract

Colorectal Cancer (CRC) is the leading cause of cancer-related death, although it is considered preventable with adequate routine screening. Despite the decline in prevalence and mortality of CRC in the United States, the African American population persist in having the highest rates of death and shortest survival for CRC. This doctoral project focused on the gastrointestinal (G.I.) staff knowledge gap about the importance of CRC screening to achieve better patient outcomes. The purpose of this project was to address the knowledge gap among the G.I staff as it relates to CRC screening. The health belief model served as a guide in the educational program in that one of the primary focuses was changing behavior based on self-efficacy, perceived threats, and perceived benefits. The practice-focused question for this project was whether an evidence-based staff education project on CRC screening guidelines would improve G.I. staff knowledge on CRC screening. The project used a quantitative design through an anonymous pre and posttest to assess the staff knowledge and to determine the impact of education on the staff. Data were analyzed using sample proportion statistics. In the pretest, the least score was 20%; however, this score improved significantly to 60% in the posttest. Overall there was a 35.33% average improvement in the score. It showed that the percentage level of knowledge for the least performer increased two-fold. I made the recommendation for biannual staff education on the importance of CRC screening and screening guidelines. This doctoral project contributes to positive social change by educating the G.I staff about the importance of early screening, which will allow them to effectively educate the community on the importance of health promotion and disease prevention, thus leading to improved patient outcomes.

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Dedication

I would like to dedicate this Doctor of Nursing Practice degree in memory of my loving grandparents Nah Justina Boh Fokum, Mr. Edmund Fokum, and Mr. Henry Daiga Tankoh, who believed in me and taught me the value of education at an early age. May your souls Rest in Perfect Peace.

I also want to dedicate this Doctor of Nursing Practice degree to mom, siblings, daughters, nephews, and nieces for their unconditional love and support throughout my educational endeavors.

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I give thanks to God, the almighty father, for his mercy, grace, and favor.

Dr. Minnick, thank you for volunteering to be my committee chair and mentor at the time when I had completely given up on my proposal. You believed in me, encouraged me with your positive energy, used your expertise to guide me to the finish line. I will forever be grateful.

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Finally, I want to acknowledge my family, especially my sister Evelyn L. Tankoh, who has always been my biggest believer and cheerleader. My daughter Arielle, my nephews Edmund and Khameron, thank you for your unconditional love, support, patience, understanding, and prayers.

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Section 1: Nature of the Project

Introduction

According to data collected by the World Cancer Research Fund (2018), colorectal cancer (CRC) is ranked as third most frequent cancer found in men, the second most found in women, and it is the second costliest in the United States (May, Whitman, Varlyguina, Bromley, & Spiegel, 2016). The National Institute of Health's (NIH) statistical data, estimated more than 1.8 million new cases of CRC diagnosis in 2018 globally (Rawla, Sunkara, & Barsouk, 2018). Although the data for the United States was not available for 2018, the National Cancer Institute's Surveillance, Epidemiology, and End Results Program estimated that the diagnosis of CRC during 2019 was more than 145,000 people. Of this number, more than 51,000 people were expected to die (NIH, 2018).

Furthermore, this number was estimated to account for approximately 8% of all cancer-related deaths (Macrae, 2019). According to Siegel et al. (2017), disease indicators for the population showed that within the United States, the incidence and mortality trended downward over the past few decades. The researchers attributed the decline to changes in behavior, such as the decrease in red meat consumption, the decline in smoking, and the increased use of aspirin. However, they noted that the rates for African Americans (AAs) remained elevated (Siegel et al., 2017).

Macrae (2019) revealed that despite the overall downward trends, disparities in the United States remain in both the occurrence of and the death from CRC. McCrae (2019) and the American Cancer Society (ACS, 2019 b, 2019c) noted that individuals of

lower socioeconomic status have an associated risk for developing CRC, with one study reporting the risk as high as 30%. Socioeconomic status is just one aspect. Patients' perceived screening barriers lack of awareness and a lack of provider communication about CRC screening options may contribute to low screening rates among minority populations (Nagelhout, Comarell, Samadder, & Wu, 2017). Other risk factors are the modifiable behaviors, which include physicalinactivity, unhealthy diets (diets with high concentrations of red meat, foods high in processed meats, and cooking meats at high temperatures), smoking, obesity, and high alcohol consumption. The modifiable behaviors are changes individuals can make to achieve a healthier lifestyle. However, there are risks that the individual has no control over, such as advanced age, family history of CRCs or polyps, or a personal history of inflammatory bowel disease or inherited syndromes (Alteri, Kalidas, Yadao, & Ogoro, 2018). In the United States, belonging to a specific ethnic group may place an individual at higher risk when compared to others. For instance, AAs carry the distinction as having the highest incidence and mortality (Alteri et al., 2018; Siegel, 2017). Overall, grasping the importance of following up with appointments in a convenient way would promote positive change in the methods and treatments of colon-related diseases. Delays in screening allow for the malignant cells to advance to neoplasms, a stage that limits a patient's chances of survival, increases the costs of treatment, and gives rise to complications as a result of the low immune system. Therefore, this doctoral project's positive social change consequences are that educating the gastrointestinal (G.I.) staff on the significance of early screening and detection of CRC would lead to prompt treatment

and minimize the costs of treatment (Rhodes Kellar-Guenther, Levinson, Dwyer, & Gritz, 2017).

The doctoral project carries importance in the nursing sector due to the evidence-based recommendations that are palpable regarding improving CRC screening appointments. The G.I. staff can thus attain an understanding of the importance of CRC screening and screening guidelines.

Problem Statement

CRC is one of the most frequently occurring cancer-related deaths, which is somewhat avoidable by routine screenings that identify precancerous neoplasms before metastasis. CRC is a potentially preventable disease; therefore, screening for CRC with colonoscopy, flexible sigmoidoscopy or fecal occult blood testing decreases cancer mortality and is cost-effective (May et al. 2016, Siegel, 2017). However, the AA population, both men and women and despite the availability of screening and early findings, persist in having the highest rates of death and shortest survival period with CRC. For this group, screening at the age of 45 is recommended by the American College of Gastroenterology (Williams et al., 2016), American Gastroenterological Association (2016), and ACS, (2018). There is a prevalence of CRC in conjunction with the high mortality rate in this project's setting, which is a large metropolitan facility where 75% of the patients seen are AA.

Within the organization, the G.I. department has problems with fulfilling appointments for CRC screening. There is a high rate of missed appointments and of patients showing for appointments late, usually more than 35 minutes. The combined

effect of missed appointments and showing up late ultimately culminates in the wasting of clinical resources as well as poor patient outcomes.

Patients above 45 years of age often obtain referrals for screening colonoscopy from their primary care providers in the clinic and community. It is the responsibility of the patient to contact the G.I. department to set up an appointment for screening. The identified practice problem in the G.I. department is the patient's "no show" rate for their colonoscopy screening appointments prompting the need to educate the staff on how to better educate patients.

This project's goal is to increase G.I. staff knowledge by providing evidence-based education on CRC screening and screening guidelines. If the G.I. staff increases their understanding of colorectal screening, there is a higher likelihood of improving healthcare outcomes by reducing the morbidity and mortality rates associated with screening colonoscopy no show rates. Educating the G.I. clinic staff in a manner that enhances their knowledge on CRC can translate into clinical practice by the staff educating patients on the importance of CRC screening, which can eventually improve patient outcomes. This doctoral project holds significance in the nursing practice sector as it increases the G.I. staff knowledge on the importance of CRC screening and current screening guidelines.

Purpose

In the United States, AAs have the highest burden of CRC while also having the lowest CRC screening rates when compared to their European American counterparts (May et al., 2016). With this project I aimed to determine the effect of staff education on

knowledge of CRC screening**.** The practice-focused question that guided this doctoral project was:

PFQ: Will an evidence-based staff education project on CRC screening guidelines improve G.I. staff knowledge of CRC screening?

This doctoral project addressed the gap-in-practice by focusing on staff education on the importance of CRC screening in the G.I. setting and by ensuring that the clinical staff was up to date with the current CRC guidelines. According to Wolf et al. (2018), the detection and subsequent removal of precursor lesions detected during screening and the detection of CRC at an earlier, more favorable stage has been shown to reduce incidence and mortality significantly. Therefore, educating the G.I. staff on the importance of CRC screening may lead to early detection and removal of precancerous polyps, which would decrease the CRC incidence and mortality. The project, therefore, equips the G.I. staff with evidence-based education, which can facilitate an environment of positive change in which there is two-way communication between the G.I. staff and the clinic patients thereby fostering the elimination of barriers, improving the workflow of CRC screenings, and reducing ethnic gaps in the screening process**.**

Nature of the Doctoral Project

This project involved the development and application of an educational evidence-based guideline on the screening process for CRCs in the primary care setting. Siegel (2017) stressed that CRC is the most preventable type of cancer, and yet it is the foremost disease that causes death in men and women.

The literature supported the importance of early detection and the prompt removal of polyps before they develop into deadly lesions. Early stage of CRC often has no symptoms, which is why screening is so important. From the years 2004-2013, a 3% decline in CRC incidence was reported; this is thought to predominantly reflect the detection and removal of precancerous polyps as a result of increased CRC screening (ACS, 2019a).CRC screening has been shown to reduce CRC incidence and mortality (Knudsen et al., 2016). Recent recommendations from ACS, U.S. Multi-Society Task Force (MSTF), and U.S. Preventive Service Task Force (USPSTF) were used in the educational program. The sources of data were web-based databases through the Walden Library; such as the Cumulative Index of Nursing and Allied Health Literature (CINAHL), PubMed, and the Educational Resources Information Center (ERIC).

I designed the project to intensify staff knowledge on the screening process for CRCs and the approved guidelines for the primary care setting to increase patient compliance in following screening procedures. The G.I. staff completed both a pretest and posttest questionnaire to assess their knowledge of the content of the educational program. I used sample proportion statistics to examine the quantitative data that was collected. The findings from the evidence-based training for G.I. staff are projected to promote timely appointments and visits by patients for colonoscopy screenings.

Significance

The primary stakeholders of this project were the G.I. clinic staff, who were mainly nurses and medical technicians who provided care to the patients receiving the screening visits and procedures. Other stakeholders included patients and their families

who received CRC screening information from the G.I. staff. The participants who received the evidence-based education were G.I. nurses and medical assistants.

The project's contribution to nursing practice is improving the G.I. staff knowledge on the importance of CRC. The project is transferable in other areas of cancer screenings such as breast cancer, prostate cancer, cervical cancer, and lung cancer. The possible implication for positive social change is that there would be more proactive communication between G.I. staff and their patients. Therefore, education is pivotal in improving CRC screening for the targeted population and thus closing the practice gap.

Summary

According to the ACS (2019a), when CRCs are found before they have a chance to metastasize to other parts of the body, there is a 5-year relative survival rate of 90%. Only 4 out of 10 CRCs are found at an early stage of development, which places the majority outside the colon or rectum, and the survival rate much lower (ACS, 2019a). Section 2 focuses on the conceptual framework related to the project, clarification of terms, practice relevance, the role of the project team, the role of the DNP student, the local background, and the context of the project.

Section 2: Background and Context

Introduction

CRC remains an ongoing problem in the AA Community; not only are there disparities related to the incidence and disease prevalence, but there are disparities about treatment and mortality (ACS, 2019b; Doubeni, 2018; May 2016). The review of the literature revealed that cancer awareness, including knowing the importance of screening and early detection, is often completed through programs that educate.

The identified practice problem at the G.I. clinic was patient compliance as it related to colonoscopy screening appointments. The purpose of the project was to fill the gap in CRC screening among AAs in the community by providing the G.I. staff evidence-based educational program. Therefore, this project's study questions remain viable and relevant regarding the critical nature of education and compliance with CRC screening. In this section I discuss the theoretical framework, the operational definitions of words used in the context of the project, the project's importance to nursing practice, the local background, and the position of the DNP student.

Theoretical Framework

The health belief model (HBM)served as a guide in the educational program in that one of the primary focuses was changing behavior based on self-efficacy, perceived threats, and perceived benefits (Jones et al., 2015). The HBM, as the core construct for this project, provided the basis for the education project. The HBM core mediators provided the focus for staff education. The core mediators were perceived threat, perceived self-efficacy, perceived benefits, and perceived barriers (Jones et al., 2015).

In the 1950s, a group of social scientists working for the U.S. Public Service developed the HBM as a means of understanding why people fail to adopt disease prevention strategies or undergo a screening test for early detection of disease (LaMorte, 2018). In the article, LaMorte (2018) stated that the HBM development was from psychological and behavioral theory with the foundation of health-related behaviors, which were to avoid illness and the belief that specific actions prevent or cure disease. According to Zare et al., (2016), individuals, especially men with higher levels of knowledge, showed higher tendencies towards taking screening opportunities and making behavior changes. The HBM, as a cognitive model, seeks to identify patterns of healthy behavior. Traditionally, the HBM has four concepts with more progressive models using six concepts. For this project, the four-concept model was the guiding framework.

The four components are perceived threats/susceptibility, perceived benefits, perceived barriers, and self-efficacy; a brief description follows below (Jones et al., 2015).

- *Perceived threats/susceptibility*: This component looks at the individual's ability to internalize information drawn from the external environment, the ability to maintain health, and or the likelihood of becoming ill. Chen, Basch, Yamada, (2010) and Griffith et al. (2009) found that perceived susceptibility in patients referred for FOBT (fecal occult blood test) as CRC screening was significantly higher than the control group, which indicated the effects of perceived susceptibility on performing the test.

- *Perceived Benefits:* This component examines the potential positivity based on personal actions related to health. The results of a study by Gholampour, Jaderipour, Khani, Kashfi, &Afzali (2018) showed that educational intervention increased the average score of perceived benefits.
- *Perceived Barriers:* This component is related to the adverse effects of specific health activity. Jeihooni, Hidarnia, Kaveh, Hajizadeh, & Askari, (2015) found that educational intervention increased perceived benefits and reduced perceived barriers in a population. The most important external cues to action were physicians, health workers, family members, and friends.
- *Self-efficacy:* The component is associated with a person's belief that they can accomplish a certain health behavior. Through the successful integration of beliefs and provided information, patients can adjust behaviors accordingly based on the information provided, thereby improving CRC screening rates.

Relevance to Nursing Practice

Over 140,000 Americans were expected to be diagnosed with CRC in 2018. It is the second leading cause of cancer death, resulting in over 50,000 deaths annually (Wolf et al., 2018). According to Wolf et al. (2018), there had been an increased incidence rate, particularly notable for rectal cancer, in individuals aged 20-49 years, which has doubled between 1991 (2.6 per100,000) and 2014 (5.2 per100,000). Despite this, the universal adherence to screening colonoscopies continued to be low compared to surveillance colonoscopies and screening for other malignant cancers (Zauber et al., 2015). Rex et al. (2017) asserted that the object of screening is to reduce CRC incidence and mortality, and

to accomplish both aims, tests need to detect early-stage CRCs and high-risk precancerous lesions. A study concentrating on temporal trends of CRC screening and incidences estimated at least 500,000 cases of CRC could have possibly been prevented between 1987 and 2010 if patients had taken part in CRC screening programs (Doubeni, 2016). The author concluded that improving the rate of CRC screening is, therefore, important in improving the outcomes of patients and decreasing healthcare costs (Doubeni, 2016). An understanding of the significance of compliance with appointments in a timely manner would promote positive change in the approaches and treatments of colon-related diseases (Hall et al., 2016).

May et al. (2016) noted that in addition to the disparity of CRC incidence, AAs had the highest prevalence of polyps at the time of the screening colonoscopy, and in terms of advanced CRC at disease presentation, AAs also had the highest prevalence. Furthermore, AAs, on a population level, had only seen a 2% decrease in CRC incidence compared to European Americans who had seen more than a 3% decline in CRC, meaning that the gap in CRC burden between AAs and other ethnicities remains (May et al., 2016). Butka (2017) noted that an educational program could offer evidence from clinical trials and what has been proven to work to positively increase awareness and expertise for the staff.

Hsiang et al. (2019) revealed that G.I. clinicians were aware that colonoscopy screening is a crucial procedure because of the available evidence-based studies. However, there is a lack of translational research focused on the significance of colonoscopy screening appointments and the resultant loses and challenges due to missed

appointments or lateness (Lipkus, Johnson, Amarasekara, Pan, & Updegraff, 2019; Muliira et al. 2016) asserted that inadequate knowledge level among nurses and physicians may be one barrier affecting CRC screening. Enhancing health care provider knowledge about CRC screening should be considered a primary intervention in the efforts to promote CRC screening and prevention.

Various professional societies have issued CRC screening guidelines, but there are variations among the existing guidelines. The ACS (2018) recommends that adults aged 45 and older with average-risk of CRC undergo regular screening with either a high-sensitivity stool-based test or a structural exam depending on patient preference and test availability. But the USPSTF (2016) and MSTF (2017) recommend average-risk adults be screened starting at age 50 using one of the screening tests available, except AAs, who should initiate screening beginning at the age of 45 (Wolf et al., 2018). All three societies recommend CRC screening through the age of 75 for adults in good health based on life expectancy. Furthermore, decisions for screening individuals aged 76 through 85 should be individualized based on patient's preferences, life expectancy, and prior screening history. Neither society recommends screening adults over the age of 85 (Rex et al., 2017).

Screening is different from surveillance. CRC screening tests are done for cancer prevention, as well as detection of cancer, polyps and polypectomy. In contrast, surveillance refers to the interval use of colonoscopy in patients with previously detected CRC or precancerous lesions and interval colonoscopy performed to detect dysplasia in persons with inflammatory bowel disease affecting the colon (Rex et al., 2017). Polyps

are benign (non-cancerous) growths, but cancer can start in certain types of polyps. These polyps are considered precancerous, which is why it is vital to have them removed. Hyperplastic polyps are considered benign, whereas an adenoma is a polyp made up of tissue that looks much like the normal lining of the colon, and cancer can start in the adenoma (ACS, 2017g). Most adenomas that are small (less than ½ inch) have a tubular growth pattern. Larger adenomas may have a villous growth pattern. Larger adenomas more often have cancers developing in them. Adenomas with a villous growth pattern are also more likely to have cancers develop in them ACS (2017g). Also, Qayed (2019) noted that all adenomas have some degree of dysplasia. Mild or moderate dysplasia is classified as low-grade dysplasia, and severe dysplasia or carcinoma in situ is classified as high-grade dysplasia. Advanced adenomas include those with a size of 1 cm or more, villous or tubulovillous histology, or those with high-grade dysplasia.

The recommended CRC screening options for average-risk patients are stool-based options, which are fecal immunochemical test (FIT) every year, guaiac-based fecal occult blood (gFOBT) test every year, and a multitarget stool DNA (mt-sDNA) test every 3 years. Second CRC screening options are direct visualizations, which are colonoscopy every 10 years, CT colonography, and flexible sigmoidoscopy every 5 years (USPSTF, 2016; Wolf et al., 2018). In 2016, the FDA approved blood Septin9 DNA test-Epi proColon for average-risk persons who have refused other forms of CRC screening. Septin9 sensitivity for CRC is 68%, specificity 78%, and 11% sensitivity for advanced lesions. Due to the test characteristics and low sensitivity, MSTF, USPSTF, or ACS do not recommend Septin9 for CRC screening as noted by (Qayed, 2019).

Recommendations for screening and surveillance for individuals with increased risk for CRC varies from those of average risk individuals. Individuals who have a first-degree relative with CRC or advanced adenoma diagnosed before 60 years of age should start screening colonoscopy at 40 years of age or 10 years younger than the earliest diagnosis in their family, whichever comes first. If the results are negative, a colonoscopy should be repeated every 5 years (Wilkins, McMechan, Talukder, & Herline, 2018)

Individuals with hereditary nonpolyposis colorectal cancer and familial adenomatous polyposis are at increased risk of CRC. Individuals with hereditary nonpolyposis colorectal cancer should begin screening with colonoscopy at 25 years of age, and screening should be repeated annually. Those with familial adenomatous polyposis, which is defined as having 100 or more recurring advanced adenomas, should begin colonoscopy between 10 to 20 years of age and be repeated every 1to 2years. Also, screening colonoscopy should begin 8 to 10 years after the onset of symptoms in individuals who have Crohn's disease with colonic involvement or ulcerative colitis. Screening should be repeated every 1 to 3 years (Wilkins et al., 2018). Patients undergoing screening tests other than colonoscopy should understand that a positive result on any stool test or non-colonoscopy test should be promptly evaluated with a colonoscopy. Colonoscopy and FIT are considered the first-tier test for CRC screening (Rex et al., 2017).

This doctoral study, therefore, was aimed at allowing the G.I. staff to garner knowledge regarding CRC screening through staff education. By addressing the knowledge gap, the study established that proper utilization of clinical resources and

improved knowledge on CRC screening, which can also be transferred to other cancer screening areas, is critical in lowering CRC cases.

Local Background and Context

At the local level, despite efforts to recruit and gain more patients, appointments remain low, and the no-show rate remains high. The state's vital statistics placed the incidence of new CRC cases at 4,450, which is 3% of the new cases in the United States. Of the 4,450 new cases of CRC, 1,630 affected persons are expected to die (Center for Disease Control and Prevention, 2019). Much of the census data was based on national figures and placed the AA population at 13%; however, the rate for AAs in Georgia was almost 3 times higher at 32.4% (United States Census Bureau, 2018). Considering this number, Georgia had a large footprint requirement regarding improving the CRC screening process. Among all racial and ethnic groups, according to Williams et al. (2016), AAs had the highest death rate and the shortest duration rate of survival. The American College of Gastroenterology recommends that AAs should begin screening at 45 years of age to combat the racial disparities (American Gastroenterological Association, 2016).

Locally, there is an adherence rate of 40% for scheduled CRC screening, which is significantly lower than the national average of 62% (ACS, 2019b, 2019d). At this facility, such a lower local adherence rate has an overwhelming effect on patient outcomes. Based on the current statistical data on CRC in the state, there is a need for improved screening and education to minimize disparity gaps and increase early detection (United States Census Bureau, 2018).

Role of the Doctor of Nursing Practice Student

I have been working at this facility for the past 13 years. For the first 9 of those years, I worked as a staff nurse in critical care as a nurse practitioner in the G.I. endoscopy laboratory for the subsequent 2 years and in the ambulatory G.I. clinic for the past 2 years. As the project leader, I had the responsibility of creating the educational materials (see Appendix A) and presenting the documents to the G.I staff. Before the educational sessions, an anonymous pretest (see Appendix B) was administered to the staff to assess existing knowledge regarding CRC screening followed by a PowerPoint in-service presentation. Following the in-service, the same test was administered as a posttest (see Appendix B). During this phase, the staff was tested to examine recall and understanding of presented information relating to CRC.

My personal experience as a nurse practitioner working in the G.I. setting motivated me to choose this project**.** Most of the patients who were diagnosed with CRC or advanced adenomas had no prior CRC screening with either one of the recommended screening tests. A percentage of the patients who had referrals for CRC screening did not show-up for their appointments and were lost to follow-up. Most of the patients were referred to G.I. due to iron deficiency anemia, rectal bleeding, blood in the stool, unintentional weight loss, or abdominal pain. CRC screenings, at times, were done as part of inpatient workup. Also, the increasing incidence of rectal cancer in adults less than 50 years of age motivated me to undertake this project. Despite my motivations for this project, I did not identify any potential bias; I remained open-minded to possible issues that arose and addressed them as needed.

Summary

Section 2 provided the theoretical framework steering the project, as well as the significance to nursing practice, the local background, and my role as the DNP student in the development of the proposed staff educational training on CRC screening. In section 3, I restate the practice-focused question and explain the sources of the evidence for the doctoral project. Also, the section includes a discussion of the analysis, synthesis, and summary.

Section 3: Collection and Analysis of Evidence

Introduction

AAs have the highest disease burden when compared to other ethnic groups (Wolf et al.,2018). Despite the advances made in cancer research, CRC is common and has a significant impact on population health parameters. CRC is the third most common cancer among men and the second most for women (ACS, 2017; May 2016). The identified practice problem in the G.I. department was staff knowledge as it related to colonoscopy screening. Buehler et al. (2019) concluded that there was an association between colorectal screening and patient demographics; after controlling for age, sex, and insurance, people living in racially segregated neighbors are 10% more likely to go unscreened. To improve the screening process, the authors found that targeted outreach with education is pivotal in improving colorectal screening among AAs.

At the project site, the G.I. department has problems with colonoscopy screening appointment compliance even though vital statistics placed the incidence of new CRC cases in the state at 4,450, which is 3% of the new cases within the United States. The purpose of this project was to determine the effect of staff education on knowledge of CRC screening. In this section I discuss the practice-focused question, the sources of evidence, and the analysis and synthesis of the data created from the implementation of this project.

Practice-Focused Questions

There is a high incidence of CRC in the state, and the identified practice problem in this G.I. department was that there were currently no consistent guidelines to remind

patients of their upcoming CRC appointments, which can eventually lead to increase compliance. Therefore, the practice-focused question for this project was:

PFQ: Will an evidence-based staff education project on CRC screening guidelines improve G.I. staff knowledge on CRC screening?

The project focused on the G.I. staff knowledge gap about the importance of CRC screenings and their pivotal role in translating their knowledge into clinical practice to achieve better patient outcomes.

Definition of Terms

I used the following are operational definitions in the text:

Colorectal Cancer (CRC): Cancers that begin either in the colon or the rectum (ACS, 2019e).

Colonoscopy: A procedure in which a doctor uses a scope with an attached camera to look inside the colon and rectum. The colonoscopy can detect irritated swollen tissue, ulcers, polyps, and cancer (NIH, 2018).

Flexible sigmoidoscopy: A procedure in which the provider uses a flexible narrow tube with a camera and light. With the scope, the provider can see inside the rectum and lower colon. (NIH, 2018).

Fecal Immunochemical Test (FIT or iFOBT): A noninvasive exam that searches for hidden or occult blood in the stool. The premise behind the test is that blood vessels associated with cancers and larger colorectal polyps are fragile, susceptible to damage with the passage of stool (ACS, 2019e). As the blood vessels come damaged, they bleed into the colon and rectum; however, the amount of blood is not enough to be visible

(ACS, 2019e). The test reacts to the hemoglobin protein found in the blood. For patients refusing colonoscopies or having difficulties with colonoscopies, this is an annual requirement. If the FIT is positive, a colonoscopy is a more definitive procedure to detect blood from a cancerous process or other causes, such as ulcers and hemorrhoids (ACS, 2019e).

Guaiac-based fecal occult blood test (gFOBT): Like the FIT/iFOBT, the gFOBT is a detection for hidden or occult blood. The screening is through a chemical reaction. The ACS (2019e) recommends that this test is an annual requirement. However, some specific foods and drugs must be avoided to avert false positives. These items include but are not limited to, medications such as ibuprofen, Aleve, and aspirin 7days prior and red meat for 3days prior.

Sources of Evidence

The source of evidence for this project was the data collected from the existing published literature and questionnaires from the G.I. staff before and after the educational program. A pretest was administered to evaluate staff knowledge before the in-service presentation. A posttest session followed the in-service to assess the impact of the staff education program. I obtained the sources of evidence from the literature used to develop the educational program from the following databases: Cumulative Index of Nursing and Allied Health Literature (CINAHL), PubMed, and the Educational Resources Information Center (ERIC).

- CINAHL: The critical terminology of *colorectal screening* yielded 3,260 citations. Combining *colorectal screening* using the Boolean connector AND with the term *African Americans* yielded 232 citations.
- PubMed: The initiation of the PubMed search using the terms *colorectal cancer screening* yielded 69,528 citations. After applying a filter using the date range as a delimiting value range, the results yielded 21,403 documents. The number declined further with the addition of *African Americans* to *colorectal cancer screening*, yielding 241 citations.
- ERIC: Using *colorectal cancer screening* as the main terminology, this database yielded 55 citations. Using 2014 to 2019 as a date filter caused a significant decrease in quotes to 16 citations. The excerpts were almost nil with the final filter *colorectal cancer screening* using the Boolean and with *African Americans*, which generated four citations.

The review comprised both qualitative and quantitative research published within the last 5 years. The inclusion criteria were all articles that were published in English language and journal articles that were peer-reviewed. Articles with no full text were considered with Walden library assistance.

The United States Preventive Services Task Force (USPSTF) suggests screening adults ages 50–75 years for CRC, FOBT yearly, flexible sigmoidoscopy every 5 years, or colonoscopy every 10 years, but only 60%–65% of the qualified patients adhere with screening guidelines (Brown et al., 2015). Although there is a correlation of CRC to high death rates and comorbidities, the show-up rate for screening is meager (Hassan,

Kaminski & Repici, 2018). A study by Levin et al. (2018) found that approximately 63% of eligible individuals for CRC screenings, less than 50% have scheduled appointments. Such facts have resulted in national concern, and groundbreaking ways are needed to address the growing problem related to inadequate screening. This project is vital to the nursing profession because nurses must acknowledge the effect, they have on patients concerning preventative care (Alberti, Garcia, Coelho, De Lima, & Petroianu, 2015; Mason, 2016). The review of the literature continued until the implementation of the project to ensure that it was exhaustive and comprehensive in developing the educational program, which addressed the practice-focused question. I analyzed the collection of evidence generated from the participants to determine the impact of the educational training.

Evidence Generated for the Doctoral Project

Participants. The G.I. clinic staff were identified as the primary stakeholders, and they were the participants who received direct education. Secondary or indirect stakeholders due to their interactions with the clinic staff were the patients (there was no direct patient care or patient contact with this project). The designated nursing staff, including the medical care technicians, were offered the opportunity to participate in this project.

Procedures. Before any staff education activities, a pretest was given to assess the staff's current knowledge and understanding regarding CRC screening and early detection procedures. After the pretest, the education sessions (Appendix A) were given; they addressed CRC screening and telephone guidelines according to evidence-based

practice and current clinical practice guidelines. Before any education, there was the gathering of baseline statistical data through a pretest. The pretest assessed their current knowledge about CRC screening. After the educational in-service, the posttest was given to evaluate the impact of the training on their knowledge. I collected and analyzed the statistical data to see the knowledge gained from the evidence-based educational program. I conducted analysis of the data through sample proportion statistics. Upon completion of the project, I provided an executive summary to the facility leadership, outlining the plan and providing any recommendations for future or additional actions.

Human protections. This project was implemented after Walden University Institutional Review Board approval (approval number 02-25-20-0417697). The participants were briefed about the project and consented before the beginning of the education program. Data collection was anonymous, and numeric codes were used as identifiers of participants. I analyzed all information collected, and I will hold the data for a period of 5 years. After the time limit, I will destroy the data.

Analysis and Synthesis

After the evaluation of the pre- and posttests (Appendix A), the data was collected, scored, and organized to facilitate the data analysis. I used sample proportion statistics to determine the effectiveness of the education program. I compared pretest data with the posttest data for differences. Statistics were interpreted as percentages, where any significant change in the participant knowledge level indicated the effectiveness of the education program in addressing the practice-focused question.

Summary

This staff education project was carried out in the G.I. department of a metropolitan healthcare facility that serves a large population of AAs. The guidelines for educating the staff for this DNP project were retrieved from studies published about CRC screening. Pre intervention and post intervention tests were used to collect data on the success of the educational program. Developing and providing educational materials that empowered and increased not only the clinical knowledge of the nurses but that of medical technicians is critical for medical staff teaching patients to look at their current state of health from the perspective of the HBM. This view allows the patient to initiate steps that generate compliance, which may improve the number of AAs receiving CRC screening before the development of cancerous lesions.

Chapter 4 covers the explanation of the study and its findings, presents recommendations for future study, strengths, and limitations of the project as well as contributions of the project team.

Section 4: Findings and Recommendations

Introduction

CRC is the third most prevalent cancer in males and second most in females (World Cancer Research Fund, 2018). In the United States, it is the second most expensive cancer to treat (May et al., 2016). Globally, more than 1.8 million cases of CRC were diagnosed in 2018 (Rawla et al., 2018). Surveillance, Epidemiology, and End Results Program approximates that there is a probability of 145,000 people being diagnosed with CRC in 2019 and more than 51,000 of these people are likely to pass away (NIH, 2018). The prevalence and mortality rates due to CRC have decreased in the United States (Siegel et al., 2017). The decline is associated with changes in lifestyle such as reduced consumption of red meat and increased use of Aspirin.

Despite the decline in CRC incidence, some disparities are related to socio economic status and race. Thus, the prevalence of CRC is still high among AAs (Siegel et al., 2017). Moreover, people who belong to a lower socioeconomic status are at higher risk of getting CRC; a study revealed the risk is 30% high (American Cancer Society 2019b, 2019c). The rate of cancer screening among minority populations is lower due to a lack of awareness and communication about the available options of CRC screening. Thus, the lack of knowledge on the importance of screening and detecting CRC early enough is a significant gap in nursing practice. The practice-focused question for the project was:

PFQ: Does an evidence-based staff education project on CRC screening guidelines improve G.I. staff knowledge on CRC screening?

The purpose of this doctoral project was to address the gap in nursing practice by educating the G.I. department staff on the importance of CRC screening and ensuring that the staff was up to date on the current CRC guidelines.

The source of evidence for this project was quantitative data obtained from pre- and posttest questions administered to the G.I. staff before and after the educational session. The pretest assessed the knowledge of the staff before the in-service presentation. The posttest assessed the impacts of the education session on the staff. The pretest and posttest data were analyzed through sample proportion statistics

Findings and Implications

The results were summarized, and the importance of creating awareness about CRC screening was identified. A pretest administered before the in-service evaluated the current knowledge of the G.I. staff. The educational sessions were held in the G.I. department. The sessions were conducted in smaller groups to ensure social distancing due to the Covid-19 pandemic. The participants were mostly nurses and medical assistants. After the in-service education, a posttest revision was carried out.

A total of 15 people attended the education sessions, and they all completed the anonymous pre- and posttest. Both the pretest and posttest had 10 questions. The results were as shown in Table 1 below.

Table 1

Pretest Results

	Participants score per question (1 question= 10%)														
Questions	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	0	10	0	0	0	0	10	0	0	0	0	0	0	0	0
2	10	10	10	10	10	10	0	0	0	0	0	0	0	0	0
3	10	0	0	0	0	0	10	10	10	10	0	10	10	0	0
4	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
5	10	10	10	0	10	10	0	10	0	10	10	10	0	0	0
6	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
7	10	10	0	10	0	0	0	0	0	0	0	0	0	0	0
8	10	10	10	10	10	10	10	10	10	0	0	0	10	0	0
9	10	10	10	10	10	10	10	10	10	10	10	0	0	0	0
10	10	10	10	0	0	0	0	0	0	0	0	0	0	0	0
Total Score (%)	90	90	70	60	60	60	60	60	50	50	40	40	40	20	20

Table 2

Posttest Results

	Participants score per question (1 question= 10%)														
Questions	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	10	10	10	10	10	10	10	10	10	0	10	10	10	10	10
2	10	10	10	10	10	10	10	10	0	10	10	10	10	10	10
3	10	10	10	10	10	10	10	10	10	10	0	10	10	0	0
4	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
5	10	10	10	10	10	10	10	10	10	10	10	0	10	10	0
6	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
7	10	10	10	10	10	10	10	10	10	10	10	0	0	0	0
8	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
9	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	0	0	10	10	10	10	0	0	0
Total Score (%)	100	100	100	100	100	100	90	90	90	90	90	80	80	70	60

The results showed that the evidence-based staff education project on CRC screening guidelines improved G.I. staff knowledge. The first analysis involved sample proportion statistics on how all 15 participants performed in each question in both pretest and posttest. In the pre and posttest, the G.I. staff demonstrated an adequate knowledge of when to administer colonoscopy. In both pretest and posttest, all 15 participants got questions 4 and 6 right (see Table 3). However, during the pretest, it was noted that most participants had limited knowledge of the appropriate time to conduct screening for colon cancer for patients with known family history and when to stop screening (Questions 1 and 10), the risk factors of developing colon cancer (Question 7). However, evidence-based education on CRC screening guidelines significantly improved the G.I. staff knowledge on CRC screening on the poor performance with Questions 1, 7, and 8, where a significant change of 80%, 53%, and 46% respectively was recorded (see Table 3).

Further, in the pretest, the least score recorded was 13%; this increased significantly after the evidence-based education, where the least score recorded in the posttest rose to 66.67% (see Table 3). The average difference indicating a significant improvement between pretest and posttest was 35.23%. However, with the exclusion of the test scores that had no effect (questions 4 and 6) where the participants scored 100% in both, the average significant improvement in knowledge was 44.0%. This is an indication that evidence-based education has a significant effect in increasing the G.I. staff knowledge on CRC screening and screening guidelines. The findings are summarized in Table 3 below (see Appendix B for the questions).

Table 3

Pretest and Posttest knowledge Performance per Question for all Participants

Questions	Pretest correct	Posttest correct	Difference
1.	13.33%	93.33%	80.00%
2.	40.00%	93.33%	53.33%
3	46.67%	80.00%	33.33%
4.	100.00%	100.00%	0.00%
5.	60.00%	86.67%	26.00%
6.	100.00%	100.00%	0.00%
7.	20%	73.33%	53.33%
8.	66.67%	100.00%	33.33%
9.	73.33%	100.00%	27.00%
10.	20.00%	66.67%	46.00%

Similar results were observed when sample proportion statistics were done on the performance of each participant on all 10 questions in both pretest and posttest. The overall results showed that the provision for evidence-based education on CRC screening guidelines had a significant effect on increasing the G.I. staff knowledge. In the pretest, the least score was 20%; however, the least score improved significantly to 60% in the posttest; this showed that the percentage level of knowledge for the least performer increased two-fold. Similarly, only two participants scored 90% in the pretest (this represents 13.33% of the participants); however, there was a significant increase to 11 participants who scored more than 90% in the posttest (this represents 73.33%). This showed a 60% increase in knowledge acquisition regarding CRC screening guidelines. The average improvement in scores after evidence-based education was 35.33%. A summary percentage difference in test score improvement showed that 13.33% had an increase in knowledge acquisition on CRC screening guidelines by 10%, 20% of the participants improved their knowledge by 30%, 53.33% of the participants improved their knowledge by 40%, and 13.33% of the participants improved their knowledge by 50%. These results were an indication that evidence-based education is an effective method in increasing G.I. staff knowledge. The results are summarized in Table 4 below.

Table 4

Pretest and Posttest Knowledge Performance per Participant

Participant No.	Total Pretest Score	Total Posttest Score	Improvement in Score
1	90%	100%	10%
2	90%	100%	10%
3	70%	100%	30%
4	60%	100%	40%
5	60%	100%	40%
6	60%	100%	40%
7	60%	90%	30%
8	60%	90%	30%
9	50%	90%	40%
10	50%	90%	40%
11	40%	90%	50%
12	40%	80%	40%
13	40%	80%	40%
14	20%	70%	50%
15	20%	60%	40%

An overview of the results discussed above implied that evidence-based education on CRC screening guidelines is critical. This is because if the G.I. staff increases their understanding of CRC screening, there is a higher likelihood of improving healthcare outcomes by reducing the morbidity and mortality rates associated with screening colonoscopy no show rates. Educating the G.I. staff in a manner that enhances their knowledge on CRC, can also be translated into clinical practice by the G.I. staff by educating patients on the importance of CRC screening, which can eventually lead to improve patient outcomes. This knowledge supports the role of pro-active communication between the clinical staff and the patients. Communication ensures that the patients air their health concerns and fears, which will help them to adopt better health practices such as early screening.

The social change implication was the identification of a staff education program that was aimed to empower and improve the G.I. staff with the knowledge needed to promote CRC screening, that will impact the population they serve.

Recommendations

The gap I identified for this project was insufficient awareness among the G.I. staff on the importance of CRC screening and current CRC recommended guidelines. The tool developed for this project was an educational intervention that was effective in reducing the identified gap in nursing practice. The development and implementation of an evidence-based education on CRC screening and screening guidelines improved staff knowledge in this facility. The educational intervention can lead to timely detection and removal of precancerous polyps; hence, decline in incidence and mortality due to CRC.

However, a high number of patients are missing their appointments, lack the financial resources, inability to access care, and some lack the knowledge on the importance of CRC screening. Also, I recommended to the practice administrator to download recent CRC guidelines and place in the information board to promote ongoing staff awareness on the importance of CRC screening and screening guidelines. I also suggested bi-annual staff education on the importance of CRC screening and screening guidelines. Future translational research needs to be conducted to assess the impact of staff education and CRC screening rates and how it impacts patients' attitudes regarding the severity of CRC and the benefits of CRC screening.

Contributions of the Doctoral Team

I did not have a project team due to the nature of the project. I created the PowerPoint used for the in-service, distributed the pre and post-test as well as presented the in-service.

Strengths and Limitations of the Project

During the PowerPoint in-service presentation, the G.I. staff were very engaged, eager to learn, and their co-operation was invaluable. The project was effective in providing the education that was helpful to the G.I. staff. The educational intervention took a day due to the Covid-19 pandemic and the need for social distancing. I held several small sessions, and the project did not disrupt the workflow in the G.I. department since non-emergent patients were being rescheduled.

The number of participants was (N=15); hence it was too small to be used to generalize a larger population. Although the focus of the project was the clinical staff, I did not evaluate the attitude and impacts of the educational intervention on patients.

Thus, future projects should analyze how education is likely to influence the beliefs of the patients as they play a significant role in determining the efficiency of an intervention.

Section 5: Dissemination Plan

Dissemination Plan

The project's findings were shared with the practice administrator and Nursing Research Counsel. Post-graduation, I am required to do a presentation to the Nursing Research Council and Magnet Committee at the facility. The G.I. practice administrator requested that I attend a meeting with the urology staff and present the findings. Due to the nature of the project, the chief resident has requested that I present and administer the pretest and posttest during resident noon conference, which consists mainly of first-year interns and residents.

The publication of the project will occur once the project is completed and will be published in ProQuest. Dissemination at the local level will include a poster presentation at the facility research day, which has been moved to a later date due to the current pandemic. The audience who will also benefit from the project information would be primary care, gynecology, urology, and breast cancer, as well as other departments where screenings are being administered.

Analysis of Self

The main challenge I encountered during the project was the lack of an environment where the clinical staff could learn new things and put them into practice. However, the project provided me with an excellent opportunity to integrate my responsibilities as a nurse practitioner and as a project leader. As a nurse practitioner who had been working in the G.I. department for 4 years, I needed to identify any disparities in nursing practice. My experience in G.I endoscopy laboratory motivated me to select

this project. I discovered most patients who were diagnosed with CRC had not undergone any screening, and some of them had been advised to undergo CRC screening but never contacted the G.I. for a screening appointment. As a project leader, I was able to apply evidence-based knowledge to create an educational PowerPoint based on recent CRC guidelines and presented them to the G.I. staff. I learned how to design, analyze, and implement a project. The skills gained helped me to conduct a project that was effective in improving the G.I. staff knowledge on the importance of CRC screening and screening guidelines. This DNP project has increased my confidence when working with the residents and faculties on other clinical research projects.

Summary

CRC is one of the most frequently occurring cancer-related death, which is avoided by routine screening screenings that identify precancerous polyps before they turn into cancer. Despite the recent downward trend, AAs continue to be disproportionately impacted by CRC when compared to other ethnic groups. AAs have the highest morbidity and mortality from CRC.

This capstone project was aimed at improving the G.I. staff knowledge as it relates to CRC screening and screening guidelines. The ACS, American College of Gastroenterology, and MSTF recommend screening AAs at age 45 for CRC. At the project site, referrals are given to all AA patients ages 45 and above for CRC screening. Early screening among AAs will lead to a decrease in mortality related to CRC, thus reducing the disparities among AAs when compared to other ethnicities.

It is essential to implement ongoing educational awareness on the importance of CRC screening, early detection, and encourage participation among all the G.I staff. Various professional societies have issued CRC screening guidelines, but there are variations among the existing guidelines as they relate to ethnic groups.

Education is effective in increasing awareness about the significance of CRC screening. People who have high levels of knowledge, especially men, have higher tendencies of going for screening and adopting healthy lifestyles (Zare et al., 2016). Ongoing staff education on CRC screening can serve as a basis for increasing staff knowledge and awareness on the importance of CRC screening. Although the number of participants limited the project, the results were significant to implement changes in local G.I. settings. The project presented opportunities for further research and development.

References

Alberti, L. R., Garcia, D. P., Coelho, D. L., De Lima, D. C., &Petroianu, A. (2015). How to improve colon cancer screening rates. *World Journal of Gastrointestinal Oncology, 7*(12), 484-491. doi:10.4251/wjgo. v7.i12.484

Alteri, R., Kalidas, M., Yadao, L., &Ogoro, C. (2018). Colorectal cancer risk factors. Retrieved from https://www.cancer.org/cancer/colon-rectal-cancer/causes-risks-prevention/risk-factors.html

American Cancer Society (2019a). Can colorectal polyps and can cancer be found early? Retrieved from https://www.cancer.org/cancer/colon-rectal-cancer/detection-diagnosis-staging/detection.html

American Cancer Society (2019b). Cancer facts &figures for African Americans, 2019-2021. Retrieved from https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/cancer-facts-and-figures-for-african-americans/cancer-facts-and-figures-for-african-americans-2019-2021.pdf

American Cancer Society (2019c). Cancer facts & figures, 2019. Retrieved from https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2019/cancer-facts-and-figures-2019.pdf

American Cancer Society (2019d). Colorectal cancer facts & figures, 2017-2019. Retrieved from https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/colorectal-cancer-facts-and-figures/colorectal-cancer-facts-and-figures-2017-2019.pdf

American Cancer Society (2019e). Colorectal cancer screening tests. Retrieved from https://www.cancer.org/cancer/colon-rectal-cancer/detection-diagnosis-staging/screening-tests-used.html

American Cancer Society (2017f). The costs of cancer: Addressing patient costs. Retrieved from https://www.fightcancer.org/sites/default/files/Costs%20of%20Cancer%20-%20Final%20Web.pdf

American Cancer Society (2017g). Understanding your pathology report. Retrieved from https://www.cancer.org/treatment/understanding-your-diagnosis/tests/understanding-your-pathology-report/colon-pathology/colon-polyps-sessile-or-traditional-serrated-adenomas.html

American Gastroenterological Association (2016). Task force releases updated recommendations for colorectal cancer screening. Retrieved from https://www.gastro.org/news/task-force-releases-updated-recommendations-for-colorectal-cancer-screening

Brown, T., Lee, J. Y., Park, J., Nelson, C. A., McBurnie, M. A., Liss, D. T., & Crawford, P. (2015). Colorectal cancer screening at community health centers: A survey of clinicians' attitudes, practices, and perceived barriers. *Preventive Medicine Reports, 2,* 886-891. doi.10.1016/j.pmedr.2015.09.003

Buehler, J., Castro, J., Cohen, S., Zhao, Y., Melly, S., &Moore, K. (2019). Personal and neighborhood attributes associated with cervical and colorectal cancer screening

in an urban African American population. Retrieved from https://www.cdc.gov/pcd/issues/2019/19_0030.htm

Butka, B. (2017). Missed appointment. *Journal of the American Medical Association,317*(20), 2135-2135.doi:10.1001/jama.2017.0125

Centers for Disease Control and Prevention (2017). *United States cancer statistics: data* visualization. Retrieved from https://gis.cdc.gov/cancer/USCS/dataviz.html

Chen C. C., Basch C. E., Yamada T. (2010). An evaluation of colonoscopy use: implications for health education. *Journal of Cancer Education, 25*,160–165. doi:10.1007/s13187-009-0024-y

Colorectal Cancer Statistics. (2018, September 12). *World Cancer Research Fund*. https://www.wcrf.org/dietandcancer/cancer-trends/colorectal-cancer-statistics

Doubeni, C. (2016). *Screening for colorectal cancer: Strategies in patients at average risk.* Waltham, MA: UpToDate. Retrieved from https://www.uptodate.com/contents/screening-for-colorectal-cancer-strategies-in-patients-at-average-risk

Doubeni, C., Corley, D., Quinn, V., Jensen, C., Zauber, A., Goodman, M., Fletcher, R. (2018). Effectiveness of screening colonoscopy in reducing the risk of death from right and left colon cancer: a large community-based study. *GUT, 67*,291-298. Retrieved from https://gut.bmj.com/content/gutjnl/67/2/291.full.pdf

Gholampour, Y, Jaderipour, A., Khani, J., Kashfi, S., &Afzali, H. (2018). The effect of educational intervention based on health belief model and social support on the

rate of participation of individuals in performing fecal occult blood test for colorectal cancer screening. *Asian Pacific Journal of Cancer Prevention, 19*(10), 2777-2787. doi:10.22034/APJCP.2018.19.10.2777

Griffith KA. (2009). Biological, psychological and behavioral, and social variables influencing colorectal cancer screening in African Americans. *Nursing Research, 58,*312–320. doi:10.1097/nnr.0b013e3181ac143d

Hall, N., Birt, L., Rees, C. J., Walter, F. M., Elliot, S., Ritchie, M., & Rubin, G. (2016). Concerns, perceived need and competing priorities: A qualitative exploration of decision-making and non-participation in a population-based flexible sigmoidoscopy screening program to prevent colorectal cancer. *British Medical Journal Open, 6*(11), e012304. doi:10.1136/bmjopen-2016-012304

Hassan, C., Kaminski, M. F., &Repici, A. (2018). How to ensure patient adherence to colorectal cancer screening and surveillance in your practice. *Gastroenterology, 155*(2), 252-257. Retrieved from https://www.gastrojournal.org/article/S0016-5085(18)34693-6/pdf

Hsiang, E. Y., Mehta, S. J., Small, D. S., Rareshide, C. A., Snider, C. K., Day, S. C., & Patel, M. S. (2019). Association of primary care clinic appointment time with clinician ordering and patient completion of breast and colorectal cancer screening. *Journal of the American Medical Association Network Open,2*(5), e193403-e193403. doi:10.1001/jamanetworkopen.2019.3403

Iskandar, H., Yan, Y., Elwing, J., Early, D., Colditz, G. A., & Wang, J. S. (2015). Predictors of poor adherence of U.S. gastroenterologists with colonoscopy

screening and surveillance guidelines. *Digestive Diseases and Sciences, 60*(4), 971-978. doi:10.1007/s10620-014-3403-0

Jeihooni, A. K., Hidarnia, A., Kaveh, M. H., Hajizadeh, E., & Askari, A. (2015). The effect of an educational program based on health belief model on preventing osteoporosis in women. *International Journal of Preventive Medicine, 24(*6), 115. doi:10.4103/2008-7802.170429

Jones, C., Jensen, J., Scherr, C., Brown, N., Christy, K., & Weaver, J., (2015). The health belief model as an explanatory framework in communication research: Exploring parallel, serial, and moderated mediation. *Health Communication,30*(6), 566-576. doi.10.1080/10410236.2013.873363

Knudsen, A., Zauber, A., Rutter, C., Naber, S., Doria-Rose, V., Pabiniak, C., . . . Kuntz, K. (2016). Estimation of benefits, burden, and harms of colorectal cancer screening strategies. *Journal of the American Medical Association, 315*(23), 2595. doi:10.1001/jama.2016.6828

LaMorte, W. (2018). Behavioral change models: The health belief model. Boston University School of Public Health. Retrieved from http://sphweb.bumc.bu.edu/otlt/MPH-Modules/SB/BehavioralChangeTheories/BehavioralChangeTheories2.html

Levin, T., Corley, D. A., Jensen, C., Schottinger, J., Quinn, V., Zauber, A., Doubeni, C. (2018). Effects of organized colorectal cancer screening on cancer incidence and mortality in a large community-based population. *Gastroenterology, 155*(5), 1383-1391. doi:10.1053/j.gastro.2018.07.017

Lipkus, I. M., Johnson, C., Amarasekara, S., Pan, W., & Updegraff, J. A. (2019). Predicting colorectal cancer screening among adults who have never been screened: Testing the interaction between message framing and tailored risk feedback. *Journal of Health Communication ,24*(3), 262-270. doi:10.1080/10810730.2019.1597950

Macrae, F. A. (2019). Colorectal cancer: Epidemiology, risk factors, and protective factors. Retrieved from https://lifewithnogallbladder.com/article/colorectal-cancer-epidemiology-risk-factors-and-protective-factors/

Mason, D. J. (2016). Partnering with nurses to transform primary care. *JAMA Forum. 316*(23), 2471-2472. doi:10.1001/jama.2016.18361

May, F. P., Whitman, C. B., Varlyguina, K., Bromley, E. G., & Spiegel, B. M. R. (2016). Addressing low colorectal cancer screening in African Americans: Using focus groups to inform the development of effective interventions. *Journal of Cancer Education, 31*(3), 567-574. doi:10.1007/s13187-015-0842-z

Muliira, J., D'Souza, M., Al-Jahwari, F (2016). Barriers to colorectal cancer screening in primary care settings: Attitudes and knowledge of nurses and physicians. *Asia-Pacific Journal of Oncology Nursing, 3*(1):98-107. doi:10.4103/2347-5625.177391

Nagelhout, E., Comarell, K., Samadder, N. J., & Wu, Y. P. (2017). Barriers to colorectal cancer screening in a racially diverse population served by a safety-net clinic. *Journal of Community Health,42*(4), 791-796. doi:10.1007/s10900-017-0319-6

National Cancer Institute. (2018). Surveillance, Epidemiology, and End Results (SEER).

National Institute of Health (2018). Colonoscopy. Retrieved from https://www.niddk.nih.gov/health-information/diagnostic-tests/colonoscopy

Pignone, M., & Miller, D. (2017). Using outreach to improve colorectal cancer screening. *Journal of the American Medical Association, 318*(9), 799. doi:10.1001/jama.2017.10606

Qayed, E. (2019). *Gastroenterology Clinical Focus: High yield GI and hepatology review for boards and practice*. North Charleston, SC: CreateSpace.

Rex, D. K., Boland, R., Dominitz, J. A., Giardiello, F. M., Johnson, D. A., Kaltenbach, T., & Robertson, D. J. (2017). Colorectal cancer screening: Recommendations for physicians and patients from the U.S. Multi-Society Task Force on colorectal cancer. *American Journal of Gastroenterology, 112*(7), 1016-1030. doi:10.1038/ajg.2017.174

Rhodes, W. C., Kellar-Guenther, Y., Levinson, A. H., Dwyer, A., & Gritz, R. M. (2017). Cost-effectiveness of a patient navigation program for colorectal cancer screening. *Journal of Clinical Pathways*, 3(4), 31-35.

Rawla, P., Sunkara, T., & Barsouk, A. (2018). Epidemiology of colorectal cancer: incidence, mortality, survival, and risk factors. *Gastroenterology Review*. doi.10.5114/pg.2018.81072

Senore, C., Inadomi, J., Segnan, N., Bellisario, C., & Hassan, C. (2015). Optimizing colorectal cancer screening acceptance: A review. *Gut*,64(7), 1158-1177.

Shah, S. J., Cronin, P., Hong, C. S., Hwang, A. S., Ashburner, J. M., Bearnot, B. I., ... & Kimball, A. B. (2016). Targeted reminder phone calls to patients at high risk of

no-show for primary care appointment: A randomized trial. *Journal of General Internal Medicine,* 31(12), 1460-1466. doi:10.1007/s11606-016-3813-0

Siegel, R. L., Miller, K. D., Fedewa, S. A., Ahnen, D. J., Meester, R. G., Barzi, A., & Jemal, A. (2017). Colorectal cancer statistics, 2017. *CA: A Cancer Journal for Clinicians,* 67(3), 177-193. doi:10.3322/caac.21395

Wools, A., Dapper, E. A., & Leeuw, J. D. (2015). Colorectal cancer screening participation: A systematic review. *The European Journal of Public Health, 26* (1), 158-168. doi:10.1093/eurpub/ckv148

United States Census Bureau (2018). Quick facts Georgia. Retrieved from https://www.census.gov/quickfacts/GA

United States Preventive Services Task Force (2016). Colorectal cancer: Screening. Retrieved From https://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/colorectalcancerscreening2?ds=1&s=colorectal%20cancer%20screening

Wilkins, T., McMechan, D., Talukder, A., & Herline, A. (2018). Colorectal cancer screening and surveillance in individual at increased risk. *American Family Physician, 97*(2), 111-116.

Williams, R., White, P., Nieto, J., Vieria, D., Francois, F., & Hamilton, F. (2016). Colorectal cancer in African Americans: An update. *Clinical and Translational Gastroenterology, 7*, e185. doi:10.1038/ctg.2016.3

Wolf, A. M., Fontham, E. T., Church, T. R., Flowers, C. R., Guerra, C. E., LaMonte, S. J., & Smith, R. A. (2018). Colorectal cancer screening for average-risk adults:

2018 guideline update from the American Cancer Society. *CA: A Cancer Journal for Clinicians, 68,* 250-281. doi:10.3322/caac.21457

Woudstra, A., Dekker, E., Essink-Bot, M., & Suurmond, J. (2015). Knowledge, Attitudes and beliefs regarding colorecta; cancer screening among ethnic minority groups in the Netherlands—a qualitative study. *Health Expectations, 19,* 1312-1323. doi:10.1111/hex.12428

Zare, M., Ghodsbin, F., Jahanbin, I., Ariafar, A., Keshavarzi, S., & Izadi, T. (2016). The effect of health belief model-education on knowledge and prostate cancer screening behaviors: A randomized controlled trial. *International Journal of Community Based Nursing & Midwifery, 4*(1), 57-68.

Zauber A. G. (2015). The impact of screening on colorectal cancer mortality and incidence: has it really made a difference? *Digestive Diseases and Sciences, 60*(3), 681–69. doi:10.1007/s10620-015-3600-5

Appendix A: Staff Education Module (PPT)

Colorectal Cancer Screening

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1

Objectives

- Colorectal cancer: Statistics
  - A. What is colorectal cancer.
  - B. Risk factors.
  - C. Symptoms of colorectal cancer.
  - D. Risk factors of colorectal cancer.
- Diagnosis of colorectal cancer.
- Current recommendations.

2

Colon Cancer: Overview

- Colorectal cancer CRC) is cancer that occurs in the colon or rectum.
- It is the second leading cause of death in the United States and affects both men and women.
- CRC is one of the most preventable type of cancer- can be detected by testing.
- American Cancer Society

3

Question

Colorectal cancer risk and mortality is highest in which ethnic group?

- A. Hispanic American
- B. Asian American
- C. Native American.
- **D. African American**

4

Colon Cancer: Statistics

- 2018- An estimated 140,250 new cases of CRC cases are expected to be diagnosed.
- 2018- An estimated 50,630 deaths are expected to occur from CRC cancer.
- African Americans have the highest incidence and mortality.

American Cancer Society

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Colon Cancer: Overview

- The most CRC start as a growth called polyps. Adenomatous polyp is the most common type.
- Screening tests can detect pre-cancerous polyps so they can be removed before they progress into cancer.

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Colorectal Cancer: Overview

- It is often found in people 50 years or older but can occur at younger age.
- CRC can be prevented if more people had recommended screening tests to find colon cancer in early stages.

7

Question

- Most colorectal cancer usually begin as
- A. Severe ulceration
- B. Chronic inflammation.
- **C. Adenoma polyp**
- D. Virus

8

Risk stratification

Average Risk	Increased Risk
No sign or symptoms of CRC No risk factor.	Family history of CRC or adenomas in first-degree relative. Two second-degree relatives with history of CRC. Personal history of adenomatous polyps. *Screen 10 years before the youngest case in the family was diagnosed.*

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CRC risk stratification

High Risk	Highest Risk
Inflammatory bowel disease such as ulcerative colitis or Crohn's disease. Start screening colonoscopy eight to 10 years after onset of symptoms.	Suspected or confirmed genetic syndromes such as familial adenomatous polyposis (FAP) or Lynch syndrome (hereditary non-polyposis colorectal cancer/HNPCC). Start screening at age 25 & annually for HNPCC. Start at the age of 10-20 &repeat every 1-2 years for FAP.

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Family history of CRC

- Persons with 1 first-degree relative with CRC or a documented advanced adenoma diagnosed at age <60 years or with 2 first-degree relatives with CRC and/or documented advanced adenomas undergo colonoscopy every 5 years beginning 10 years younger than the age at which the youngest first-degree relative was diagnosed or age 40, whichever is earlier.
- Persons with 1 first-degree relative diagnosed with CRC or a documented advanced adenoma at age ≥60 years begin screening at age 40. The options for screening and the recommended intervals are the same as those for average-risk persons.

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Question

- A 38 year old asymptomatic African American male with no significant past medical history presents for annual physical exam. He reports a family history of colon cancer in his maternal uncle at age 65 and maternal grandmother at age of 69. At what should he be screened for colorectal cancer?
- A. Screen with diagnostic colonoscopy now.
- **B. Start screening at age 45.**
- C. Screen at age 55.
- D. Screen when the patient is symptomatic.

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Colonic Polyps

- Colorectal polyps can be
  - sporadic or hereditary
- Neoplastic (tubular, tubulovillous, villous adenomas)
- Non-neoplastic (hyperplastic)

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Question

- Which of the following polyp is not considered precancerous ?
- A. Villous adenoma
- B. Tubular adenoma
- C. Tubulovillous adenoma
- **D. Hyperplastic polyp**

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Modifiable risk factors

- Alcohol consumption
- Diet
- Obesity
- Sedentary lifestyle
- Cigarette smoking.

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Question

Which of the following is **not** considered a risk factor for colorectal cancer? Circle all that apply

- **A. Bleeding hemorrhoids.**
- B. Familial Adenomatous Polyposis (FAP)
- C. History of adenomatous polyps.
- D. Crohn's disease

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Non-modifiable risk factors

- Race- African Americans have higher risk
- Age- Increases with aging>50
- Inherited gene mutations- HNPC & FAP
- Family or personal history of colon cancer or adenomatous polyps.
- Inflammatory bowel disease- Crohn's disease or Ulcerative colitis

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Symptoms of CRC

Early stages of CRC often has few or no symptoms.
Symptoms may include:

- Blood in stool
- Bleeding from the rectum.
- Change in bowel habits (constipation or diarrhea).
- Black or dark stools

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Symptoms of CRC

- Cramping abdominal pain.
- Unintentional weight loss.
- Inability to completely empty the bowel.
- Iron deficiency anemia (weakness, excessive fatigue and SOB).

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CRC screening tests

- Several tests may be used to diagnose colorectal cancer. They may include:
  - Colonoscopy: A colonoscope is used to look inside the rectum and colon. Detects precancerous polyps. Polyps are removed before they turn into cancer. Used as a diagnostic test if any of the other test result is abnormal.
  - Use to evaluate positive results from all non-colonoscopy test.

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CRC screening tests

- CT Colonography is a detailed CT scan of the colon and rectum. Done every 5 years.
- Flexible Sigmoidoscopy: Looks inside of the rectum and lower portion of the colon. Done every 5 years.

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CRC screening tests

- Guaiac-based Fecal Occult Blood Test (gFOBT): Looks for blood in stool.
- Fecal Immunochemical Test (FIT). Done annually. Checks for blood in stool. If test is positive, diagnostic colonoscopy is performed
- FIT-DNA Test: Combines the FIT with a test to detect altered DNA in stool. Done every one or three years.

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Recent Recommendations

- American Cancer Society recommended screening average risk patients at age 45.
- Adults ages 76-85. Screening should be considered on case by case basis.
- Adults over age 85 should no longer be screened.
- Assess if the patient has at least a 5-10 years life expectancy.

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Facility recommendation

- This facility recommends screening all average risk adults at the age of 45.
- This facility offers screening colonoscopy and FIT because our patients are at high risk.

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Questions

- Thank you.

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References

- American Cancer Society (2017). Colorectal Cancer Facts & Figures 2017-2019. Retrieved from https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/colorectal-cancer-facts-and-figures/colorectal-cancer-facts-and-figures-2017-2019.pdf
- Cancer.Org (2017). Understanding Your Pathology Report. Retrieved from https://www.cancer.org/treatment/understanding-your-diagnosis/tests/understanding-your-pathology-report/colon-pathology/colon-polyps-sessile-or-traditional-serrated-adenomas.html
- Centers for disease control and Prevention (2017). Retrieved from https://www.cdc.gov/cancer/colorectal/pdf/basic_fs_eng_color.pdf

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Appendix B: Staff Education Pre and Posttest Questions

1. A 30-year-old presents to the clinic for evaluation of acid reflux. He reports that his brother, aged 35, was recently diagnosed with stage III colon cancer, and his mother passed away from colon cancer at age 45 from colon cancer. When should he be screened?

    A. At the age of 45.

    B. When he is symptomatic.

    C. Now.

    D. At the age of 35.

2. What is the least common presentation in a 51-year-old patient with stage two colorectal cancer?

    A. Weight loss.

    B Iron deficiency anemia.

    C. Asymptomatic.

    D. Rectal bleeding.

3. What test is used to screen for colorectal cancer? Circle all that apply

    A. H pylori stool antigen.

    B. Flexible Sigmoidoscopy.

    C. Fecal immunochemical test (FIT).

    D. CT Colonography.

4. A 65 years old Asian female presents with a positive fecal immunochemical test (FIT). Which test should be offered for further evaluation?

A. FIT-DNA.

B. Fecal Occult Blood Test (FOBT).

C. CT Colonography.

D. Colonoscopy.

5. Which of the following lifestyle choices would decrease the risk for colorectal cancer in an average risk patient?

A. Sedentary lifestyle.

B. Obesity.

C. High fiber diet.

D. Alcohol consumption.

6. Mr. Ike is a 47 years old morbidly obese AA male who presents to the clinic for evaluation. His iron panel shows iron deficiency anemia. On physical exam, his abdomen is distended, and he admits to having alternating diarrhea and constipation, which started about nine months ago. Which is the best test to determine what is going on with Mr. Ike?

A. Tumor marker blood test.

B. Colonoscopy.

C. Fecal immunochemical test. (FIT).

D. H pylori stool test.

7. Which of the following about colorectal cancer is correct?

A. Patients with familial adenomatous polyposis (FAP) are at increased risk of developing colorectal cancer.

B. Native Americans have the highest mortality from colorectal cancer than African Americans.

C. A low fiber diet decreases the risk of developing colorectal cancer.

D. Regular cardio exercise and daily fiber consumption increases your risk for colorectal cancer.

8. A 75-years old Hispanic male is evaluated as a new patient. He is asymptomatic, feels well, and jogs three miles daily. He reports no family history of colorectal cancer nor gastric malignancy. He has not had any prior colorectal cancer screening. Which of the following screening test would be appropriate for this patient?

A. CT Colonography.

B. Flexible Sigmoidoscopy.

C. Do not screen. Pt is low risk.

D. Offer colonoscopy or fecal immunochemical testing now.

09. A 50-year old male presents to the clinic for a follow up of elevated blood pressure. He is willing to undergo CRC screening; however, he does not want to drink the prep nor change his diet because he resides in a shelter. Which screening test would be appropriate for this patient?

A. Barium enema.

B. Flexible Sigmoidoscopy.

C. Fecal immunochemical test.

D. CT Colonography.

10. A 90-years old male who is wheelchair bound with history of stroke, heart attack, end stage liver disease presents for follow up with his daughter. She reports that her brother aged 68 is undergoing treatment for stage IV CRC. She is requesting that her father be screened for CRC. Based on current recommendations, you should?

    A. CT Colonography.

    B. Do not screen. Patient is low risk.

    C. Screen with any of the recommended CRC screening test.

    D. Offer a colonoscopy or fecal immunochemical testing now.