

PERCEPTIONS OF EARLY DETECTION SCREENING FOR COLORECTAL  
CANCER IN AFRICAN AMERICAN MEN AND WOMEN AGED 30–44, USING  
THE HEALTH BELIEF MODEL

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## DEDICATION

To my husband, son, mother, and late father, I dedicate this dissertation work to you. Dem, thank you for your unfailing love, support, and always filling in the gaps in our life so I could research, write, and stay sane. I appreciate every word of encouragement, every hug, and every moment you helped me just to breathe, smile, and have fun during this process. I love you so much.

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## ABSTRACT

CHLOÈ FIELDS

### PERCEPTIONS OF EARLY DETECTION SCREENING FOR COLORECTAL CANCER IN AFRICAN AMERICAN MEN AND WOMEN AGED 30–44, USING THE HEALTH BELIEF MODEL

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African Americans have incidence and mortality rates of 55.2 and 24.5 per 100,000 cases for colorectal cancer (CRC). By 2030, incidence rates for colon and rectal cancers will increase by 90% and 124.2%, respectively, for ages 20–34 years old and by 27.7% and 46%, respectively, for ages 35–49 years old. To date, studies targeting African American men and women, ages 30–44, about CRC screenings and screening behaviors are scarce as the vast majority of studies on CRC within the African American community are focused on those aged 50 and above. The purpose of this study was to investigate factors that influence African American men and women’s participation in early detection screening for CRC, utilizing a health belief model framework. Through the use of a mixed-method convergent parallel design, quantitative and qualitative data collection was employed through an online survey and face-to-face interviews. Analysis was completed by SPSS ordinal logistic regression and NVIVO. Study findings indicated cues to action and perceived susceptibility were predictors of CRC screening; however, overall screening knowledge was low. Additionally, perceived barriers and perceived benefits were consistent with the current screening trends of African American men and women aged 50 and above. Based on the study findings, recommendations include: the creation of age-appropriate health communication campaigns and health interventions, updated CRC evidence-based screening guidelines to include younger adults based on current disease trends, advocacy

efforts funding research to assess CRC impact in African Americans aged 30–44, and streamlined approaches for healthcare providers to discuss CRC screenings with patients younger than the age of 45.

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## CHAPTER I

### INTRODUCTION

Cancer is a disease in which atypical cells in the body grow out of control (ACS, 2018i; American Cancer Society [ACS], 2020b; Centers for Disease Control and Prevention [CDC], 2017d; 2018a; Mayo Clinic, 2018a; National Cancer Institute [NCI], 2015). The cells mutate swiftly and can penetrate other portions of the blood, tissue, and lymph system (ACS, 2020b, CDC, 2018a; Mayo Clinic, 2018a; NCI, 2015). Cancer can be caused by genetics, environment, and or lifestyle factors (ACS, 2020b; NCI, 2015; World Health Organization [WHO], 2018). Cancer is a unique disease in that researchers expect there to be a 70% increase in the number of cases in the next 20 years; with a 1 in 3 lifetime risk of developing cancer for women, and a 1 in 2 risk of developoing cancer for men (ACS, 2020d; Howlader et al., 2017; WHO, 2018). In 2020, it is estimated that "40 out of 100 men and 39 out of 100 women will develop cancer during their lifetime, in the United States" (ACS, 2020b, p. 2). Likewise, the increase in cancer can be attributed to the fact that people are living longer lives (Ahmad et al., 2015; M. C. White et al., 2014; Xu, Z. & Taylor, 2014). Additionally, there are over one hundred types of cancer, with each requiring different diagnosis and treatment (NCI, 2018c; WHO, 2018). Worldwide, cancer ranks number two as the global cause of death, with "1 in 6 deaths due to cancer," accounting for about 13% of the world's deaths, with a total of 9.6 million deaths in 2018 (WHO, 2018, p. 1). According to the National Cancer Institute [NCI] (2018a), in 2018, it was estimated that 1,735,350 million people would be diagnosed with cancer, and 609,640 will die from the disease in the United States. Additionally, the ACS found that over "16.9 million Americans with a

history of cancer were alive on January 1, 2019," with a vast majority of these individuals who were "diagnosed years ago and have no current evidence of cancer" (ACS, 2020b, p. 1).

However, the number of expected new cancer cases in 2020 is 1.8 million, with about 606,520 expected deaths. When specifying cancer by gender on-set, prostate cancer is the most common for men, and breast cancer is the most common for women (ACS, 2018c, 2020b; CDC, 2017f, 2018a; WHO, 2018). However, lung and colorectal cancers (CRC) are the most common, non-gender specific cancer for both men and women (ACS, 2018c, 2018i, 2020b; CDC, 2018a).

Of the two most common cancers in men and women, CRC has a significant impact on all races and ethnicities of these genders (ACS, 2018i, 2020b; NCI, 2018a; WHO, 2018). CRC is cancer located in the colon or rectum (CDC, 2018b, 2018c, 2020b). It is the third leading cause of cancer deaths in the United States and the third most common cancer in men and women (ACS, 2018d; CDC, 2018c, 2020b). Disease signs and symptoms include "rectal bleeding, blood in the stool, a change in bowel habit or stool shape, the feeling that the bowel is not completely empty, abdominal cramping or pain, decreased appetite, and weight loss" (ACS, 2018i, p. 13). On average, 1 in 3 individuals diagnosed with CRC will die, with over 50,000 people dying from CRC each year in the United States and about 881,000 worldwide (CDC, 2018f; Doubeni & Levin, 2018). While CRC is considered a preventable and treatable cancer (when coupled with screening), race trends of the disease show that African Americans rank the highest of all races in both incidence and mortality, even with a decrease of death and diagnoses over the last decade (ACS, 2016a; CDC, 2018f; DeSantis et al., 2016; Williams, R. et al., 2016).

While deaths and occurrences reign higher in this race compared to other races, the commonality between all races is that a person's physical activity, dietary habits, and lifestyle have a significant role in disease prevention (Brenner & Chen, 2018; CDC, 2018a, 2018b).

Physically active individuals have a 24% lower risk of developing CRC than less active people; however, poor diets such as low fruit and vegetable intake, low-fiber, high-fat and high consumption of red or processed meat raises the risk (Aykan, 2015; Grosso et al., 2017; Jeyakumar et al., 2017; Moore et al., 2016; NCI, 2017; Tan & Chen, 2016; Zhao et al., 2017). CRC has also been linked to moderate and heavy alcohol use, and people who have a lifetime average of 2 to 4 alcoholic drinks per day have a 23% higher risk of being diagnosed with CRC (ACS, 2017a; Grosso et al., 2017; Rossi et al., 2018; NCI, 2018b; Wang et al., 2015). Additionally, genetic make-up, family history of the disease, and the presence of other co-morbidities also contribute to a CRC diagnosis (ACS, 2018i; 2018f; Weigl et al., 2018).

Screening for CRC is the most effective prevention method (ACS, 2018b; CDC, 2018e; Jin, 2016; Joseph et al., 2018). The U.S. Multi-Society Task Force on Colorectal Cancer (MSTF), comprised of the American Gastroenterological Association, American College of Gastroenterology, and American Society for Gastrointestinal Endoscopy, recommendations suggest that screening for CRC should begin for an average-risk person at the age of 50, and at the age of 45 for African Americans (Rex et al., 2017; MSTF, 2018). However, ACS suggests that screening recommendations begin at age 45 for all men and women at average risk (ACS, 2018a; Macrae, 2018). The MSTF believes the ACS' recommendation to be "a qualified recommendation based largely on a modeling study utilizing updated data on the incidence of CRC in younger people" however, the MSTF also believes "studies to support lowering the screening age are limited at this time" (MSTF, 2018, p. 1). Moreover, based on the limitation of studies on CRC in younger people, currently, no recommendation for younger adults (those below the current recommendation age) exist, except for those with extenuating circumstances. Circumstances often include a personal or family history of CRC or CRC polyps, inflammatory

bowel disease and or genetic syndromes like familial adenomatous polyposis (FAP), or hereditary non-polyposis CRC (Lynch syndrome) (Ahnen et al., 2014; CDC, 2018e; Macrae, 2018; Mork et al., 2015). While some experts believe that there is no need for adjusting the recommendations for younger adults, others believe that the current recommendation should be considered more deeply.

Recent facts clearly show that even though the death rates of CRC in the young adult population are not as high as older adults, the incidence rates and young on-sets of CRC are continuing to increase (ACS, 2020a; Ahnen et al., 2014; Ashktorab et al., 2016; Chang et al., 2012; Lapumnuaypol et al., 2018; Macrae, 2018; Mork et al., 2015; MSTF, 2018; Rex et al., 2017; Siegel et al., 2017; Welch & Robertson, 2016). Rectal cancer incidence rates in adults 20 to 29 "have been increasing longer and faster" and the "colon cancer incidence rates increased by 1.0% to 2.4% annually since the mid-1980s in adults 20–39 years and by 0.5% to 1.3% since the mid-1990s in adults 40 to 54 years" (Siegel et al., 2017, p. 1). Moreover, for young African Americans specifically, the survival rate after a CRC diagnosis shows to have a worse and higher disparity than other racial and ethnic groups (ACS, 2016a; NCI, 2016a; Rex et al., 2017). According to the ACS (2020b), age trends vary and while death rate declined by 2.6% per year between 2008 and 2017 for adults over the age of 55, during this same time the death rates increased by 1% per year for adults who were younger than 55 (ACS, 2020b). However, while a diagnosis of CRC for those under 50 is still not as common, it is the speed, rise, and non-leveling off of these rates in those under 50 that is concerning (Siegel et al., 2017; Welch & Robertson, 2016). Moreover, it is the need for change in current recommendations in screening that should be thought about for the future.

Compared to other races, African Americans, as an entire population, are proportionally disadvantaged in not only health, but other socioeconomic factors as well (Jones et al., 2018; Kiviniemi et al., 2018; Rothstein, 2014; Saegert et al., 2006; D. R., Williams et al., 2016). These factors contribute significantly to the pursuit of health screenings, often putting a strain on achieving the desired outcome (Kiviniemi et al., 2018; Office of Minority Health, n.d.; Robert Wood Johnson Foundation, 2014). As deaths and occurrences remain high for CRC in African Americans and evidence show that CRC appears earlier and in more young adults, there have not been studies targeting younger adult African American men and women, aged 30–44, regarding CRC screening and the six health belief constructs (Ahnen et al., 2014; Chang et al., 2012; Kiviniemi et al., 2018; Macrae, 2018; Mork et al., 2015; MSTF, 2017, 2018; Rex et al., 2017; Siegel et al., 2017; Welch & Robertson, 2016). Using the health belief model (HBM) and focusing on the six constructs—perceived benefits, perceived barriers, perceived susceptibility, perceived severity, self-efficacy, and cues to action.

### **Purpose of the Study**

The purpose of this study was to explore two questions. The first question investigated what factors influenced why African American men and women aged 30–44, would participate (or would fail to participate) in early detection screening for CRC. The second question of the study was to discover if the idea of a new screening recommendation age versus the current screening recommendation age would have an impact on the decision of African American men and women, aged 30–44, to get screened for CRC; and if the HBM constructs, as with those 45 and older, would have an impact on the screening decision.

## **Theoretical Framework**

### **Health Belief Model**

When initially developed by Irwin Rosenstock, Godfrey Hochbaum, S. Stephen Kegeles, and Howard Leventhal in the 1950s, the HBM sought to provide a rationale for why individuals failed to engage in programs to detect and prevent disease (Skinner et al., 2015; Urich, 2017; Yoo et al., 2013). Subsequent years following its development, the basic premise of the HBM remained the same. However, its scope expanded robustly to include the concerns and predictions of public health issues such as health-related lifestyle behaviors, health compliance, and responses to disease symptoms and management (Glanz, et al., 2008; Janz & Becker, 1984; Skinner et al., 2015). The overall purpose of the HBM is to understand why people adhere to or disregard health issues/health maintenance as well as to discover what elements prompt them to do so (Becker, 1974; Champion, 1999; Skinner et al., 2015; Rosenstock, 1974). Additionally, the HBM helps health program developers identify the reasons for health disparity by focusing two aspects of health behavior: threat perception and behavioral evaluation (Rosenstock et al., 1966). The HBM has been used as a theoretical framework for many studies focused on screening for CRC (Rawl et al., 2005; R. Williams et al., 2018). However, those studies focused on populations much older than the population examined in this study.

### **Health Belief Model Constructs**

The HBM includes six constructs to help predict why "people will take action to prevent, screen for, or control illness conditions" (Champion & Skinner, 2008, p. 3). These constructs include perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy. Perceived susceptibility refers to an individual's belief in the chance of acquiring a health issue. Perceived severity places emphasis on the significance of the health

issue to the individual. Perceived benefits incorporate the belief that there is an advantage or significant value in taking a particular action to achieve positive results. Perceived barriers are negative prohibitions to action. Cues to action are prompts to act. Self-efficacy is the certainty in one's capability to act (Skinner et al., 2015; LaMorte, 2019; Jones et al., 2015). Although the HBM has its limitations because it is cognitively based, together, the constructs provide measurements in predicting engagement in one's health (Skinner et al., 2015). Each HBM construct is essential to the overall health paradigm; however, the magnitude of each construct can vary depending on the circumstance and health of an individual. The current study focused on examining the perceptions of early detection screening for CRC in African American men and women aged 30–44 by using the HBM with a specific focus on perceived barriers and perceived benefits.

### ***Perceived Barriers and Perceived Benefits***

Perceived barriers and benefits are constructs widely used in the theories of health behaviors. Perceived benefits influence an individual's belief, ultimately prompting a health behavior change to reduce the incidence of a health threat (Glanz et al., 2008; LaMorte, 2019; Skinner et al., 2015). Perceived barriers can be intrinsic and or extrinsic barriers that affect the participation in and or compliance of health behavior change. For CRC, the perceived benefits refer to belief in participating in a CRC screening test to prevent a CRC diagnosis, while the perceived barriers refer to the tangible and intangible aspects that hinder the participation in a CRC screening test (Rawl et al., 2005; R. Williams, 2018). Perceived barriers have been studied more widely than perceived benefits. Noting some barriers as comfortability of test, provider communication and encouragement, symptom absence, the concern of test effectiveness, testing cost, lack or presence of a family history of CRC, and follow-up test (Honein-AbouHaidar et al.,

2014; James et al., 2002; Redmond-Knight et al., 2015; R. Williams, 2018; Yong et al., 2016).

Likewise, the role of fear and medical mistrust as a perceived barrier of CRC screening in African American men and women is noteworthy (Adams et al., 2017; Champion et al., 2008; Gamble, 1997; Hong et al., 2018; Kalichman, 2017; Ramai et al., 2018; Reynolds et al., 2018; Spencer, 2010). The knowledge of perceived benefits and barriers for CRC screening has primarily been revealed and discussed by those who are at the current recommended screening age (i.e., 45+). The awareness of the perceived benefits and perceived barriers in African American men and women, aged 30–44, towards CRC screening is currently non-existent. However, based on the research of those aged 45 and older, it can be loosely suggested that the younger generations (30–44) may align with the beliefs of the older population. Using the HBM as a theoretical framework, this research sought to explore and expand those notions for the given population.

### **Research Questions**

Research Question 1: For African American males and females aged 30–44, what are the perceived barriers, perceived benefits, perceived severity, perceived susceptibility, cues to action, and self-efficacy towards screening for CRC?

Research Question 2: For African American men and women aged 30–44, what is the relationship between sex and the six health belief model constructs towards early detection screening for CRC at the current recommended age versus screening earlier than the recommended age?

### **Null Hypothesis**

H<sub>0</sub>: There will be no significant difference between African American men and women aged 30–44 regarding their perceived barriers, perceived benefits, perceived severity, perceived

susceptibility, cues to action, and self-efficacy of screening for CRC at the current recommended age versus screening earlier than the current recommended age.

### **Delimitations**

Delimitations of the study included:

- The participants were African American males or females between the aged of 30–44.
- The participants had not had a CRC screening test of any type.
- The participants resided in Dallas County (Texas).

### **Limitations**

Limitations of this study were as follows:

- A participant's understanding of the Colorectal Cancer disease including how one gets the disease, common statistics, the disease make-up and disease progression.
- A participant's knowledge of Colorectal Cancer screening tests as a method of disease prevention.
- The total number of participants available for pretesting of survey instrument.
- A participant's beliefs and attitudes towards Colorectal Cancer and Colorectal Cancer screening tests.
- A participant's cultural norms presented limitations.
- The 70-item questionnaire has not been validated with the target population.
- A participant's present health behavior and socioeconomic status presented limitations.
- The study was limited in that it used a convenience sample.
- The study was limited in that the total number of respondents limited its generalization of the results.

## **Assumptions**

Assumptions of the study included:

- The participant's ability to understand their involvement in the study.
- The participants are American and have a high school education or higher.
- The participants spoke and understood English.
- The participants were able to read and write in English.
- The participants' ability to respond to survey items honestly and the best of their knowledge was assumed.
- The survey instruments would effectively yield results that would answer the research questions.
- The use of the HBM was a good indicator to predict screening behavior.

## **Definition of Terms**

*Cancer*- a malignant tumor of potentially unlimited growth that expands locally by invasion and systemically by metastasis (Merriam-Webster, 2018a).

*Colon*- part of the large intestine that extends from the cecum or rectum (Merriam-Webster, 2018b).

*Colonoscopy*- endoscopic examination of the entire colon (Merriam-Webster, 2018c).

*Colorectal Cancer*- cancer that occurs in the colon or rectum (CDC, 2018b).

*CT Colonography*- a test that uses x-rays and computers to produce images of the entire colon (CDC, 2018b).

*Flexible Sigmoidoscopy*- a test in which a sigmoidoscope is used to check the rectum and the lower part of the colon only (CDC, 2018b).

*Rectum*- the terminal part of the intestine from the sigmoid colon to the anus (Merriam-Webster, 2018d).

*Stool Test*- a test that checks for hidden blood in the stool (CDC, 2018b).

### **Importance of the Study**

Current research demonstrates an increase in the onset of CRC in younger adults (Rex et al., 2017; Siegel et al., 2017). Screening earlier than the current recommended age has the potential to increase rates of early detection for CRC and decrease mortality and incidence rates. This research aimed to identify the perceived barriers, perceived benefits, perceived severity, perceived susceptibility, self-efficacy, and cues to action of African American males and females aged 30-44, towards screening for CRC earlier than the recommended age of 45. Given that African Americans make up only 13.4% of the population yet they have the highest death and occurrence rates of CRC among all races in the United States, these results increase knowledge for health educators to shape the methods by which health promotion efforts are developed and implemented for CRC detection, screening, and treatment (DeSantis et al., 2016; U.S. Census Bureau, 2017d; Williams, D. R. et al., 2016).

## CHAPTER II

### REVIEW OF LITERATURE

Nature versus nurture focuses on determining if a person's health, social, and cultural behavior is tied to their environmental surrounding or their genetic make-up (Cherry, 2018; Hernandez & Blazer, 2006). Both of these factors have varying degrees in shaping a person and have been deemed nearly impossible to isolate them from one another (Cherry, 2018; Hernandez & Blazer, 2006). In analyzing African Americans' perceived barriers and perceived benefits towards CRC, CRC screening, and their high incidence and mortality rates of the disease, it is vital to consider the notion that nature and nurture both play a role in the overall representation in CRC screening (Doll, 1996; Hyndman, 2016). In reviewing the historical characteristics and demographics of African Americans, their major health problems, and their barriers to screening, one can better understand the CRC screening habits of African Americans. Additionally, one can better understand the research at hand and better understand why it is suggested that African American men and women should screen for CRC earlier than the current recommended age of 45.

#### **African Americans**

##### **National Health Characteristics of the Target Population**

African Americans (or Blacks) are "defined as persons whose lineage includes ancestors who originated from any of the black racial groups in Africa" (Luquis & Perez, 2013, p. 8). In the United States, African Americans make up roughly 13% of the population (Kaiser Foundation, 2017; U.S. Census Bureau, 2017d). Approximately 55% of African Americans reside

in the southeastern sector within major metropolitan areas. These areas include states as far south as Texas (over 25% of the state's population) and as far east as the District of Columbia (over 50% of the state's population) (Agency for Healthcare Research and Quality [AHRQ], 2018; Luquis & Perez, 2013). Other states with African American populations over 25% include "Mississippi, Louisiana, Georgia, Maryland, South Carolina, and Alabama" (AHRQ, 2018; Luquis & Perez, 2013, p. 9; U.S. Census Bureau, 2017a, 2017b). Smaller numbers of African Americans are seen in the west, with as little as a 1% makeup in some western states such as Idaho and Montana (AHRQ, 2018; Kaiser Foundation, 2017; U.S. Census Bureau, 2017c). Within the African American community, men and women account for about 48% and 52%, respectively (U.S. Census Bureau, 2017d). The population of African Americans has increased over the years; however, the increase has been a much slower one than in other minority populations (U.S. Census Bureau, 2017d). From 1990 to 2000, there was a 17% increase, yet from the years 2000 to 2010, the expansion only grew to 12% (U.S. Census Bureau, 2017b). The average age of African Americans is 33, and adolescents (ages 10–19) make up about 13% of the population (Office of Adolescent Health, 2016). Within the African American population, the majority of the population is age 5 to 17 years old. Less than 5% percent of the African American population is comprised of individuals who are 75 years of age and older (U.S. Census Bureau, 2017b). Interestingly enough, while African American females make-up the majority of the population, when compared, African Americans have more males (51%) ages 17 and under than females (U.S. Census Bureau, 2017b). Additionally, African Americans have a more considerable number of young people than the non-Hispanic Caucasian population (U.S. Census Bureau, 2017b). Moreover, the higher population of older women versus older men demonstrates

that, on average, more African American women live longer than African American men (National Center for Health Statistics, 2017; Zarulli et al., 2018).

The household is yet another area in which African Americans fall behind when compared to other races/ethnic groups. On average, about 66% of African American households are headed by a single parent (Kids Count Data Center, 2020). Rates that are higher than the total US population (35%), Hispanics (42%) and Caucasians (24%) (Kids Count Data Center, 2020). Furthermore, more single African American females head the household than single African American males (U.S. Census Bureau, 2017d). Moreover, marriages in the African American population have declined and are lower than the U.S. rates (Raley et al., 2015; U.S. Census Bureau, 2017d). As the population with the lowest opposite-sex marriage rate across all races and ethnicities, only about 29% of African Americans are considered to be in married households, with about 5% cohabitating (U.S. Census Bureau, 2017b). The national percentage is 48% (U.S. Census Bureau, 2017d). This percentage is a significant decrease from the percentages over 50 years ago, which included 61% for African Americans and 72% as the national rate (Mouzon, 2014). Furthermore, the rate of divorces for African Americans is 12%, and the rates of separations are at 4%, with African American women having the higher rates in both at 13% and 4%, respectively, compared to other races (U.S. Census Bureau, 2017d).

### **National Health Characteristics of the Target Population: Women**

African American women have historically held their families together, and like many women in other races/ethnicities, they often overlook their wellbeing and health (Research Now, 2018; Ricketts, n.d.; WHO, n.d.). An African American woman's socioeconomic status and other social determinants of health have a significant impact on the leading health issues for this population; so much that when measured against the U.S. population and other races, they fall

slightly below or barely surpass both the U.S. population and other races (CDC, 2017a, 2018g, 2018j). A relevant health issue for African American women is heart disease. An estimated 49% of African American women have heart disease, and it is the number one cause of death for this population (CDC, 2017a; Murphy et al., 2017). On average, 48,000 African American women die from heart disease annually (American Heart Association [AHA], n.d.). Heart disease is also the number one cause of death in women of other races, and in fact, one in every three women died from the disease (AHA, 2018; CDC, 2017a). The American Heart Association suggests that a person partakes in the proper diet and exercise plan, get the appropriate heart health screening, and become educated on warning signs and symptoms to prevent and recognize the disease (AHA, 2015; CDC, 2017a). Compared to 22.3% of women of all races, 23.3% of African American women die from heart disease (CDC, 2018h). Additionally, this number is also higher than both Hispanics and Caucasians, who are at 22.6% and 22.3%, respectively (CDC, 2018h). Moreover, “almost 64% of women who die suddenly have no previous symptoms” (CDC, 2017a, p. 1).

While heart disease affects many African American women, cancer is also a significant health issue for African American women (ACS, 2016b; CDC, 2018g, 2018h; DeSantis et al., 2016). While there had been a relatively consistent presence of the overall cancer rates in African American women, breast cancer is on the rise, and CRC and lung cancer are decreasing (ACS, 2016b; DeSantis et al., 2016). The most common cancers among women in the United States include breast cancer (124.8 per 100,000), lung cancer (50.7 per 100,000), and CRC (33.3 per 100,000; CDC, 2018g). However, the leading causes of cancer deaths for women are lung cancer (33.6 per 100,000), followed by breast cancer (20.3 per 100,000) and CRC (11.8 per 100,000; CDC, 2018g). African American women follow behind Caucasian women in the incidence

rates/number of new cancers and fall in front of Hispanic women (390.3 vs. 421.4 and 327.5 per 100,000 [89,597 vs. 679,293 & 69,119]). In death rates of cancers, African American women lead both Caucasian and Hispanic women (152.6 vs. 136.5 and 94.7 per 100,000); yet when compared in numbers, 237,723 Caucasian women, 34,139 African American women, and 17,957 Hispanic women die on average from cancer (CDC, 2018g). The rates of new CRC cases in African American women per 100,000 people is 37.5; a rate higher than Caucasian women (32.7) and Hispanic women (28.0; CDC, 2018g). The number of new colon cancer cases includes 8,578 (African American), 54,245 (Caucasian), and 5,679 (Hispanic; CDC, 2018g). While there is a significantly higher number of Caucasian women (199,594) who have breast cancer, compared to African American women (28,450) and Hispanic women (20,153), the death rates for breast cancer in African American women are about 42% higher than Caucasians and about 50% higher than Hispanic women (ACS, 2016b; CDC, 2017e, 2018g; DeSantis et al., 2016). The rates of new cases of lung cancer per 100,000 people in African American women (46.3) are lower than their Caucasian (52.5) counterpart, but higher than their Hispanic (24.0) counterparts—a numbered count of 90,619 (Caucasian), 10,560 (African American) and 4,447 (Hispanic; CDC, 2018g). Moreover, the death rates per 100,000 people for lung cancer follow a similar trend with Caucasian (34.9) women experiencing the highest deaths followed by African American (30.8) women and Hispanic (13.1) women (CDC, 2018g). When translated to numbers, lung cancer deaths show 61,153 Caucasian women, 6,877 African American women, and 2,338 women die on average (CDC, 2018g). African American women experience a 79.6% 5-year relative survival rate for breast cancer, a percentage lower than all other races (90%) and Caucasians (89.7%; CDC, 2018g). Additionally, the 5-year relative survival rate for CRC in African American women is about 59.2%. Yet, in all other races and Caucasians, a 5-year relative survival rate

occurs about 66.4% and 64.4%, respectively (CDC, 2018g). However, CRC deaths in African American women are decreasing at faster rates than Caucasian women (ACS, 2016b; DeSantis et al., 2016). African American women have higher 5-year relative survival rates for lung cancer, at 19.1% compared to all other races (26.3%) and Caucasians (21.6%) (CDC, 2018g). While the rates of lung cancer show lower rates of death for this type of cancer, it should not negate the disproportion African American women face in their health, compared to other races.

Following heart disease and cancer, stroke is a significant and underrated health issue for African American women (CDC, 2015). According to Sharrief et al. (2016), while stroke mortality has decreased, deaths and occurrences of stroke remain high among African Americans, with stress as an influential risk factor. The CDC (2018j) and the National Institute for Neurological Disorders and Stroke NINDS (n.d.) consider a stroke to happen when a clot restricts blood flow from an area of the brain, damaging and killing the brain. The CDC (2017c) also notes that stroke costs the United States about \$34 billion and is “an important cause of disability” (CDC, 2017c, p. 1). Although stroke is the fifth leading cause of death in the United States, killing 140,000 Americans each year, it is the fourth leading cause of death in all females of all ages (6.0%) (CDC, 2018h, 2018j; NINDS, n.d.). For African Americans, the number is even more alarming, as stroke is the third leading cause of death in these women, with 6.4% of women dying from the disease (CDC, 2018h). This percentage is higher than the percentages for females overall (6.1%), lower than Hispanic females (6.5%), and higher than females of Caucasian descent (6.0%; CDC, 2018i). Stroke in African American women is most often seen in women ages 85 and older (7.9%). Still, African American women are “more likely to have a stroke at a younger age and to have more severe strokes” than their Caucasian counterparts (CDC, 2018h, CDC, n.d., p. 1). According to the CDC (2018k), while strokes are common, 80% of strokes are

preventable by having the appropriate diet, lifestyle, body weight, and exercise habits (CDC, 2018k). Moreover, African American women are often at a higher risk for adverse health outcomes of stroke. This is because they are at a higher risk of factors that are commonly tied to the disease, such as high blood pressure, increased salt intake, sickle cell anemia, diabetes, and obesity (CDC, n.d.).

### **National Health Characteristics of the Target Population: Men**

When compared against African American women and men of other races, African American men show more inferior health rankings (American Psychological Association [APA], 2018; Arias et al., 2017; Murphy et al., 2017). Similar to African American women, heart disease is the number one health issue for African American men. The 2016 and 2018 National Vital Statistics report found heart disease continues to reign as the leading cause of death with than average 321,000 men dying from the disease (CDC, 2017b; Xu, J. et al., 2018; Xu, J. et al., 2016). The percentage of deaths caused by heart disease in African American men (23.9.1%) is similar to percentage rates among all races (24.4%; CDC, 2018i). Death rates of heart disease in African American males are consistent rates with the death rates for Caucasian (24.6%), yet they are twice as likely to die from the disease between the ages of 18 and 49 (CDC, 2017i, 2018i). Additionally, African American death rates are higher than the death rates of Hispanic males (20.6%; CDC, 2018i). Furthermore, 70% to 89% of men experience cardiac arrest, with the higher rates seen in African Americans; however, there is a lower risk of cardiac arrest in African American men (CDC, 2017b). According to Barnett et al. (2001), this “seemingly lower risk” has to do with the fact that the “transition of heart disease from a disease of affluence to a disease of disadvantage occurred later in African Americans than it did among United States Whites” (p. 20). What these changes implied was that the behavioral risk factors of heart disease became

more widespread in social classes that were deemed to be low but in later years (Barnett et al., 2001). As with African American women, prevention is possible through positive lifestyle habits (Barnett et al., 2001; CDC 2017b, 2017i). While African American men have similar rates of heart disease across men of all races, they are more likely to experience heart disease at an earlier age and have more barriers related to disease course treatment and care (Barnett et al., 2001; CDC, 2017b).

Cancer is a common health disease occurring in many populations; therefore, it is not surprising that cancer is the number two health issue for African American men (CDC, 2017i). For African American men, the overall incidence rates of cancer had decreased by as much as 2%; however, they continue to have the highest death rates of cancer, when compared to all racial and ethnic groups, including CRC (ACS, 2016b; CDC, 2018g). The most common cancers among men in the United States are prostate cancer (99.1 per 100,000), lung cancer (66.4 per 100,000), and CRC (43.5 per 100,000; CDC, 2018g). However, the leading causes of cancer deaths for men are lung cancer (49.8 per 100,000), followed by prostate cancer (18.9 per 100,000) and CRC (16.6 per 100,000; CDC, 2018g). Numerically, these rates translate to 83,645 for lung cancer, 28,848 for prostate cancer, and 27,508 for CRC (CDC, 2018g). For cancer in general, African American men lead in mortality (226.7) and new cancer (501.2) rates per 100,000 (CDC, 2018g). In each of these areas, African Americans are followed accordingly by Caucasians than Hispanics, in which the new cancer rates are 469.1 and 352.6, and the death rates are 190.1 and 136.2 per 100,000, respectively (CDC, 2018g). When measured side-by-side, 22.8% of men from all races in the United States die from cancer, yet 21.4% of African American men face the same fate (CDC, 2018i). Overall, African Americans fare better than Caucasians who have 23% of deaths due to cancer but worse than Hispanics who have 20.2% (CDC, 2018i). The 5-year

relative survival rates for African American men who have prostate and CRC are 95.2% and 57.6%, respectively, but the survival rate for lung cancer is only 15.9% (CDC, 2018i). Overall, the 5-year relative survival rates for African American men are lower than the rates for all males of all races, which include 97.3% for prostate, 62.9% for CRC, and 21.5% for lung cancer (CDC, 2018i).

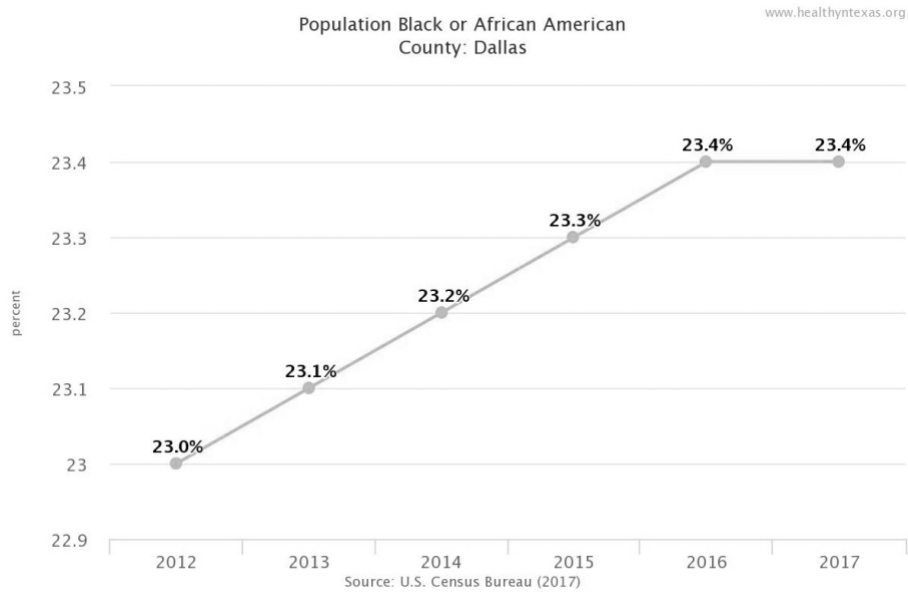
While African American men share the number one and the number two major health issues with women of the same race, they do not share the third major health issue, which is unintentional injuries, also known as accidents (CDC, 2018i; Jiang et al., 2018). Unintentional injuries include motor vehicle crashes, falls, fires and burns, drowning, poisoning, and aspirations (CDC, 2018i; Jiang et al., 2018). Moreover, unintentional injuries are the third leading cause of deaths in African American males, in which rates equate to 6.5% (CDC, 2018i; Murphy et al., 2017). Unlike the other health issues, African American males have lower death rates of unintentional injuries than all races combined (6.4%), Hispanics (10.3%), and Caucasians (6.8%; CDC, 2018i). Additionally, most unintentional deaths in African American males are between the ages of 5-9 at 31.2% (CDC, 2018i). However, this is not to say that other African American adult males do not have high rates. In fact, in the age ranges 10 -14, 15-19, 20-24, and 25-34, the percentages of death caused by unintentional injuries for each group individually, range anywhere from 17% to 23% (CDC, 2018i). Moreover, a notable cause for such high rates of death caused by unintentional injuries in African Americans males has been correlated with the high rates of subjection to neighborhood violence, particularly during youth (Jiang et al., 2018; Santiago, 2018).

## **Local Demographics and Health Characteristics of the Target Population**

Dallas County, made up of 13 communities, has a current population estimate of about 2.6 million and is projected to have a population of 2.8 million by the year 2021 (Dallas County Health and Human Services [DCHHS], 2016; U.S. Census Bureau, 2015). It is the second-largest populated county in Texas and the ninth-largest populated county in the United States (DCHHS, 2016; U.S. Census Bureau, 2015). Currently, an estimated 23.4% of African Americans, reside in Dallas County; a county population count lower than both Hispanics (40.2%) and Caucasians (29.2%), but higher than the percentages than Texas (12.7%) and the United States (13.4%) (Healthy North Texas, 2018). However, while the growth rate of African Americans in Dallas County has remained consistent for the last two years, it is expected to continue to increase over time, while the Caucasians growth rate will decline (see Figure 1, Figure 2, and Figure 3; Healthy North Texas, 2018).

**Figure 1**

*Population Black Or African American County: Dallas*



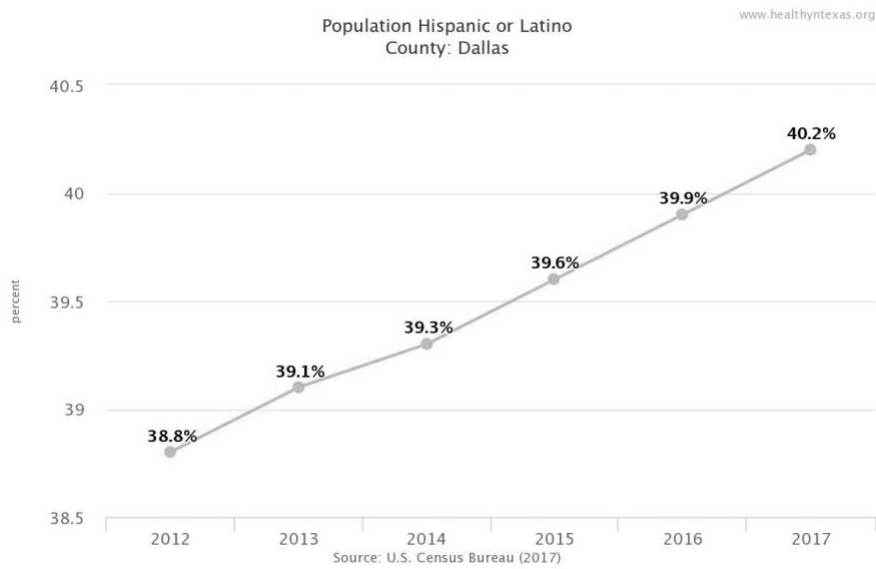
*Note.* Adapted from *2017 Population Black or African American in Dallas County* by U.S.

Census Bureau, 2017

(<https://www.census.gov/quickfacts/fact/table/US/PST045219>). In the public domain.

**Figure 2**

*Population Hispanic Or Latino County: Dallas*

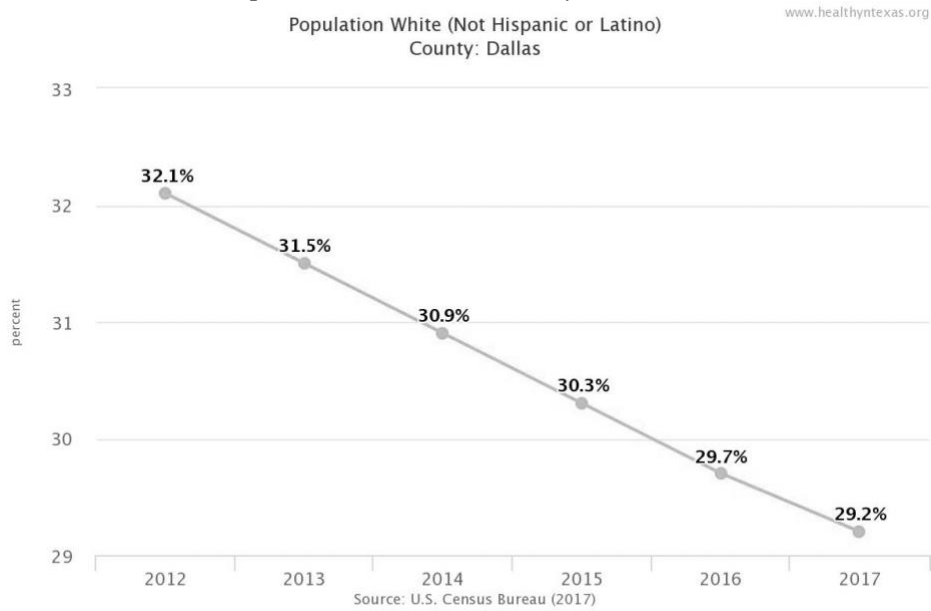


*Note.* Adapted from *2017 Population Hispanic or Latino in Dallas County* by U.S. Census Bureau, 2017

(<https://www.census.gov/quickfacts/fact/table/US/PST045219>). In the public domain.

**Figure 3**

*Population White (Not Hispanic Or Latino): County Dallas*



*Note.* Adapted from 2017 *Population White (Not Hispanic or Latino) in Dallas County* by U.S. Census Bureau, 2017

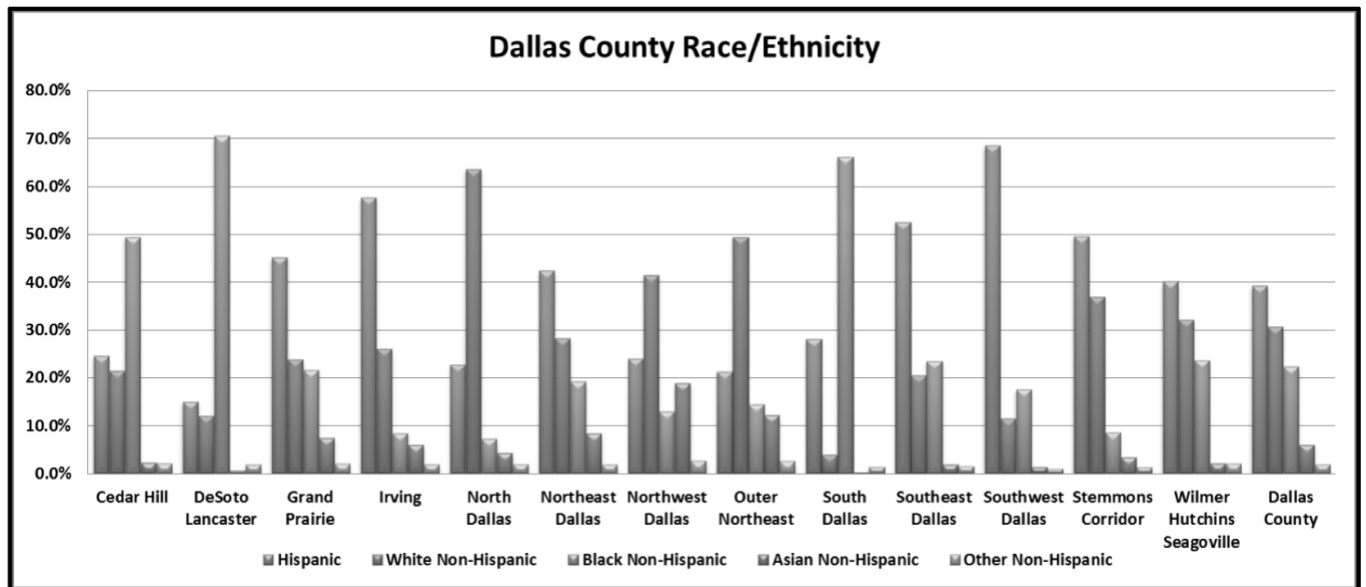
(<https://www.census.gov/quickfacts/fact/table/US/PST045219>). In the public domain.

The median age total for Dallas county is 33.2, with 34 as the median age for females, and 32.3 the median age for males (Data USA: Dallas County, 2020.). Additionally, more females (1.3 million) reside in Dallas county than males (1.2 million; Data USA: Dallas County, 2020).

African Americans more dominantly reside in the Desoto/Lancaster (first highest), South Dallas (second highest) and the Cedar Hill (third highest) communities of Dallas County; and are less populated in the North Dallas, Irving, and Stemmons Corridor areas of the County (see Figure 4 and Figure 5). When compared against other communities in Dallas County and as the three highest densely populated communities of African Americans, they experience poorer health outcomes, lower educational attainment, more mortality, less employment, low household income, and higher poverty rates (DCHHS, 2016; Healthy North Texas, 2018). However, while true, over 80% of African American adults in Dallas County and 90% of African American children have health insurance and access to health services through their insurance (Healthy North Texas, 2018).

**Figure 4**

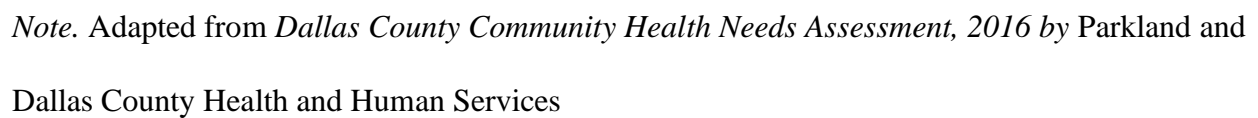
*Dallas County Race/Ethnicity*



*Note.* Adapted from *Dallas County Community Health Needs Assessment, 2016* by Parkland and Dallas County Health and Human Services

(<https://www.dallascounty.org/Assets/uploads/docs/hhs/dcha/DallasCountyCommunityHealthNeedsAssessment2016-FINAL.PDF>.) In the public domain.

### North Texas Services Areas

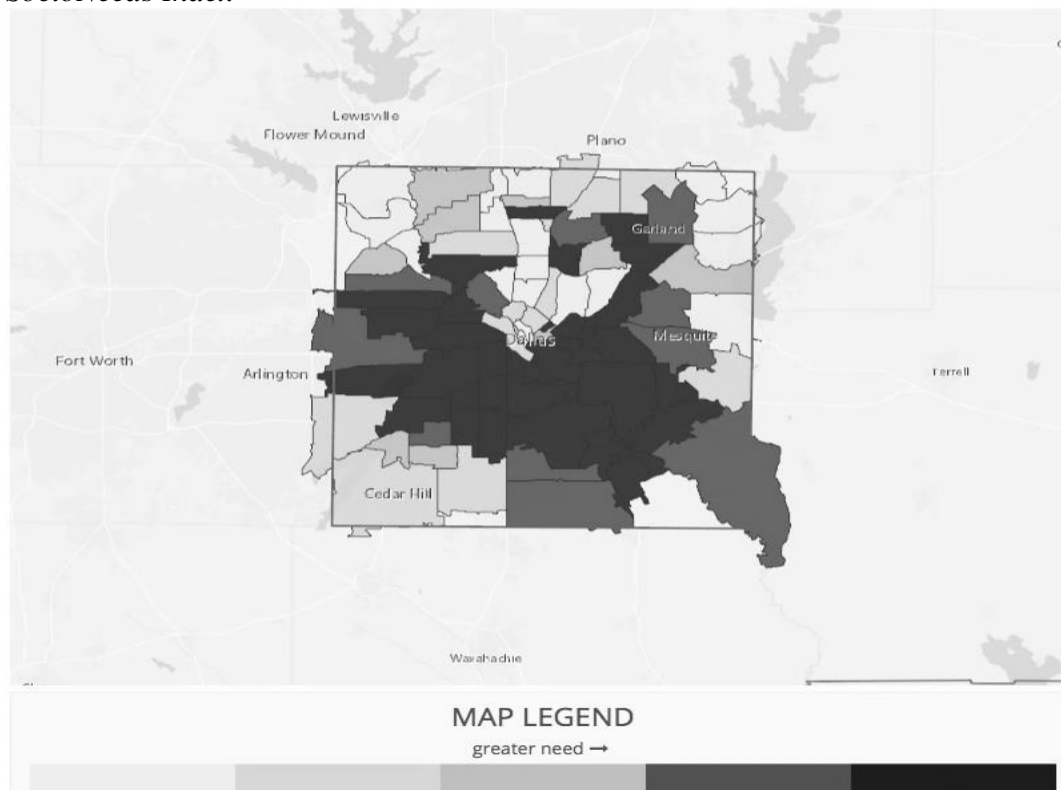


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Healthy North Texas' SocioNeeds Index is a “measure of the socioeconomic need that correlated with poor health outcomes health” (Healthy North Texas, 2018, p. 1). It generates an index value to show ranked needs by location/zip code, in which the ranking goes from 1 to 5 (light to dark), indicating more significant needs as the number increases and the color darkens (see Figure 6). When the SocioNeeds Index is generated for Dallas county, the communities in which a vast majority of African Americans reside (Desoto/Lancaster, South Dallas, and Cedar Hill), the SocioNeeds Index show dark shadings (5) indicating the highest need for African Americans residing in this area.

**Figure 6**

*SocioNeeds Index*

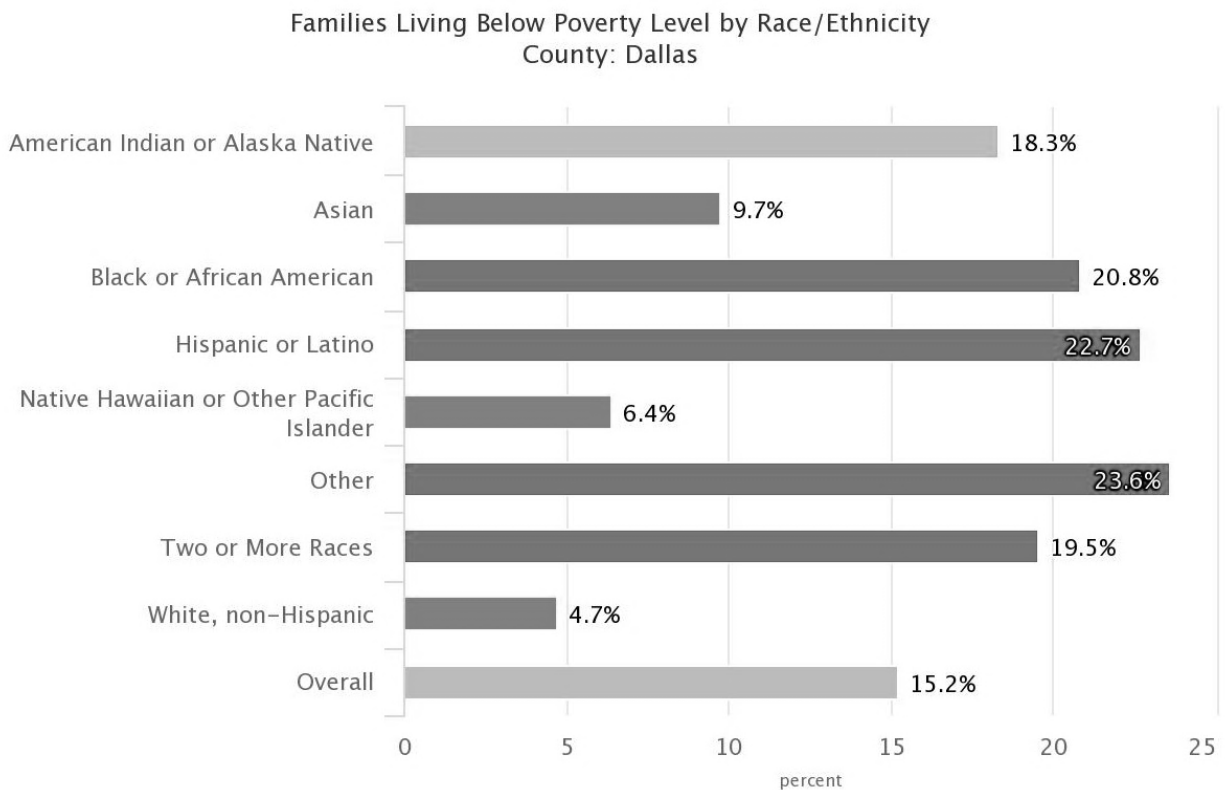


*Note.* Adapted from 2018 SocioNeeds Index for Dallas for Healthy North Texas by Conduent Healthy Communities Institute

In Dallas County, the average person per household is 2.8, with 15.2% of all families living below the poverty level; however, when grouped by race, 20.8% of African Americans families are living below the poverty level, and the numbers continue to increase (see Figure 7; Healthy North Texas, 2018).

**Figure 7**

*Families Living Below Poverty Level By Race/Ethnicity County: Dallas*



*Note.* Adapted from *Families Living Below Poverty Level by Race/Ethnicity County: Dallas* for Healthy North Texas by American Community Survey, 2012–2016

(<http://www.healthyntexas.org/?module=indicators&controller=index&action=view&comparisonId=&indicatorId=2&localeId=2631&periodId=459>.) In the public domain.

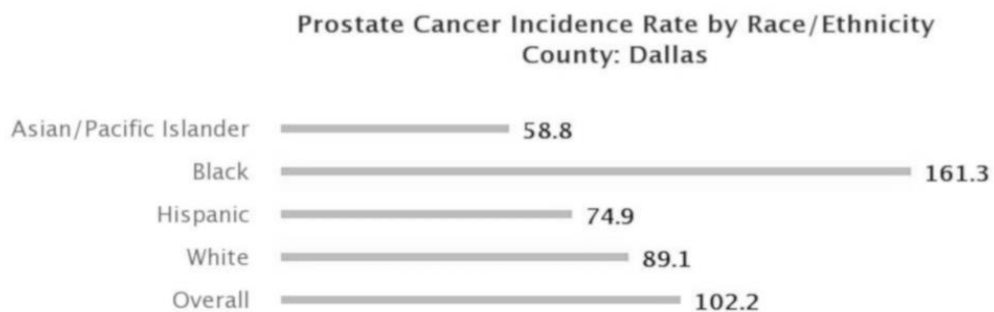
The median household income of Dallas County is \$51,411, yet the median household income for African Americans in the county is \$38,337 (Healthy North Texas, 2018). Dallas County has a dropout rate of 2.9%, making it the second-highest rate among all 17 North Texas counties (Healthy North Texas, 2018). African Americans in Dallas County have the second-highest dropout rate (3.5%; Healthy North Texas, 2018). Furthermore, the percentage of African American 25 years and older with a bachelor's degree or higher (20.7%) is lower than the overall value in Dallas County (29.7%; Healthy North Texas, 2018). Nevertheless, the percentage of African Americans 25 years and older with a high school degree or higher is 88%, a number higher than the Dallas county value (78%) and all other race/ethnicities except Caucasians (94.1%; Healthy North Texas, 2018). In all, it can be inferred that African Americans in Dallas County experience poorer health outcomes and have worse socioeconomic status (SES) than the overall value of Dallas County in most categories and when compared to most of their racial counterparts. While unfortunate, through targeting specific health issues and socioeconomic needs and applying the proper unique solutions for African Americans, these historical detriments can change.

When taking a more in-depth look into the health issues that plague African Americans nationally—heart disease, cancer, stroke, and unintentional injuries—locally, these same issues affect African Americans in Dallas County, equally or worse (DCHHS, 2016). Each disease affects the African American genders accordingly in Dallas County, just as they do when (see Figures 8, 9, 10, and 11) analyzed nationally (DCHHS, 2016). For African Americans, prostate cancer (men), breast cancer (women), CRC (men and women), and lung cancer (men and women) have the highest incidence rates for all of the mentioned diseases when compared to their counterparts (Healthy North Texas, 2018). Moreover, for African Americans in Dallas County,

lung cancer (men and women) have the highest death rate followed by prostate cancer (men), CRC (men and women), unintentional injuries (men and women) and breast cancer (women; DCHHS, 2016; Healthy North Texas, 2018). Furthermore, a constant is that for both the local and the national levels, CRC plagues this population at much higher and much more significant rates.

### Figure 8

*Prostate Cancer Incidence Rate By Race/Ethnicity County: Dallas*

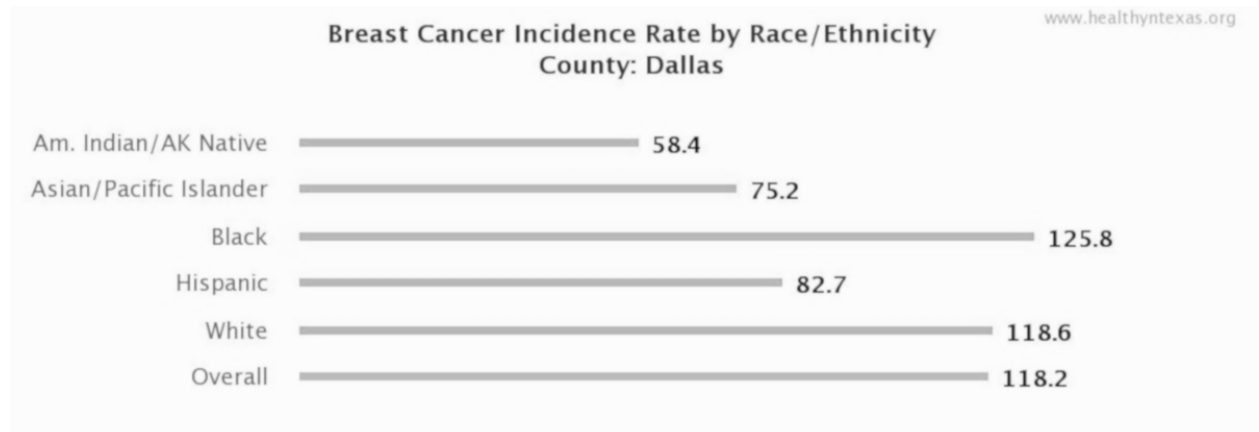


*Note.* Adapted from *Prostate Cancer Incidence Rate By Race/Ethnicity County: Dallas* for Healthy North Texas by National Cancer Institute, 2011–2015

(<http://www.healthytexas.org/?module=indicators&controller=index&action=view&comparisonId=&31indicatorid=386&localeTypeId=2&localeId=2631&periodId=455>). In the public domain.

**Figure 9**

*Breast Cancer Incidence Rate By Race/Ethnicity County: Dallas*

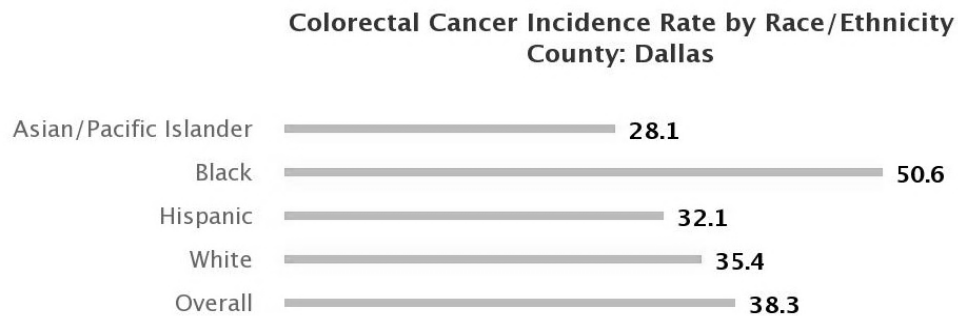


*Note.* Adapted from *Breast Cancer Incidence Rate By Race/Ethnicity County: Dallas* for Healthy North Texas by National Cancer Institute, 2011–2015

(<http://www.healthytexas.org/?module=indicators&controller=index&action=view&comparisonId=&32ndicatorid=180&localeTypeId=2&localeId=2631&periodId=455>). In the public domain.

**Figure 10**

*Colorectal Cancer Incidence Rate By Race/Ethnicity County: Dallas*

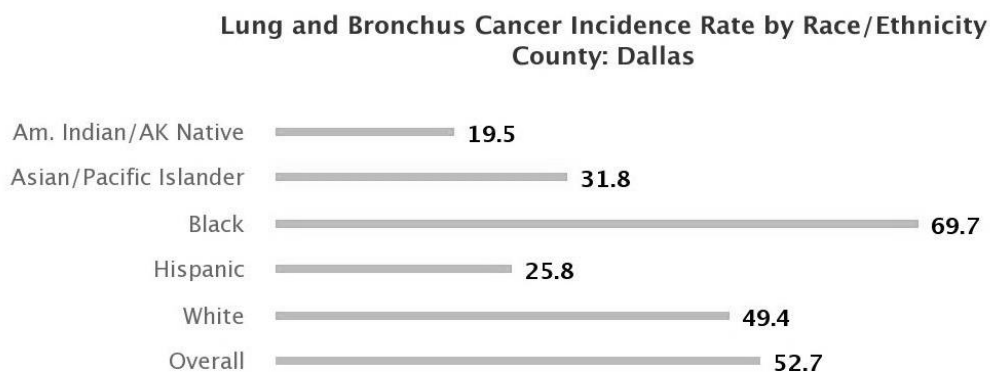


*Note.* Adapted from *Colorectal Cancer Incidence Rate By Race/Ethnicity County: Dallas* for Healthy North Texas by National Cancer Institute, 2011–2015

(<http://www.healthyntexas.org/?module=indicators&controller=index&action=view&comparisonId=&33indicatorid=221&localeId=2631&localeChartIdxs=1%7C2%7C3&periodId=455>). In the public domain.

**Figure 11**

*Lung And Bronchus Cancer Incidence Rate By Race/Ethnicity County: Dallas*



*Note.* Adapted from *Lung And Bronchus Cancer Incidence Rate By Race/Ethnicity County: Dallas* for Healthy North Texas by National Cancer Institute, 2011–2015

(<http://www.healthyntexas.org/?module=indicators&controller=index&action=view&comparisonId=&34indicatorid=303&localeTypeId=2&localeId=2631&periodId=455>). In the

public domain.

### **Colorectal Cancer**

CRC can appear in the colon, in the rectum, or both areas (ACS, 2018d; CDC, 2018b).

CRC forms when there is uncontrolled cell growth in the large intestine, which causes abnormal growth of benign tumors called polyps (ACS, 2017b; CDC, 2018b). These polyps grow in the colon, and those that are not removed over time turn cancerous (ACS, 2017b; CDC, 2018b).

Globally, in 2018, new cases of CRC equate to ten percent, and mortalities equate to nine percent (GLOBOCAN Database, 2018; Macrae, 2018). Countries such as Japan (148,151), Spain (37,172), Ukraine (22,283), and Portugal (10,270) have high incidence rates in 2018 (GLOBOCAN Database, 2018; Macrae, 2018). In the United States, CRC is the third most common cancer in men and women, the second leading cause of cancer-related deaths in men and women, and the highest incidence and mortality rates are seen in men (ACS, 2018d; CDC, 2018b).

### **Symptoms**

Symptoms of CRC most often include blood in or on the stool, stomach pain, aches or cramps, weakness or fatigue, diarrhea, constipation, and unexplained weight loss (ACS, 2018g; CDC, 2018b; Macrae, 2018; Mayo Clinic, 2018a). These symptoms can appear suddenly or can take place progressively over some time, with many experiencing symptoms at varying stages of the disease course (Mayo Clinic, 2018a; Walling et al., 2015). Symptoms of CRC are a result of the risk factors specific to the disease.

### **Risk Factors & Prevention**

A person's genetic make-up can increase the risk of developing CRC (CDC, 2018d; Macrae, 2018; National Institutes of Health [NIH], 2018a). DNA type or a family history of CRC, lynch syndrome, and or familial adenomatous polyposis is the most common genetic factor (CDC, 2018d; Fuchs et al., 1994; Mayo Clinic, 2018a; Petersen, 1995). Other risks include those that are typically within a person's control. Contributors that are risk factors to the incidence and mortality of CRC include decreased physical activity, improper diet, overconsumption of alcohol, and the use of tobacco products (ACS, 2018h; CDC, 2018l; Macrae, 2018; NIH, 2018a; Shaw et al., 2018). On average, a consistent weekly regimen of exercise can lower risks of disease and health issues, including CRC (Brenner & Chen, 2018; CDC, 2018m; Leone et al., 2012; NCI, 2017). Moreover, CRC risk decreases when an increase in physical activity is combined with a proper diet consisting of "food and beverages that help achieve and maintain a healthy weight promote health and prevent chronic disease," such as fruits, vegetables, whole grains, and low animal fats (CDC, 2018d, p. 1; Kunzmann et al., 2015; Ma et al., 2018; Macrae, 2018). For those who may already be diagnosed with CRC, a proper nutritional diet will help to achieve better results while in treatment, as well as post-treatment (Cancer Treatment Centers of America, n.d.; Pepper, 2010).

Evidence also suggests that co-morbidities not only increase the risk of CRC but have been noted to serve as a small underlying cause of the disease possibly—particularly diabetes and obesity (Huxley et al., 2009; Leone et al., 2012; Liu et al., 2019; Macrae, 2018; NCI, 2017). Moreover, obesity appears to be a more critical risk factor for developing CRC in both men and women; however, men show greater links and women show to have an increased risk of earlier on-sets (ACS, 2018e; 2020a; Moore et al., 2016; NCI, 2017). Furthermore, other comorbidities to CRC include different cancers, Crohn's disease, and ulcerative colitis (Mayo Clinic, 2018b;

National Institute of Diabetes and Digestive and Kidney Diseases [NIDDKD], 2017; Zafar et al., 2008). In recent years, drugs, such as aspirins, non-steroidal anti-inflammatory drugs (NSAIDs), and supplements have been analyzed for their roles in CRC prevention (CDC, 2018l; Chan, 2018; Macrae, 2018). These agents have shown to be inhibitors of CRC carcinogenesis (Chan, 2018; Macrae, 2018; Spencer et al., 2016). However, while proper nutrition, daily low-dosages of aspirins, NSAIDs, and or supplements can help alleviate CRC, participating in a CRC screening test is the most reliable prevention method (ACS, 2018b; CDC, 2018e).

### **Screening**

Although CRC is most often prevented by diet and lifestyle, the surest way to prevent the disease is to participate in a recommended screening test (ACS, 2018a; CDC, 2018e; MSTF, 2017; Rex et al., 2017). The MSTF recommended screening age is currently 50 for Caucasians and Hispanics and 45 for African Americans, at average risk (ACS, 2018b; MSTF, 2017; Rex et al., 2017). However, based on racial trends and a person's personal health history, family medical history, these recommendations should be altered (ACS, 2018a; Macrae, 2018; Rex et al., 2017; Siegel et al., 2017). The recommendations have been the standard for many years, and while it is still uncommon, but not unlikely for someone under 50 to get the disease, new evidence exists that shows the current recommendations should be reevaluated, with suggestions of screening as early as the age of 40 (MSTF, 2017; Rex et al., 2017; Siegel et al., 2017; Welch & Robertson, 2016). The new recommendations are supported by results from a new study demonstrating that CRC risks for those born in the 1990s are at two times (for colon) and four times (for rectal) higher, than those at the same age born in 1950 (Rex et al., 2017; Siegel et al., 2017). Additionally, younger on-set of CRC is now more widely present (ACS, 2020a; Ahnen et al., 2014; Chang et al., 2012; Macrae, 2018; Mork et al., 2015; MSTF, 2018; Rex et al., 2017; Siegel

et al., 2017; Welch & Robertson, 2016). Individuals who screen early and screen regularly have the potential to lower their risks of mortality and incidence of CRC, because polyps can be removed before they turn cancerous (CDC, 2018d; Katz et al., 2004; Siegel et al., 2017; Welch & Robertson, 2016). Screening tests that can detect and altogether remove adenomatous polyps are the most reliable method of preventing CRC (ACS, 2018b, CDC, 2018e). An increase in disease prevention is especially true for those populations that are more vulnerable to the disease, such as African American men and women (ACS, 2020a; Macrae, 2018; MSTF, 2017). Moreover, in more recent years, the numbers of individuals up to date on their CRC screening have increased, with most credit attributed to the CDC's Screen for Life campaign and the National CRC Roundtable's 80% by 2018 campaign (CDC, 2018f; National Colorectal Cancer Roundtable, n.d.; Steele et al., 2013).

There are six types of CRC screening tests currently recommended for those 50 – 75. The first three are the most recommended tests— the high sensitivity guaiac fecal occult blood test/fecal immunochemical test (FIT), the flexible sigmoidoscopy, and the colonoscopy (ACS, 2018b; CDC, 2018n). The other three tests that are also used in CRC screenings include the double-contrast barium enema (DCBE), virtual colonoscopy, and stool DNA test (ACS, 2018b; CDC, 2018n). Testing preference, medical condition, availability of resources, test likelihood, potential harm, and follow-up need all vary from person to person; therefore, there is no single “best” test for any one person (ACS, 2018b; CDC, 2018n; NCI, 2016b). Coupled with all screening tests, except for the stool test, is the administration of the prescribed bowel preparation drink, which serve as laxatives to cleanse the large intestine so that the physician performing the screening has a clear view when checking the colon for polyps and cancer (ACS, 2018b; Parra-Blanco et al., 2014). Although the screening cleanse process has improved in recent years, it has

served as a barrier to the screening because the process for the drink mixture can often be an unpleasant experience for the patient (ACS, 2018b; Parra-Blanco et al., 2014).

### **Barriers for African Americans and Its Effects on Screening**

In the United States, when compared, African American men and women are affected by CRC at significantly higher rates than other races (ACS, 2016a; Macrae, 2018; Rex et al., 2017). Research shows that the intent to screen for CRC by African Americans and the attitude towards screening are linked and encompass a variety of factors (Jimbo et al., 2017; Rogers et al., 2015). Some of these factors include aspects such as health literacy, age, gender, access to health services, environment and cultural factors (Brittain et al., 2016; Office of Disease Prevention and Health Promotion [ODPH], 2018a, 2018b; Van Der Heide et al., 2015). Additionally, researchers agree the screening attitudes and screening intent African Americans hold towards CRC screenings are also caused by fear, the feeling of being emasculated by the invasive procedure (for men), financial capability, risk perception, and inconvenience. While these are only a few factors, the fact remains that the commonality between CRC screening attitudes and intent to screen is often heavily determined by the barriers African Americans experience (James et al., 2002; Lumpkins et al., 2013; Peterson et al., 2016; Rogers et al., 2015; Williams, D. R. et al., 2016; Zullig et al., 2012).

### **Medical Mistrust**

African Americans, particularly the men, are known to have little faith in health care providers due to historical events, such as the Tuskegee Syphilis Experiment, which has placed a mental distrust of the system in this group (Adams et al., 2017; Alsan & Wanamaker, 2017; Cahill et al., 2017; Spencer, 2010; Williamson & Bigman, 2018). The mental distrust that has been set in place by the extensive past of justifiable fear and mistrust of the research and medical

community in the African American community, has caused significant hindrances (Corbie-Smith et al., 1999). These hindrances block not only the prevention of CRC within this population but other health issues as well (Adams et al., 2017; Alsan & Wanamaker, 2017; Brandon et al., 2005; Cahill et al., 2017; Katz et al., 2004, para. 21; Sutton et al., 2019). As a barrier, medical mistrust hinders health promotion to address health disparities, adherence to medical advice, and creates a more extensive marginalization between African American patients and their providers (Kalichman, 2017; Williamson & Bigman, 2018). Studies have found the higher the level of mistrust, the lower the rate of screening for CRC in African Americans (Adams et al., 2017; Brittain et al., 2016; Lumpkins et al., 2016). Moreover, the level of mistrust by African Americans has most often been studied at the physician level, with fewer studies focused on the organizational level (Adams et al., 2017; Arnett et al., 2016). Furthermore, because patients are more directly involved with providers than the system as a whole, the physician level of mistrust holds much weight as a barrier.

### **Patient-Provider Communication**

A CRC screening test can only be administered if a provider recommends the test for a patient, through communicating such to him or her (ACS, 2018a; CDC, 2018e; MSTF, 2017). However, healthcare providers who have African Americans as patients have been noted to have poor interactions—communication, visit time, establishing good rapport, patient-centeredness—with African American patients than with Caucasian patients (Beach et al., 2011; Ghods et al., 2008; Johnson et al., 2004). Research shows that patient-provider communication has demonstrated to be one of the strongest predictors of completing a CRC screening test (Halbert et al., 2016; Huei-yu Wang et al., 2018; Katz et al., 2004; Sava et al., 2018). Halbert et al. (2016) found when providers communicated with their African American patients adequately about

screening for CRC, those patients had “a 10-times greater likelihood to screening compared to those who did not report provider communication” (p. 6). Additionally, while about 23% of African Americans report having “at least one problem in communicating with their healthcare providers, Patient-provider communication has been noted to also lead to an overall increase in the utilization of CRC screening tests by African Americans (Halbert et al., 2016; Mott-Coles, 2014; Peterson et al., 2016). For CRC screenings, patient-provider communication not only focuses on the act of having a discussion, but also involves the understanding of the topic being discussed and the length (in time) of the communication (Carcaise-Edinboro and Bradley, 2008). According to Carcaise-Edinboro and Bradely (2008), those patients who felt they had “sufficient time with the healthcare provider” and had an “adequate explanation of the healthcare needs” were more likely to screen for CRC than those who did not (p. 738, p. 744). Moreover, completion of a CRC screening test was most closely associated with those who believed to have adequate knowledge of CRC screening, coupled with excellent communication with their healthcare provider (Halbert et al., 2016; Katz et al., 2004). Furthermore, to reach success in screening for CRC by African Americans, there must be a proper plan for the patient and adequate guidelines for providers on how to uniquely initiate and facilitate these conversations with the African Americans and move the discussion into actions.

### **Health Literacy**

Health literacy is described as one’s ability to comprehend basic health information and health services to make informed health decisions (NIH, 2018b; ODPH, 2018b). Health literacy encompasses the capacity to which a person can gather, communicate, discuss, and process health information (CDC, 2018o; NIH, 2018a; ODPH, 2018b). More importantly, health literacy is often related to a health outcome. Higher health literacy is often accompanied with higher life

status/class and good health choices; and lower health literacy is accompanied by lower life status/class and poorer health choices (Ali et al., 2018; CDC, 2018o; NIH, 2018a; ODPH, 2018b). African Americans' experience more poverty have poorer levels of health; however, according to Van Der Heide et al. (2015), "studies showed that higher health literacy was associated with more CRC screening and more positive attitudes towards CRC screenings" in the population (p. 575). No single method exists for which African Americans can become literate on a given health topic. However, in a comprehensive review of multiple studies, De Wit et al. (2017) found for some African Americans, health literacy is obtained through the familial and or community, with the older generations passing down health knowledge to the younger generation. While this method is based upon a community model for healthcare and a more convenient process of obtaining health information, it may not be the best method, as data disclosed in this manner may be biased and or miscommunicated.

Moreover, research surrounding health literacy suggests that "today's health information is presented in a way that is not usable by most Americans," and that "nearly 9 out of 10 adults have difficulty using health information that is available" and more than 90 million American adults have poor literacy skills (Institute of Medicine, 2004; Peterson et al., 2007; Ratzan, 2010, p. 575;). For African Americans to participate in CRC screenings, they must understand what the tests are and the consequences of not participating in them. By improving the processes utilized to increase health literacy and teach about the benefits of CRC screening, specifically for African Americans, CRC screenings can increase and mortalities to decrease.

### **Socioeconomic Status: Education, Income, And Employment**

SES is considered to be a person's class or social standing and is measured by education, income, and occupation (CDC, 2018p). Since these qualities have been termed into one

definition, research has found that one's SES is often a determinant of the inequalities in an individual's life as it relates to accessing various resources. In fact, the CDC recognizes socioeconomic status as a contributing factor to cancer (CDC, 2018p). Additionally, socioeconomic status can also predict other health outcomes (Braveman, 2010; CDC, 2018p; Saegert et al., 2006; Williams, D. R. & Collins, 2013; Williams, D. R. et al., 2016). As a barrier, SES can often dictate and directly influence access to healthcare for African Americans (Cornman et al., 2014; Egen et al., 2017; Saegert et al., 2006). The research concludes that African Americans have lower income, less fulfilling jobs, and lower education levels than their non-Hispanic white counterparts (Jones et al., 2018; Kiviniemi et al., 2018; Luquis & Perez, 2013). These lower levels affect the amount of health-related knowledge received, how and when care is obtained, and the rate at which a care plan is consistently followed (Healthy North Texas, 2018; Williams, D. R. & Collins, 2013).

If African Americans are not aware of their health needs, not able to afford basic health care, do not have adequate insurance, and are subjected to environments that do not cultivate the importance of their specific health needs, then it can be difficult for them to remain healthy (Ali et al., 2018). More importantly, as socioeconomic gaps widen between African Americans and other races, so do the health gaps (Cornman et al., 2014; Egen et al., 2017; Williams, D. R. & Collins, 2013). Wider gaps between socioeconomic status and health lead to more significant problems and more difficulties in addressing health issues for this population (CDC, 2018p). Ultimately, for CRC screening in the African American population, SES hinders the utilization and consistency of which they screen (Steinbrecher et al., 2012; Von Wagner et al., 2011; Wyatt et al., 2017). The historical evidence of low SES in African Americans continues to progress.

Until there a significant positive impact, it will continue to hinder the rates and capability at which African Americans screen for CRC.

In the United States, education has a high value. Yet, while emphasized as the best route to achieve success, not all citizens can seize and utilize this the educational opportunity fully—the African American community being one. African Americans attend primary and secondary schools that have fewer teachers that are qualified, in need of funding, high in poverty, experience more discipline of African American students, have high percentages of Caucasian teachers and perform at lower levels in core subjects (Center for American Progress, 2017; Cook, 2015). Nationally, of those 25 and older, about 82% of African Americans graduate from high school— a number higher than Hispanics and lower than their Caucasian counterparts (U.S. Census Bureau, 2017d). Additionally, the dropout rate is about 7%, which is lower than Hispanics (10%), but higher than Caucasians (5%) and Asians (3%; Gramlich, 2017). Moreover, African American males are twice as likely to complete their high schooling through a GED program with “22 percent of all GED credentials produced by the prison system each year compared to 5 percent and 8 percent for White and Hispanic males respectively” (Heckman & LaFontaine, 2010, p. 249). Notably, African Americans account for about 40% of the prison system population (Wagner & Sawyer, 2020). Additionally, while African American females are more likely to graduate high school than African American males, they still have lower rates of graduating compared to their female Caucasian counterparts, but higher rates than Hispanic females (Luquis, & Perez, 2013; U.S. Census Bureau, 2017d).

When moving from high school graduations to college enrollment and college graduation, the rates for African Americans in these categories begin to drop significantly (Jones et al., 2018; Journal of Blacks in Higher Education, n.d.; Nichols & Evans-Bell, 2017). When analyzing the

traditional college-aged student, African Americans not only fall below Caucasians but also below Hispanics (Nichols & Evans-Bell, 2017). In the study of college enrollees from 1993 to 2012, M. Lopez & Fry (2013) found that 62% of Asians, 47% of Hispanics and Caucasians, and 43% of African Americans between the ages of 18 to 24, who graduated from high school were enrolled in college. While African Americans may have lower rates, increases from the previous ten years have occurred, which provides hope for the future (Jones et al., 2018; Nichols & Evans-Bells, 2017). For African Americans, the gender gap of enrollment directly from high school was led by men, in the year 1994 (Lopez, M. & Gonzalez–Barrera, 2017). However, by 2012, college enrollment of African American women spiked from 48% in 1994 to 69%, with the enrollment of men increasing from 56% to 57% within the same period (Lopez, M. & Gonzalez–Barrera, 2017). The reasoning for the switch in positions can be attributed to the removal of race and gender-specific barriers women faced in earlier years—workforce increase, family planning (Goldin, et al., 2006; Jones, et al., 2018; Lopez, M. & Gonzalez–Barrera, 2017).

According to Isaac and LaVeist (2013), when comparing education and income by race, one can see just how each race truly matches up against the other. Generally, African Americans have less education than their Caucasian counterparts, which equates to less income (Cook, 2015; Isaac & LaVeist, 2013; Jones, et al., 2018; Nichols & Evans-Bells, 2017). Having less education does not infer that in all cases, African Americans always fall below, but in most broad-spectrum studies, they are the lower of the two. Low income equates to poverty, and as mentioned by Isaac and LaVeist (2013), “African Americans and persons of Hispanic origin were about three times as likely as whites to be poor and one and one-half times as likely to be near-poor” (p.443–444). While poverty rates of African Americans have decreased from recent years, the issue remains prevalent today, with about 24% of African Americans who are in poverty, with the highest

percentage of 38, seen in those 18 and under (U.S. Census Bureau, 2017d). This 24% percentage is also higher than Caucasians and Hispanics, who are at a rate of 12% and 21%, respectively (U.S. Census Bureau, 2017d). The byproduct of poverty is often the cause of household income. The median household income for African Americans is currently at \$38,555, with males typically earning more than females (U.S. Census Bureau, 2017d). Caucasians and Hispanics have higher median incomes at \$61,349 and \$46,882, respectively (U.S. Census Bureau, 2017d). The results of these rates are, as mentioned, tied to education, which ultimately is linked to the occupation. African Americans generally are employed in office and administrative support occupations, services, food preparation, sales, transportations and material moving, management/professionals, and production type occupations, which have lower pay rates (Luquis & Perez, 2013, p. 9; Rolen & Toossi, 2018). Hispanics and Caucasians are employed in the same occupations, with most Hispanics in service jobs and most Caucasians in management, professionals, and related occupations (Luquis & Perez, 2013). The occupations of African Americans, as well as income and education, have a significant impact on SES. As a population that continues to fall below their counterparts in these factors, it is vital not to ignore these aspects and understand the significant impact SES has on the health outcomes of African Americans.

## **Environment**

In the African American population, it is essential to recognize that their place of residence and their socioeconomic status are significant factors in their health. When defined, the environment is considered a person's surroundings, conditions, and geographical area of where they live and operate in their daily human existence. A residential environment for African Americans has been noted to directly influence their access to health and health care ( Williams, D. R. & Collins, 2013; Williams, D. R. et al., 2016). Moreover, African Americans who live in

rural areas are more likely to live further away from providers and health services (Alyabshi et al., 2019; Evans & Williams, B. E., 2013; Kripalani et al., 2008; Lin et al., 2015; Thompson, B. et al., 2018; Syed et al., 2013). D. R. Williams and Collins (2013) suggested “racial segregation has created distinctive ecological environments for African Americans” –including living in rural areas and food deserts (p. 339). African Americans who are poor tend to reside near or in poverty-stricken areas, most of which are often neglected, or its inhabitants do not feel safe enough to be outside unnecessarily (Williams, D. R. & Collins, 2013). Specifically speaking about CRC, the differences for people living in rural versus urban areas is often an indication of a healthy thriving life and one that is unhealthy and lacks access. Research has been conducted to describe the impact a person’s urban or rural environment has on their health; however, only a small number are specifically focused on the health issue of CRC with or without the racial implication being studied (Hughes et al., 2015). While true, it can be inferred, based on related demographic and characteristic research on African Americans, that where and how African Americans live will determine their ability and access to the screen for CRC.

### **Incarceration**

While African Americans make up roughly 13% of the U.S. population, 33% of African Americans make-up the incarcerated population, the 500% increase in incarcerations in the United States over the last 40 years have been unfortunate, especially for African Americans born in 2001, as they have a 1 in 3 chance of incarceration (Bialik ,2018a; The Sentencing Project, 2018a). Moreover, 44% of juvenile African Americans were held in juvenile centers as of October 2015 (The Sentencing Project, 2018a). The number of incarcerated males is more significant than females, and 1 in 17 black men aged 30–34 was in prison in 2015, compared to 1 in 42 Hispanic males and 1 in 91 Caucasian males (The Sentencing Project, 2018b; Gramlich,

2018). Furthermore, when an African American or any other person is incarcerated, the state of their health significantly changes. While primary health care is provided for the sick during incarceration, the rates of preventative screening are almost non-existent in these vulnerable populations.

Historically, there has been a low usage of preventive screenings in African Americans who are not jailed, so to add in a dynamic that restricts their freedom, those low usages spike tremendously. However, not much research exists on the incarcerated population's health because there is no national registry for "tracking disease prevalence and risk factors," because "they are excluded from national health surveys;" however, the research that is available has shown some barriers to access to health care for specific diseases (Binswanger et al., 2005, p. 1781). One barrier includes access to testing and treatment for HIV and sexually transmitted diseases (CDC, 2017g). According to the CDC (2017h), persons entering correctional facilities have high rates of STDs (including HIV) and viral hepatitis. While the research concludes that screening is vital for African Americans (and other races) to have healthy lives, prisons and jails tend to weigh the cost versus the need to determine whether or not to offer these types of services to their inmates (CDC, 2017g).

According to the CDC (2017g), programs that are provided are most often in the prison system (long-term sentencing), but most of the incarcerated population are in jails (short-term sentencing). Additionally, accessing cancer screening, while incarcerated presents a barrier for all inmates, including African Americans. The prisons/jails majorly inhabit African Americans, who are also more prone to diseases such as cancer, heart disease, STIs, diabetes, and other notable diseases, a dire need for effective and efficient health care screenings in the prison system exist. Moreover, not only is screening limited but also a "cancer screening registry or statewide

computerized medical records in correctional institutions” is nonexistent. However, there still is enough formerly reported information to deduce that cancer screenings are needed for those incarcerated (Binswanger et al., 2005, p. 1786). Limitations are primarily significant for cancer screening tests like mammography for breast cancer and colonoscopy or sigmoidoscopy for CRC (Binswanger et al., 2005). These screening tests often require the use of facilities outside of the jail or prison; therefore, these systems may not be able to feasibly have all of their eligible inmates partake in these tests—limiting access to those who genuinely need this care. Some may think that jails and prisons are not appropriate places for inmates to seek vital health care. However, Binswanger et al. (2005) proclaimed it is an “appropriate venue in which to provide cancer screening for high-risk populations” and because although facing the consequences of their action, these individuals still seemingly care about their health and are “receptive to jail-based screenings” (p. 1783).

### **Summary**

The evidence of the disparities—health, social, cultural—African Americans face as a result of the nature and nurture within their lives is evident. African Americans are suffering compared to their counterparts. They lack education, have a lower income, higher social disadvantage, and prone to more disease and adverse health problems. Moreover, these underlying issues play a significant role in the reasoning for higher incidence and mortality rates of CRC and lower rates of CRC screening. While CRC screening recommendation age is lower for African Americans than in other races, since it is a preventable disease, the idea of decreasing the current recommended age has the possibility to impact the devastation seen today significantly.

## CHAPTER III

### METHOD

For this study, the researcher used a mixed-method of convergent parallel design. The researcher was given the approval to conduct the research by the TWU IRB (see Appendix A). In this type of design, both qualitative data and quantitative data were included, allowing for the comparison and contrasting of the data results to answer the research questions (Creswell & Plano-Clark, 2011). The rationale for using both methods allowed the researcher to answer research questions for this study and discover relevant information that can be applied to a future research study. Within this design, there were three phases: in Phase 1, data was collected and analyzed concurrently; in Phase 2, results were compared; and in Phase 3, data was interpreted.

#### **Population and Sample**

A homogeneous purposive sampling was used for this research. The researcher anticipated a minimum sample size of 100 participants. The sample size was determined based on the literature's suggestion when targeting large populations, and access to all individuals of the population is not feasible (Alshibly, 2018). The actual sample was comprised of 110 African American men and women from Dallas County (Texas). Ninety-two participants were unique respondents (completed only the survey); 18 participants were duplicated (completed both the survey and the interview). Nine survey participants were excluded because their surveys were incomplete. Eighteen surveys were deemed ineligible as they did not meet age requirements. One participant was excluded from the interview because they had a colon cancer screening test.

## **Recruitment**

### **Survey Recruitment**

Individuals were recruited for their participation in the online survey using the recruitment flyer (see Appendix F). The survey recruitment flyer was a brightly colored document and included the following: the purpose of the research, what type of participants that were needed, the survey registration link and QR code, survey completion incentive, study disclaimer and contact information for questions. The survey recruitment flyers were placed at the welcome desk and on the activity bulletin board inside of the Oak Cliff Family YMCA. The Oak Cliff Family YMCA also included the survey recruitment flyer within their electronic newsletter and sent it via email to constituents. Survey recruitment flyers and information was also shared organically by constituents and were shared electronically by the researcher. Those individuals interested in participating in the online survey did so by utilizing the QR code or the Survey Monkey website link located on the flyer. Once on the online survey webpage, each participant was required to first read and sign the electronic consent form (see Appendix F). From there, the participant was then automatically directed to the survey for completion. All questions were directly sent to the researcher and answered accordingly (see Appendix D).

### **Interview Recruitment**

Individuals were recruited for their participation in the interview using the recruitment flyer (see Appendix F). The survey recruitment flyer was a bold-colored document and included the following: the purpose of the research, what type of participants that were needed, the interview registration link and QR code, interview completion incentive, study disclaimer and contact information for questions. The interview recruitments flyers were placed at the welcome desk and on the activity bulletin board inside of the Oak Cliff Family YMCA. The Oak Cliff

Family YMCA also included the interview recruitment flyer within their electronic newsletter and sent it via email to constituents. Interview recruitment flyers and information was also shared organically by constituents and were shared electronically by the researcher. Those individuals interested in participating in the interview did so by utilizing the QR code or the Survey Monkey website link located on the flyer. Once on the interview registration webpage, the participant provided their contact information and selected the preferred time and date of their interview. Additionally, the interviewee had a choice in the interview method in which the choices included in-person face-to-face (the Oak Cliff Family Y or secure location of the interviewees choosing), Skype, FaceTime, Google Duo, Google Hangouts, or WhatsApp). After the interview registration form was completed, the researcher contacted the interview participants directly via phone and or email to invite them to participate in the interview, confirm the suggested interview date, time, and method to interview and provided the consent form for completion (see Appendix C & see Appendix F). The researcher also followed up with an email (see Appendix F).

### **Data Collection Instruments**

The study instrument is the Survey of ColoRectal Educational and Environmental Needs (SCREEN), a national patient survey of CRC (Partin et al., 2010; see Appendix H). The original survey is 126 questions with a Likert scale for scoring (1 = *strongly agree* to 5 = *strongly disagree*; Partin et al., 2010). The researcher used 70 questions from the survey that were most relevant to the current study and did not alter any of those questions. The questions that were omitted did not add value to the research, nor were they beneficial to understanding CRC screening behaviors within the target population. Permission to use the survey was granted from Melissa Partin, Ph.D., Professor of Medicine, University of Minnesota, and Co-Associate Director and Investigator, Minneapolis VA Health Services Research & Development (HSR&D) Center of

Innovation (see Appendix G). Dr. Partin served as the principal investigator for the VA HSR&D funded study #IIR 04-042. The questions in the SCREEN survey are a combination of other surveys that have been validated as good predictors to quantifying CRC screening behaviors among men and women of all populations. Questions in the survey specifically related to the HBM construct cues to action, were derived from research conducted by Wells and Thompson-Robinson (2016). The survey questions were appropriate for the targeted population because they focused on aspects of screening habits for CRC in African Americans. The qualitative data came from individual interviews. The study used modified guided open-ended questions, primarily focused on the HBM constructs (see Appendix I; Temple University, 2007).

According to the literature, when conducting each individual qualitative interview, there is no set number of interviews which will work for every research study and often times the notion of achieving saturation is heavily discussed (Baker, E. & Edwards, 2012; Baker, E. et al., 2012; Francis et al., 2010; Gerson & Horowitz, 2002; Guest et al., 2006; Hagaman & Wutich, 2016; Morse, 2000; Saunders et al., 2018; Small, 2009; Weller et al., 2018). Some experts in the field believe that the exact number of individuals interviews can vary, and the phrase “it depends” often is utilized. Experts say it depends on many internal and external factors, while others have mentioned conducting from as low as 12 interviews to has high as 60 (Baker, E. & Edwards, 2012; Baker, E. et al., 2012; Francis et al., 2010; Gerson & Horowitz, 2002; Guest et al., 2006; Hagaman & Wutich, 2016; Morse, 2000; Saunders et al., 2018; Small, 2009; Weller et al., 2018).

Moreover, the literature mentions that interviewing a large or small sample does not necessarily constitute that one amount will obtain better results over another amount (Baker, E. & Edwards, 2012; Baker, E. et al., 2012; Francis et al., 2010; Gerson & Horowitz, 2002; Guest et al., 2006; Hagaman & Wutich, 2016; Morse, 2000; Saunders et al., 2018; Small, 2009; Weller et

al., 2018). With guidance from the literature, this research conducted 20 individual interviews. Each interview lasted from about 20 to 30 minutes. Interviews were conducted in-person, face-to-face (at the Oak Cliff Family YMCA, or a secure/private location of the interviewees choosing) or securely via one of the following video media platforms—Skype, Facetime, Google Duo, Google Hangouts, or WhatsApp. The consent forms were emailed and had to be signed before each interview could begin (see Appendix B). During each interview session, participants and the PI reviewed the consent form first to answer any questions before beginning the interview. Only the PI and the interview participant were in attendance during the interview. The interview sessions followed the open-ended question guidelines throughout and were audio-recorded. At the end of each interview, the face-to-face interviewee was reminded that he or she would receive the incentive gift card and verbally confirm that they were aware. Those interviews conducted via a secure video media platform will have their incentive gift card mailed. Each mailed incentive gift card should have been received within three days following the interview.

### **Data Collection**

For data collection, both qualitative and quantitative data were collected. Quantitative data was collected through participants completing the online survey using Survey Monkey. Participants were recruited to participate in the survey via flyers, email, and social media. Surveys completed online were automatically uploaded to the survey database. The survey was available for two consecutive months, and participants who completed the survey before the deadline were entered into a drawing to win one of three prizes—Amazon Fire TV Stick, Amazon Fire Tablet, or Amazon Echo Dot. Survey participants were instructed to only complete one survey but could participate in the interview.

Qualitative data was collected through individual interviews. The individual in-person face-to-face interviews would have taken place at the Oak Cliff Family YMCA, located in the Southern region of Dallas, Texas, or at a secure/private location of the interviewees choosing. Additionally, the interview had the option to occur via a secure media platform (i.e., Skype, FaceTime, Google Duo, Google Hangouts, or WhatsApp). There were 20 separate interviews. Each interview lasted 20 to 30 minutes and was audio recorded. Interview participants received a Walmart gift card worth \$20 as an incentive gift. Interview participants were allowed only to attend one interview session and could also participate in the survey.

### **Data Analysis**

As a part of this convergent parallel design, data analysis from both the quantitative and qualitative data occurred in the first phase, and each component of the research was analyzed separately. The percentages and averages of the quantitative data collected were and used to determine how knowledgeable the target population was about CRC and CRC screening. The quantitative data was analyzed using logistic regression in SPSS. As a predictive analysis, for this study, logistic regression was used to provide detailed information on the data and explain the relationship between the dependent variable and independent variables in the research. In the interview, the perceptions, attitudes, and beliefs towards early detection screening for CRC were captured. From this analysis, themes, parallels, and differences between the data was analyzed to determine CRC screening habits for early age detection, and the roles of the HBM constructs in them. NVivo was the software used to analyze and store the qualitative data. Using NVivo, the qualitative data analyzed and coded the dataset for specific themes, refining the data, and then capture the data in visualizations to ultimately reach a conclusion. Additionally, rigor for the qualitative data was addressed through member checking and peer examination.

## **Summary**

The use of a mixed-methods convergent parallel design approach, as the methodology for the study, focused on CRC screening, and proved to be effective throughout the research. To determine the proper conclusion and to answer the study's research question, the appropriate population and sample size were gathered. In order to protect human participants, the use of vulnerable populations were not included. Additionally, all participant information is currently being adequately protected through lock and key or password. The data collection procedures and instrumentation focused on qualitative and quantitative methods and measured the research questions via reliable and validated surveys and open discussion questions. Analysis of the collected data used practical analysis tools to understand the data thoroughly, discover relationships and themes, and produce adequate answers about the research at hand to determine the conclusion of the research questions.

## CHAPTER IV

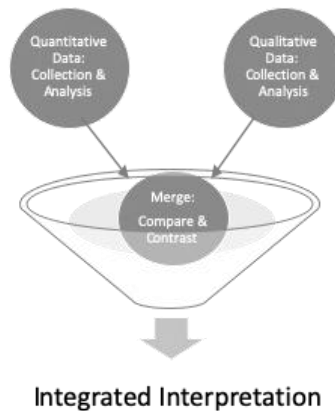
### RESULTS

#### **Quantitative Results**

The purpose of this study was to determine the perceptions of early detection screening for CRC in African American Men and Women, aged 30–44, using the HBM as a theoretical framework. Within this chapter, a presentation of the research study results is included. The research study utilized a mixed-method of convergent parallel design and included the data collection, analysis, merging, and integrated interpretation of quantitative and qualitative data (see Figure 12). The quantitative method of this study set out to discover if a correlation between gender and the HBM core constructs had any bearing on early detection screening decisions for CRC within the chosen population. An ordinal logistic regression statistical analysis was utilized for this prediction. The qualitative aspect of the research study sought to determine the perceived barriers, benefits, severity, susceptibility, cues to action, and self-efficacy towards screening for CRC, for the sampled population. Additionally, while all HBM constructs were analyzed, the research was specifically interested in discovering the results surrounding the constructs of perceived barriers and benefit.

**Figure 12**

*A Funnel Blend For Integrated Mixed Methods Research*



To answer the research question, “What is the relationship between gender and the six Health Belief Model constructs towards early detection screening for colorectal cancer at the current recommended age versus screening earlier than the recommended age, for African American men and women aged 30-44?” , a modified version of the Survey for ColoRectal Cancer Educational and Environmental Needs (SCREEN) was utilized. The results yielded a total of 110 attempted surveys. Of these, 101 surveys were completed, producing a 93% completion rate with an average of 17 minutes as the typical time spent on the survey. Eighteen surveys were deemed ineligible, as they fell outside of the age perimeter— three surveys were completed by individuals older than 44 and 15 surveys completed by individuals that were younger than 30. The ineligible surveys ranged from a minimum age of 24 to a maximum age 46, with the age of 29 as the mode. As a result, the sample size was  $n = 83$  surveys (see Table 1).

**Table 1***Demographics*

Gender*		<i>N</i>	%
	Male	35	42.2
	Female	47	56.6
Age			
	30-34	52	62.7
	35-39	24	28.9
	40-44	7	8.4
Household Income			
	Less than \$10,000	2	2.4
	\$10,001–\$20,000	3	3.6
	\$20,001–\$40,000	10	12
	\$40,001–\$60,000	16	19.3
	\$60,001–\$80,000	18	21.7
	More than \$80,000	34	41
Marital Status			
	Married	33	39.8
	Divorced	2	2.4
	Single, never married	48	57.8
Education			
	None	0	
	First through 11th grade	0	
	High school graduate	3	3.6
	One to three years of college (some college)	6	7.2
	College Graduate	38	45.8
	Master's Degree	26	31.3
	Doctorate or Professional Degree	10	12

\*Note. *N* = 82 here, as one participant did not indicate male or female for gender.

## **Demographics**

A percentage of 51.5 of completed survey participants were aged 30–34; 23.8% of the surveys were completed by those aged 35–39. A percentage of 7 of the surveys were completed by those 40–44. The average age of all survey participants was 34.3. All surveys, eligible and ineligible, were completed by African American men and women. A more substantial portion of females (59) completed the survey than males (41). Of the surveys that met the minimum age requirement, females aged 30–34 accounted for 31 surveys, 13 were completed by female respondents aged 35–39, and three from the age range 40–44. For eligible males, 20 aged 30–34 completed the survey, 11 were between the age of 35–39, and four who were within the age range of 40–44. One survey did not indicate male or female but fell within the age range of 30–34. Most survey participants indicated that they are single, never been married (58%). Approximately 40% of eligible respondents reported being married, 0% indicated separated, and 2% were divorced. Those in the age group 30–34 reported the most responses for married and the most responses for single, never been married. All eligible survey participants had some level of education. For instance 4% were high school graduates, 7% some college (1 to 3 years), 46% bachelor's degree, 31% master's degree, and 12% doctorate or professional degree. Those aged 30–34 were the most educated, with the highest-ranking in each of the five categories, except high school graduates. Approximately 90% were employed, whether it was employment for an organization or self-employment. Roughly 41% of respondents had a household income of more than \$80,000, and only 2% had an income of less than \$10,000.

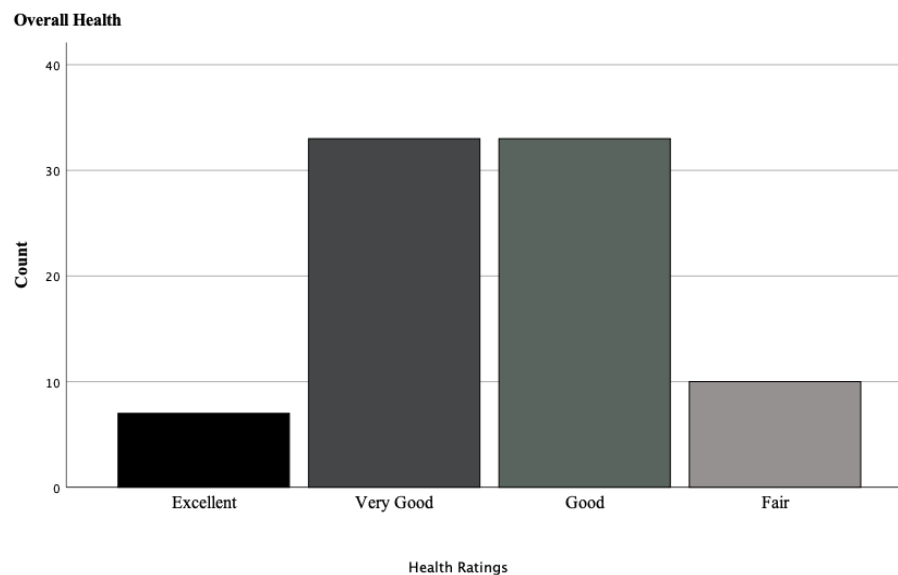
## Perceptions of Early Detection Screening

### *Overall Health*

To gauge the perceptions of early detection screening for CRC, within the target population, for this research, it was imperative to discover their foundational understanding of the disease, in general, and specifically to their health. Overall health can affect screening habits and understanding of the disease and its effect on one's health. When asked about overall health, respondents had the option of choosing from a rating of 1–5, whereas 1 = *excellent health* and 5 = *poor health*. Equally, more respondents reported having very good health (39.8%) and good health (39.8%; see Figure 13). Zero respondents chose poor health (5), or I don't know (6) as an option. The mean (*M*) for overall health for the entire population sample was relatively high, at 2.55 out of 6.

**Figure 13**

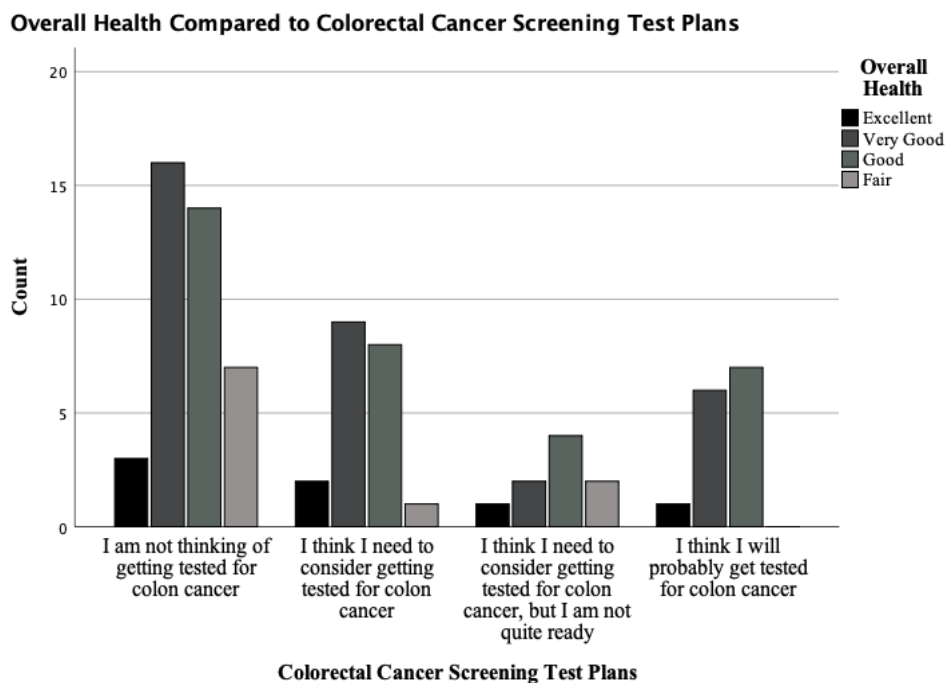
### *Overall Health*



**Colorectal cancer screening decision influences.** Overall health can influence CRC screening decisions. When comparing overall health to screening plans, approximately 48% ( $n = 40$ ) of respondents who selected that *they are not thinking of getting tested for colorectal cancer* noted that they have either excellent, very good, good, or fair health (see Figure 14). Of the same group, approximately 24% ( $n = 20$ ) noted that they *need to consider getting tested for colorectal cancer*, and 11% ( $n = 9$ ) said that they *should get tested for colorectal cancer but are not quite ready*. Only 17% ( $n = 14$ ) of respondents who noted that they have either excellent, very good, good, or fair health said that they *should probably get tested for colorectal cancer*.

**Figure 14**

*Overall Health Compared To Colorectal Cancer Screening Test Plans*

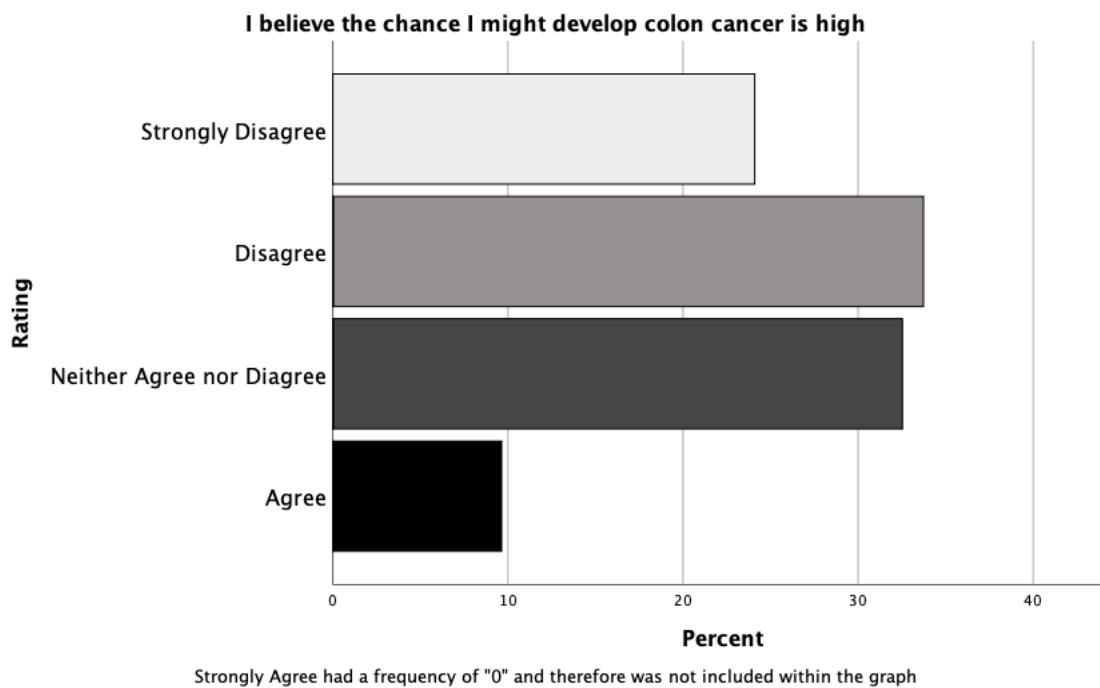


Furthermore, when asked, *I believe the chance I might develop colon cancer is high*, less than 10% of respondents agreed, 32.5% neither agreed nor disagreed, 33.7% disagreed, 24.1% strongly disagreed, and zero respondents selected strongly agree (see Figure 15). However,

nearly 50% strongly agreed that doing colon cancer testing makes sense, and 52% felt that the benefits.

**Figure 15**

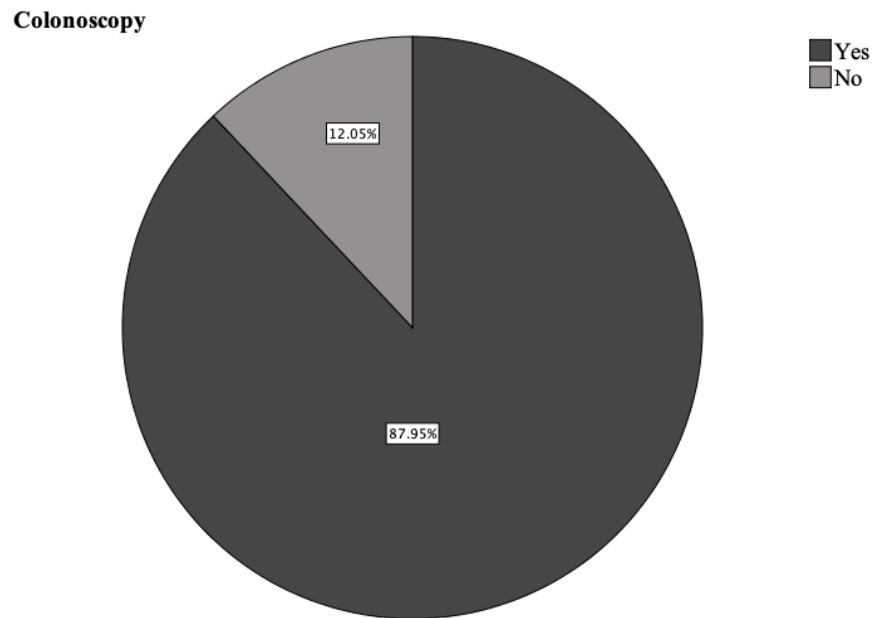
*Belief In Developing Colorectal Cancer*



**Knowledge of colorectal cancer and screening test type.** Knowledge of CRC test type was most prevalent for the colonoscopy as 87.94% of respondents had heard of the test, 12.05% had not heard of the test, and 0% indicated that they did not know about it (see Figure 16). The sigmoidoscopy was the test that respondents were least knowledgeable of, with 79.52% reporting that they have not heard of the test (see Figure 17). Knowledge of the fecal occult/blood stool test was comparable on both sides; 49.40% of respondents indicated yes, they have heard of the test, and 50.60% reported no, they have not heard of such a test (see Figure 18). Knowledge of the double-contrast barium enema was limited, with 63.86% noting that they have not heard of this test (see Figure 19).

**Figure 16**

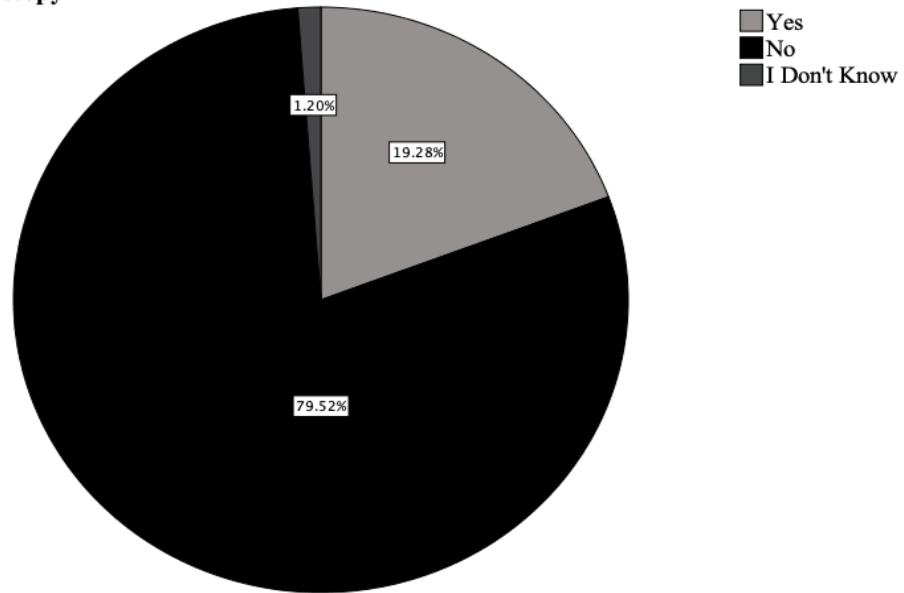
*Participants' Knowledgeable Of Colonoscopy Screening Test*



**Figure 17**

*Participants' Knowledgeable Of Sigmoidoscopy Screening Test*

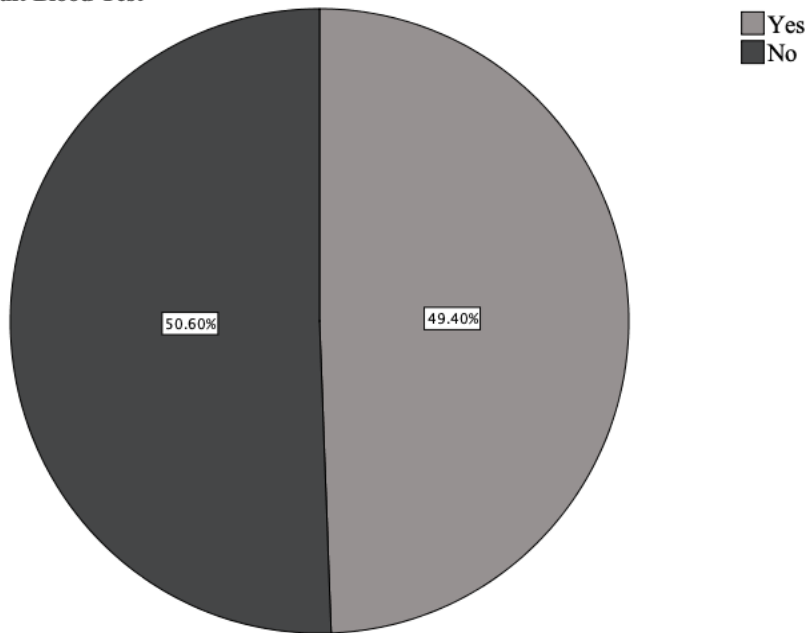
**Sigmoidoscopy**



**Figure 18**

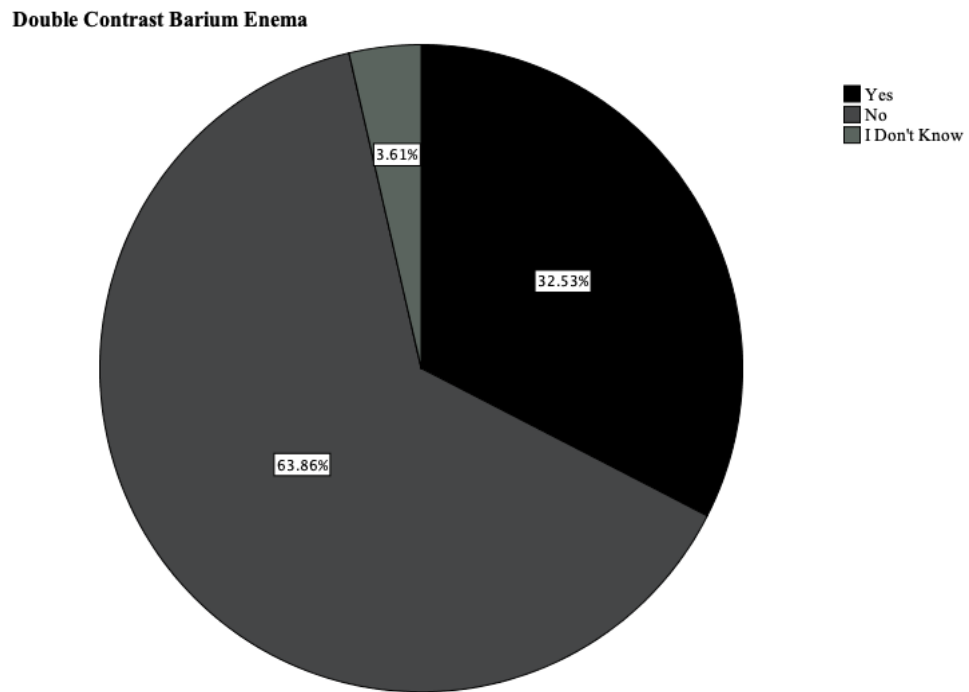
*Participants' Knowledgeable Of Fecal Occult Blood Test Screening Test*

**Fecal Occult Blood Test**



**Figure 19**

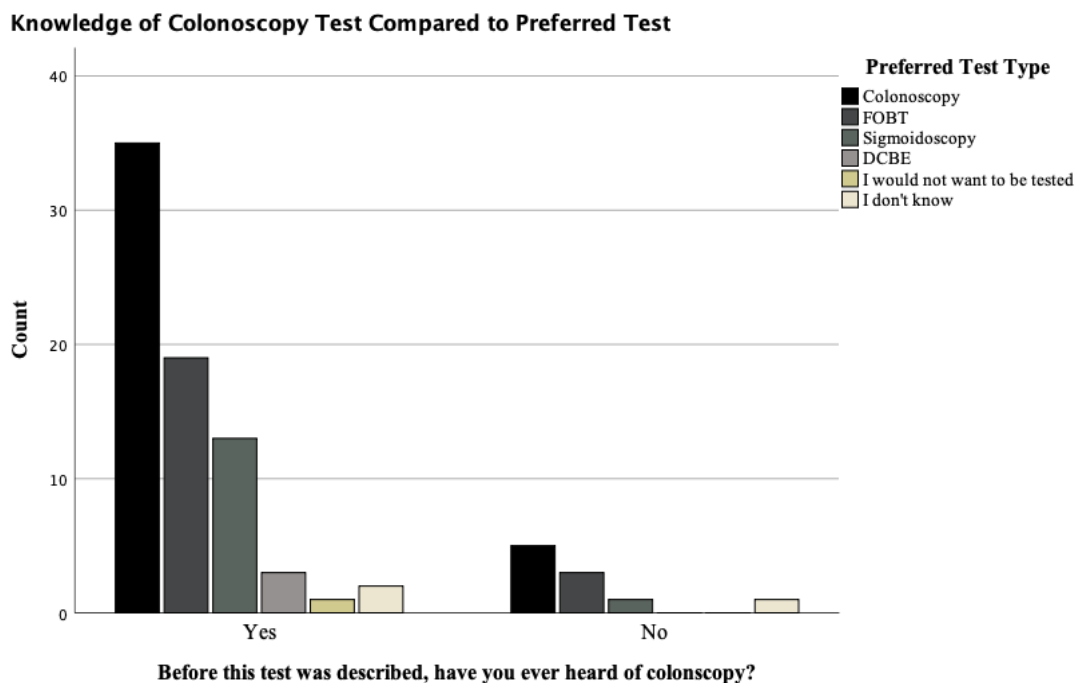
Participants' Knowledgeable Of Double Contrast Barium Enema Screening Test



**Knowledge of colorectal cancer screening test type and test preference.** When asked if a doctor recommended a colonoscopy, a direct correlation between respondents' knowledge of test type and test preference was present. Figure 20 depicts the knowledge of colonoscopy by screening test preference.

**Figure 20**

*Knowledge Of Colonoscopy Test Compared To Preferred Test*

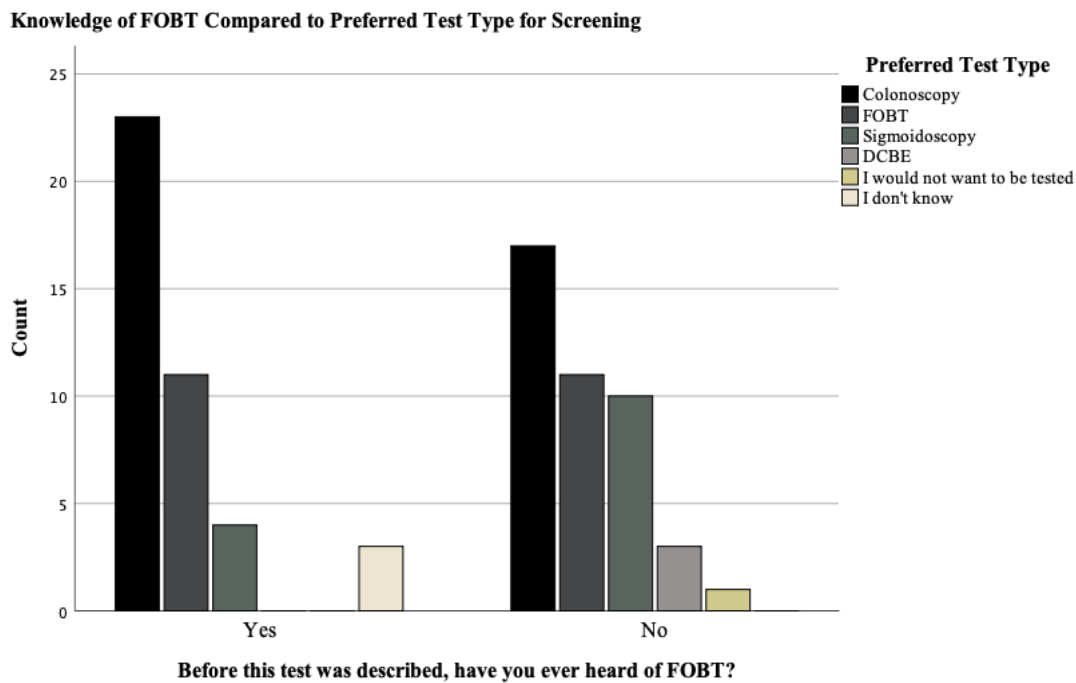


Of those knowledgeable about the colonoscopy test, 48.2% of respondents noted that they preferred to test by a colonoscopy, 23% by Fecal Occult Blood Test (FOBT), and 42.2% were knowledgeable of the test (see Figure 20). Additionally, 26.4% of respondents preferred the fecal occult blood test/stool blood test (26.5%), followed by the sigmoidoscopy (16.9%), and lastly, double-contrast barium enema (3.6%). Moreover, while there was a small percentage who did not

know what test they would prefer (3.6%) if a doctor recommended them to be screened, an even smaller percentage (1.2%) indicated that they would not want to be tested.

**Figure 21**

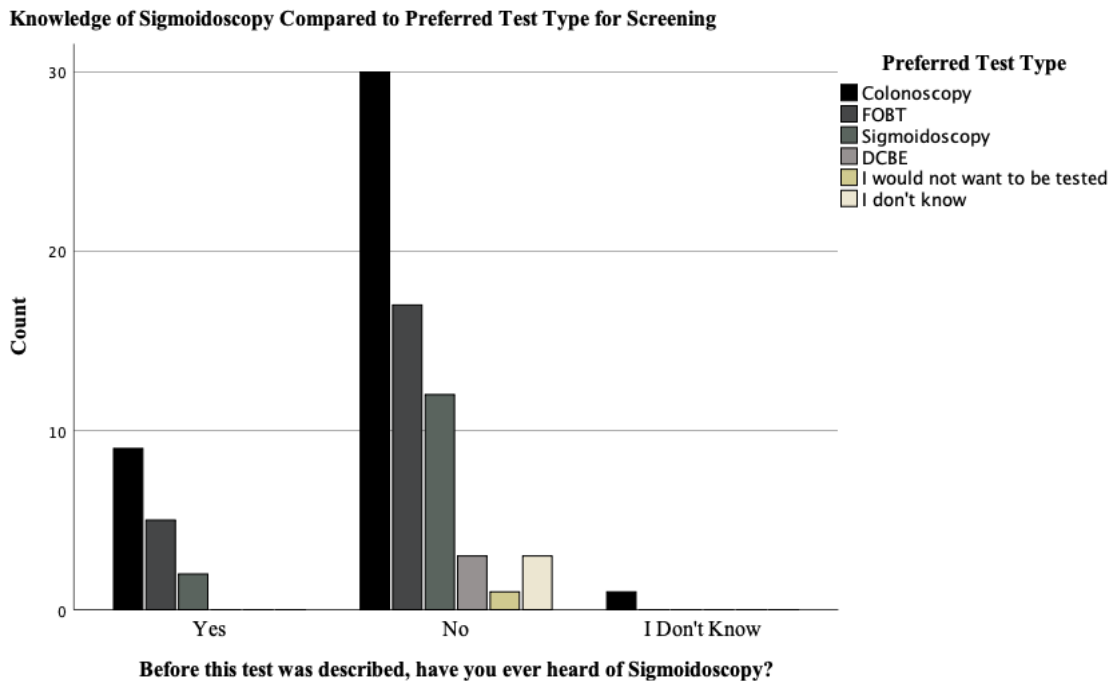
*Knowledge Of FOBT Compared To Preferred Test Type For Screening*



Within both categories, knowledgeable (yes) of FOBT and not knowledgeable (no), 11 respondents noted that they would prefer to screen by the FOBT method (see Figure 21). This number was less than colonoscopy but more than sigmoidoscopy and DCBE test. Of those who were knowledgeable about the test, a small percentage (3.61%) indicated they did not know which test they preferred.

**Figure 22**

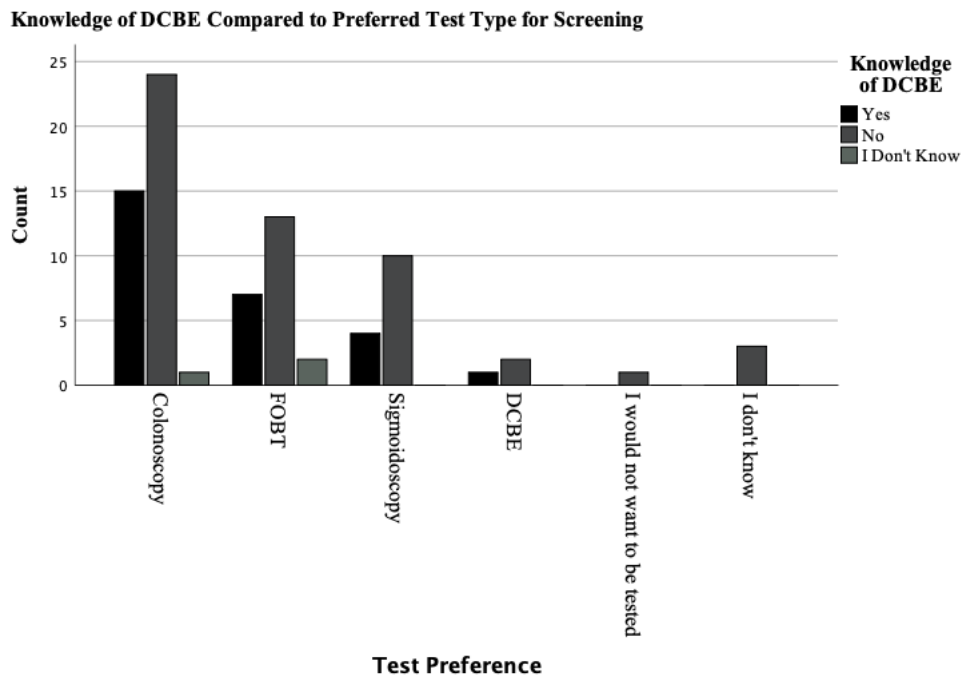
*Knowledge Of Sigmoidoscopy Compared To Preferred Test Type For Screening*



When analyzing knowledge of sigmoidoscopy, of those who did not know about the test, 36.14% preferred to test by colonoscopy, 20.48% preferred to test by FOBT, 14.46% preferred to test by sigmoidoscopy, 3.61% preferred DCBE and did not know, and 1.20% would not want to be tested (see Figure 22). Overall, more respondents were not knowledgeable about the sigmoidoscopy test than any other CRC screening test.

**Figure 23**

*Knowledge Of DCBE Compared To Preferred Test Type For Screening*



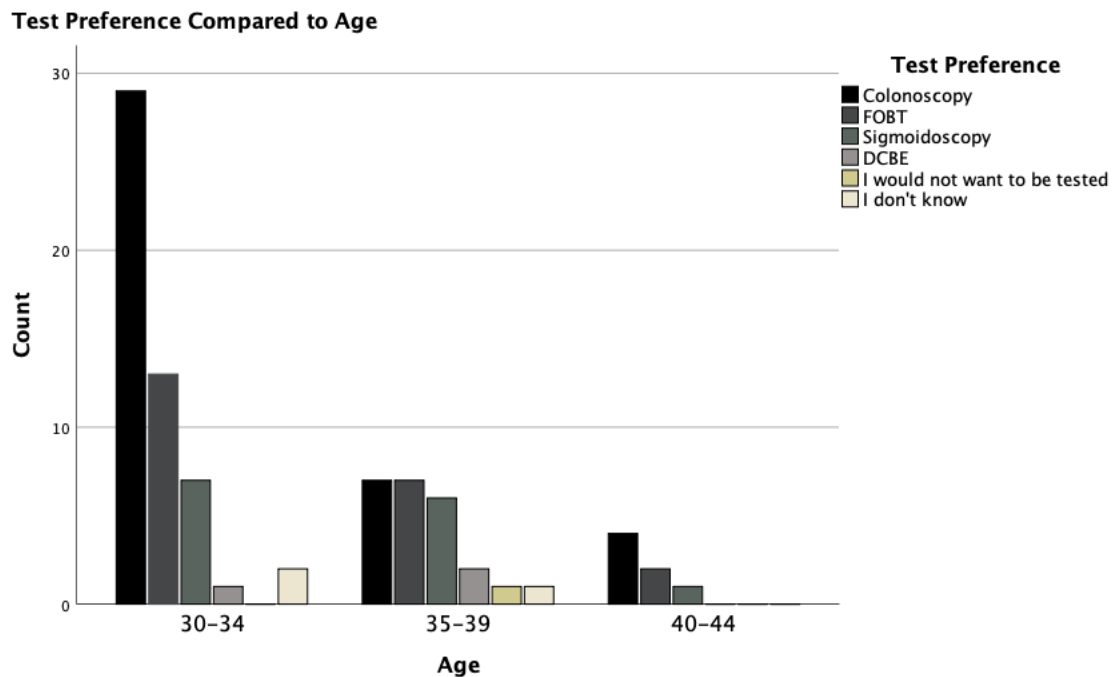
The knowledge of the double-contrast barium enema (DCBE) was apparent; however, it was not a preferred test type method for screening. Those most knowledgeable of DCBE preferred to be tested by colonoscopy (18.07%), followed by FOBT (8.43%), then sigmoidoscopy (4.82%; see Figure 23). Coincidentally, those who were not knowledgeable of the DBCE followed a similar testing preference trend. They preferred to be tested by colonoscopy first (28.92%), FOBT second (15.66%), and sigmoidoscopy third (12.05%), all before DCBE.

**Colorectal cancer screening test preference and age.** When test preference was compared against age, those 40-44 were the only age group certain of which test they would select if their doctor recommended them to be tested (see Figure 24). The DCBE was the least preferred test by all age groups, yet the sigmoidoscopy was the test that fewer people had known. The colonoscopy was the most preferred test by those aged 30–34 and those aged 40–44. However,

the age group 35–39 preferred to test by colonoscopy and FOBT, roughly at 29.2% for each test type.

**Figure 24**

*Test Preference Compared To Age*



### **Knowledge of colorectal cancer screening test type and test frequency. CRC**

screening test knowledge also includes the understanding of the test frequency, who should be tested, and why one should be tested. When asked, "At what age are people supposed to start getting tested for colon cancer?" responses ranged from as low as 21 years of age to as high as 60 years of age. The mode was 40 years of age at a frequency of 32; the average age was 41.2. For each test type (colonoscopy, fecal occult/blood stool test, sigmoidoscopy), respondents were asked how often they should do the test (see Table 2). Answers included 1 = *once a year*; 2 = *every 5 years*; 3 = *every 10 years*, 4 = *only when there is a problem*. The correct answer for these included fecal occult/stool blood test-once a year; colonoscopy-every 10 years; sigmoidoscopy—

every 5 years. For FOBT, 60.2% of all respondents answered correctly with an average choice of 2 ( $M = 1.53$ ); for sigmoidoscopy 50.6% of all respondents answered correctly with an average choice of 2 ( $M = 1.80$ ); and for colonoscopy, 9.6% of all respondents answered correctly, with the average choice was 2 ( $M = 1.87$ ). Some respondents also mentioned that certain screening tests should be completed every 2 years. This response was recorded multiple times for the colonoscopy test and once for the sigmoidoscopy test. The response *Only when there is a problem* was chosen less than 8% of the time for each test, with most respondents selecting this choice for the sigmoidoscopy test.

**Table 2**

*How Often Should You Do The Test? Survey Responses*

Test	Frequency	N	%	M	SD
Colonoscopy		<b>83</b>		<b>1.87</b>	<b>0.777</b>
	Once a year	27	32.5		
	Every 5 years	44	53		
	Every 10 years	3	9.6		
	Only when there is a problem	6	4.8		
FOBT		<b>83</b>		<b>1.53</b>	<b>0.786</b>
	Once a year	50	60.2		
	Every 5 years	26	31.3		
	Every 10 years	3	3.6		
	Only when there is a problem	4	4.8		
Sigmoidoscopy		<b>83</b>		<b>1.80</b>	<b>0.823</b>
	Once a year	32	38.6		
	Every 5 years	42	50.6		
	Every 10 years	3	3.6		
	Only when there is a problem	6	7.2		

*Note.* 1 = Once a year, 2 = Every 5 years, 3 = Every 10 years, 4 = Only when there is a problem

**Table 3***How Often Should You Do The Test? Survey Responses, By Age*

Test	Frequency	30-34	35-39	40-44	Total
Colonoscopy					
	Once a year	<i>n</i> = 14	<i>n</i> = 11	<i>n</i> = 2	27
	Every 5 years	<i>n</i> = 30	<i>n</i> = 10	<i>n</i> = 4	44
	Every 10 years	<i>n</i> = 7	<i>n</i> = 1	<i>n</i> = 0	8
	Only when there is a problem	<i>n</i> = 1	<i>n</i> = 2	<i>n</i> = 1	4
FOBT					
	Once a year	<i>n</i> = 30	<i>n</i> = 16	<i>n</i> = 4	50
	Every 5 years	<i>n</i> = 18	<i>n</i> = 7	<i>n</i> = 1	26
	Every 10 years	<i>n</i> = 2	<i>n</i> = 0	<i>n</i> = 1	3
	Only when there is a problem	<i>n</i> = 2	<i>n</i> = 2	<i>n</i> = 1	4
Sigmoidoscopy					
	Once a year	<i>n</i> = 16	<i>n</i> = 14	<i>n</i> = 2	32
	Every 5 years	<i>n</i> = 31	<i>n</i> = 8	<i>n</i> = 3	42
	Every 10 years	<i>n</i> = 3	<i>n</i> = 0	<i>n</i> = 0	3
	Only when there is a problem	<i>n</i> = 2	<i>n</i> = 2	<i>n</i> = 2	6

In all, the age range 30-34 was the group with the most correct responses for each of the test frequency questions and proved to be more knowledgeable than those aged 35–44 about CRC screening test frequency (see Table 3). Additionally, more women than men respondents were knowledgeable about when testing should occur, but both men and women gravitated heavily towards the choice of once a year or every 5 years for every test option (see Table 4, Table 5, and Table 6).

**Table 4***How Often Should You Do FOBT? Responses By Gender*

	Once a year	Every 5 years	Every 10 years	Only when there is a problem	Total
Gender					
Male	22	10	2	1	35
Female	27	16	1	3	47
Total	49	26	3	4	82

**Table 5***How Often Should You Do Sigmoidoscopy? Responses By Gender*

	Once a year	Every 5 years	Every 10 years	Only when there is a problem	Total
Gender					
Male	17	15	1	2	35
Female	14	27	2	4	47
Total	31	42	3	4	82

**Table 6***How Often Should You Do Colonoscopy? Responses By Gender*

	Once a year	Every 5 years	Every 10 years	Only when there is a problem	Total
Gender					
Male	14	19	2	0	35
Female	12	25	6	4	47
Total	26	44	8	4	82

**Table 7***Test Recommendation From Healthcare Provider*

Test	Recommendation	Freq.	%	M		Total	SD		Total
				Male	Female		Male	Female	
Colonoscopy				1.91	1.98	1.95	2.84	.146	.217
	Yes	4	4.8						
	No	79	95.2						
FOBT				2.00	1.96	1.98	.000	.204	.155
	Yes	2	2.4						
	No	81	97.6						
Sigmoidoscopy				2.00	2.00	2.00	.000	.000	2.00
	Yes	0							
	No	83	100						
DCBE				1.97	2.00	1.99	.196	.000	.110
	Yes	1	1.2						
	No	82	98.8						

*Note.* 1 = Yes, 2 = No

Moreover, while the aforementioned questions regarding testing frequency revealed that there was low knowledge of CRC, respondents seemed to be knowledgeable about how to prevent CRC potentially. When asked, over 70% (15.7% strongly agreed, and 57.8% agree) knew that

when colon polyps are found and removed, colon cancer could be prevented. Even more believed that when CRC is found early, it can be cured (31.2% strongly agree; 50.6% agree). Additionally, only 1.2% believed that CRC could not be cured if found early, and 3.6% believed that a person must have symptoms to have CRC.

### **Test Recommendation**

When asked about test recommendations for each test type, 100% of respondents answered "no" to the question that asked, "During the past 12 months, did a doctor, nurse or other health professional advise you to get a sigmoidoscopy?" For each of the remaining CRC test types (colonoscopy, FOBT, DCBE), when asked, respondents stated that the test had not been recommended to them within the past 12 months. This phenomenon occurred over 95% of the time (see Table 7). Test recommendation by age was low among all ages (see Table 8). Among ages 30-34, approximately 98% had not had an FOBT recommendation, 100% were not recommended for a sigmoidoscopy, 94% were not recommended for a colonoscopy, and 98% were not recommended for a double-contrast barium enema. Among ages 35–39, approximately 96% had not had an FOBT recommendation, 100% were not recommended for a sigmoidoscopy, 98% were not recommended for a colonoscopy, and 95% were not recommended for a DCBE. Among ages 40–44, there were no recommendations for any of the four CRC screening tests within the last 12 months. Additionally, the total mean for test recommendation by gender (both male and female) included  $M = 1.98$  for FOBT, whereas “no” (2) was the average choice selected;  $M = 2.00$  for sigmoidoscopy whereas “no” (2) was the average choice selected;  $M = 1.99$  for DCBE whereas “no” (2) was the average choice selected, and  $M = 1.95$  for the colonoscopy, whereas “no” (2) was the average choice selected (see Table 7). Furthermore, when asked should people in their 20s and 30s should learn about colon cancer test, those aged 30–34, 40% strongly

agree, 52% agree, 6% neither agree or disagree, and 2% disagree; within the age range 35–39, 42% strongly agree, 37% agree; 17% neither agree nor disagree, and 4% disagree; for aged 40–44, 43% strongly agree, 43% agree and 14% strongly disagree.

**Table 8**

*Test Recommendation From Doctor Frequency By Age*

	30–34	35–39	40–44	
Colonoscopy	Y = 3 N = 49	Y = 1 N = 23	Y = 0 N = 7	Total 83
FOBT	Y = 1 N = 51	Y = 1 N = 23	Y = 0 N = 7	83
Sigmoidoscopy	Y = 0 N = 52	Y = 0 N = 24	Y = 0 N = 7	83
DCBE	Y = 1 N = 51	Y = 0 N = 24	Y = 0 N = 7	83

### **Health Belief Model Constructs**

An ordinal logistic regression analysis was completed for gender and HBM constructs to analyze the predictor for early detection screening for CRC.

### ***Perceived Barriers***

To determine if the construct “perceived barriers” is a predictor of early detection screening for CRC for gender, the questions: “I am afraid of having an abnormal test result,” “My doctor never recommended that I get a colonoscopy,” “Finding time to go through colon cancer testing would be difficult for me to do,” “I worry that tests will be painful,” and “I worry I will feel vulnerable during the tests,” “Having the test done will be embarrassing,” were the primary

indicators analyzed. The predictor variables produced the following results, which can be seen in Table 9.

**Fear.** The odds of males thinking of fear of abnormal test results as a perceived barrier for CRC early detection screening was .835, 95% CI [.383, 1.823] times that of females. Gender has a statistically insignificant effect on the prediction that the perceived barrier fear would warrant early detection screening for CRC, Wald  $\chi^2(2) = .204, p = .651$  was statistically insignificant.

**No doctor recommendation.** The odds of males thinking of no doctor recommendation as a perceived barrier for CRC early detection screening was .961, 95% CI [.427, 2.162] times that of females. Gender has a statistically insignificant effect on the prediction that the perceived barrier, no doctor recommendation, would warrant early detection screening for CRC, Wald  $\chi^2(2) = .009, p = .923$ .

**Time availability.** The odds of males thinking time availability as a perceived barrier for CRC early detection screening was .610, 95% CI [.263, 1.416] times that of females. Gender has a statistically insignificant effect on the prediction that the perceived barrier, time availability, would warrant early detection screening for CRC, Wald  $\chi^2(2) = 1.321, p = .250$ .

**Test painful.** The odds of males thinking the test would be painful as a perceived barrier for CRC early detection screening was .976, 95% CI [.440, 2.168] times that of females. Gender has a statistically insignificant effect on the prediction that a perceived barrier, test painful, would warrant early detection screening for CRC, Wald  $\chi^2(2) = .003, p = .953$ , was statistically insignificant.

**Vulnerable.** The odds of males feeling vulnerable as a perceived barrier for CRC early detection screening was 1.018, 95% CI [.462, 2.241] times that of females. Gender has a

statistically insignificant effect on the prediction the perceived barrier, vulnerability, would warrant early detection screening for CRC, Wald  $\chi^2(2) = .002, p = .965$ .

**Embarrassing.** The odds of males thinking testing is embarrassing as a perceived barrier for CRC early detection screening was .887, 95% CI [.385, 2.043] times that of females. Gender has a statistically insignificant effect on the prediction that the perceived barrier, embarrassing, would warrant early detection screening for CRC, Wald  $\chi^2(2) = .080, p = .777$ .

**Table 9**

*Ordinal Logistic Regression Of Gender And Perceived Barriers As A Predictor For Early Detection Screening For Colorectal Cancer*

<i>Predictor Variable</i>	<i>B</i>	<i>Std. Error</i>	<i>Wald <math>\chi^2</math></i>	<i>p</i>	<i>OR</i>	<i>95% CI OR [Lower, Upper]</i>
<b>Perceived Barrier</b>						
<b>Fear</b>						
Male	-1.80	.3984	.204	.651	8.35	[.383, 1.823]
Female	0 <sub>a</sub>				1	
<b>No Doctor Recommendation</b>						
Male	-.040	.4138	.009	.923	.961	[.427, 2.162]
Female	0 <sub>a</sub>				1	
<b>Time Availability</b>						
Male	-.494	.4294	1.321	.250	.610	[.263, 1.416]
Female	0 <sub>a</sub>				1	
<b>Test Painful</b>						
Male	-.024	.4071	.003	.953	.976	[.440, 2.168]
Female	0 <sub>a</sub>				1	
<b>Vulnerable</b>						
Male	.018	.4026	.002	.965	1.018	[.462, 2.241]
Female	0 <sub>a</sub>				1	
<b>Embarrassing</b>						
Male	-.120	.4260	.080	.777	.887	[.385, 2.043]
Female	0 <sub>a</sub>				1	

*Note. 0<sub>a</sub> = Reference Group*

### ***Perceived Benefits***

To determine if the construct “perceived benefits” is a predictor of early detection screening for CRC for gender, the questions: “I believe that when colon cancer is found early, it can be cured,” “Doing colon cancer testing makes sense to me,” and “I think the benefits of colon cancer testing outweigh any difficulty I might have in going through the tests ” were the primary indicator analyzed. The predictor variables produced the following results, which are displayed in Table 10.

**Found early, cured.** The odds of males thinking if colon cancer is found early, it can be cured, as a perceived benefits for CRC early detection screening was 1.458, 95% CI [.635, 3.348] times that of females. Gender has a statistically insignificant effect on the prediction that the perceived benefits found early, cured would warrant early detection screening for CRC, Wald  $\chi^2(2) = .789, p = .375$ .

**Test makes sense.** The odds of males thinking the test makes sense as perceived benefits for CRC early detection screening was .888, 95% CI [.402, 2.200] times that of females. Gender has a statistically insignificant effect on the prediction that the perceived benefits, the test makes sense, would warrant early detection screening for CRC, Wald  $\chi^2(2) = .888, p = .941$ .

**Benefits outweigh any difficulty.** The odds of males thinking, benefits outweigh, and difficulty knowing status as perceived benefits for CRC early detection screening was .574, 95% CI [.244, 1.354] times that of females. Gender has a statistically insignificant effect on the prediction that the perceived benefits, benefits outweigh any difficulty, would warrant early detection screening for CRC, Wald  $\chi^2(2) = 1.605, p = .205$ .

**Table 10**

*Ordinal Logistic Regression of Gender And Perceived Benefits As A Predictor For Early Detection Screening For Colorectal Cancer*

<i>Predictor Variable</i>	<i>B</i>	<i>Std. Error</i>	<i>Wald <math>\chi^2</math></i>	<i>p</i>	<i>OR</i>	<i>95% CI OR [Lower, Upper]</i>
<b><i>Perceived Benefits Found Early, Cured</i></b>						
Male	.377	1.0290	.789	.375	1.458	[.635, 3.348]
Female	0 <sub>a</sub>				1	
<b><i>Test Makes Sense</i></b>						
Male	-.061	.4334	.020	.888	.941	[.402, 2.200]
Female	0 <sub>a</sub>				1	
<b><i>Benefits Outweigh Any Difficulty</i></b>						
Male	-.554	.4376	1.605	.205	.574	[.244, 1.354]
Female	0 <sub>a</sub>				1	

*Note.* 0<sub>a</sub> = Reference Group

### ***Perceived Susceptibility***

To determine if perceived susceptibility is a predictor of early detection screening for CRC for gender, and answer the research question, the questions “I believe that colon cancer is mainly a problem for men,” “I think that compared to other persons my age, I am at a lower risk for colon cancer,” “I believe that the chance that I will develop colon polyps is high,” and “I believe the chance I might develop colon cancer is high” were the primary indicators analyzed. The predictor variables produced the following results, which can be seen in Table 11.

**Man problem.** The odds of males thinking colon cancer is a man problem, as a perceived susceptibility for CRC early detection screening was .266, 95% CI [.115, .612] times that of

females. Gender has a statistically significant effect on the prediction that the perceived susceptibility, CRC is a man problem and would warrant early detection screening for CRC, Wald  $\chi^2(2) = 9.701, p = .002$ .

**Age risk.** The odds of males thinking that, compared to others of their age, they are at a lower risk of CRC, as a perceived susceptibility for CRC early detection screening was 2.276 95% CI [.999, 5.187] times that of females. Gender has a statistically significant effect on the prediction that the perceived susceptibility, age risk, would warrant early detection screening for CRC, Wald  $\chi^2(2) = 3.83, p = .050$ .

**Polyp development, high.** The odds of males thinking their chance of developing polyps is high, as a perceived susceptibility for CRC early detection screening was .392, 95% CI [.171, .898] times that of females. Gender has a statistically significant effect on the prediction that the perceived susceptibility, polyp development, high would warrant early detection screening for CRC, Wald  $\chi^2(2) = 4.901, p = .027$ .

**CRC risk, high.** The odds of males thinking they have a high risk of CRC, as a perceived susceptibility for CRC early detection screening was .393, 95% CI [.173, .893] times that of females. Gender has a statistically significant effect on the prediction that the perceived susceptibility, CRC risk, high, would warrant early detection screening for CRC, Wald  $\chi^2(2) = 4.986, p = .026$ .

**Table 11**

*Ordinal Logistic Regression Of Gender And Perceived Susceptibility As A Predictor For Early Detection Screening For Colorectal Cancer*

<i>Predictor Variable</i>	<i>B</i>	<i>Std. Error</i>	<i>Wald <math>\chi^2</math></i>	<i>P</i>	<i>OR</i>	<i>95% CI OR [Lower, Upper]</i>
<b><i>Perceived Susceptibility</i></b>						
<b><i>Man Problem</i></b>						
<i>Male</i>	-1.325	.4254	9.701	.002	.266	[.115, .612]
<i>Female</i>	0 <sub>a</sub>				1	
<b><i>Age Risk</i></b>						
<i>Male</i>	.822	.4202	3.83	.050	2.276	[.999, 5.187]
<i>Female</i>	0 <sub>a</sub>				1	
<b><i>Polyp Development, High</i></b>						
<i>Male</i>	-.936	4.228	4.901	.027	.392	[.171, .898]
<i>Female</i>	0 <sub>a</sub>				1	
<b><i>CRC Risk, High</i></b>						
<i>Male</i>	-.934	.4181	4.986	.026	.393	[.173, .893]
<i>Female</i>	0 <sub>a</sub>				1	

*Note. 0<sub>a</sub> = Reference Group*

### ***Perceived Severity***

To determine if perceived severity is a predictor of early detection screening for CRC for gender, and answer the research question, the question “Going through colon cancer testing is an important thing for me to do” was the primary indicator utilized, as seen in Table 12.

**Testing important.** The odds of males thinking that going through CRC screening test is important, as a perceived severity for CRC early detection screening was .799, 95% CI [.355, 1.797] times that of females. Gender has a statistically insignificant effect on the prediction that the perceived severity, testing important, would warrant early detection screening for CRC, Wald  $\chi^2(2) = .295$ ,  $p = .587$ .

**Table 12**

*Ordinal Logistic Regression Of Gender And Perceived Severity As A Predictor For Early Detection Screening For Colorectal Cancer*

<i>Predictor Variable</i>	<i>B</i>	<i>Std. Error</i>	<i>Wald <math>\chi^2</math></i>	<i>p</i>	<i>OR</i>	<i>95% CI OR [Lower, Upper]</i>
<i>Perceived Severity Testing Important</i>						
<i>Male</i>	-.224	.4136	.295	.587	.799	[.355, 1.797]
<i>Female</i>	<i>0<sub>a</sub></i>				<i>1</i>	

*Note. 0<sub>a</sub> = Reference Group*

### ***Self-Efficacy***

To determine if self-efficacy is a predictor of early detection screening for CRC for gender and answer the research question, the question “I intend to undergo colon cancer testing” was the primary indicator utilized, as seen in Table 13.

**Screening intent.** The odds of males intending to screen, as self-efficacy for CRC early detection screening was .522 95% [CI, .230, 1.186] times that of females. Gender has a statistically insignificant effect on the prediction that the self-efficacy of screening intent, would warrant early detection screening for CRC, Wald  $\chi^2(2) = 2.411$ ,  $p = .522$ .

**Table 13**

*Ordinal Logistic Regression Of Gender And Self-Efficacy As A Predictor For Early Detection Screening For Colorectal Cancer*

<i>Predictor Variable</i>	<i>B</i>	<i>Std. Error</i>	<i>Wald <math>\chi^2</math></i>	<i>p</i>	<i>OR</i>	<i>95% CI OR [Lower, Upper]</i>
<i>Self-Efficacy Screening Intent</i>						
<i>Male</i>	-.649	.4183	2.411	.121	.522	[.230, 1.186]
<i>Female</i>	0 <sub>a</sub>				1	

*Note.* 0<sub>a</sub> = Reference Group

### ***Cues to Action***

To determine how a cue to action is a predictor of early detection screening for CRC for gender, and answer the research question, the question “Someone important to me feels that it is important that I get regular colorectal cancer test” was the primary indicator utilized, as seen in Table 14.

**Testing, someone important.** The odds of males believing testing, someone important, as a Cue to Action for CRC early detection screening was .336 95% CI [.147, .722] times that of females. Gender has a statistically significant effect on the prediction that testing, someone important as a cue to action, would warrant early detection screening for CRC, Wald  $\chi^2(2) = 6.603$ ,  $p = .010$ .

**Table 14**

*Ordinal Logistic Regression of Gender and Cues to Action as a Predictor for Early Detection Screening for Colorectal Cancer*

<i>Predictor Variable</i>	<i>B</i>	<i>Std. Error</i>	<i>Vald <math>\chi^2</math></i>	<i>p</i>	<i>OR</i>	<i>95% CI OR [Lower, Upper]</i>
<i>Cues to Action</i>						
<i>Someone</i>						
<i>Important Influence</i>						
<i>Male</i>	-1.089	.4239	6.603	.010	.336	[.147, .772]
<i>Female</i>	0 <sub>a</sub>					

*Note.* 0<sub>a</sub> = Reference Group

Furthermore, external cues to action also include prompts from health care providers; however, over 90% have not had a test recommended to them from their provider. Furthermore, internal cues such as overall health were positive among the vast majority; therefore, it is likely that a minimal amount would change screening behavior based on this aspect.

## **Qualitative Results**

### **Demographics**

In using a modified CRC focus group questionnaire, qualitative data was collected and analyzed for the research study. Through in-person and virtual interviews, the research question explored, “What are the perceived barriers, benefits, severity, susceptibility, cues to action, and self-efficacy towards screening for colorectal cancer, for African American males and females aged 30–44?” The questionnaire included 11 questions and was separated into four sections (a) general questions about CRC, (b) feedback on the CDC CRC promotional screening materials, (c) suggestions on how to talk to peers about CRC and CRC screening test, and (d) additional interviewee comments. In total, 20 individuals participated in the interview; 45% of the sample

was male, and 55% was female. All participants were African American. Participants were between the ages of 30–44. Nineteen participants had not had a CRC screening test. One participant did have a CRC screening test. As a result, the eligible sample was  $n = 19$ . Interviews were conducted virtually through the FaceTime application. One interview was conducted in-person. Prior to conducting each interview, participants were provided a consent form, which asked for consent to conduct the interview, given information on the basics of the interview and privacy, and also was informed of the incentive gift for participation. On average, interviews lasted between 15 and 20 minutes. Interviews were audio-recorded, and no identifying information was utilized in analyzing the collected information.

### **Thematic Analysis of Qualitative Interviews**

Through NVIVO 12, a thematic analysis was completed using the transcribed interviews. Information obtained from the interviews was coded and categorized using the HBM constructs as the primary codes—perceived barriers, perceived benefits, perceived severity, perceived susceptibility, cues to action, and self-efficacy, as well as codes for knowledge and others. Within each code, thematic nodes were created to express and represent the topics and ideas that were discovered, as it relates to screening for CRC within the sample population. Table 15 provides a breakdown of constructs in relation to the questions asked, notable themes found, and relevant quotes from interview participants.

**Table 15***Thematic Analysis Of Interviews*

HBM Construct	Question Asked	Common Themes	Example Quotes
Perceived Barriers	What do you believe would cause you to/prevent you from getting screened for colorectal cancer?	<ul style="list-style-type: none"> <li>• Test recommendation</li> <li>• Fear</li> <li>• Test process</li> <li>• Finances</li> <li>• Transportation</li> <li>• Masculinity</li> <li>• Medical mistrust</li> <li>• Age (too young)</li> <li>• Schedule/time/availability</li> <li>• Readiness</li> <li>• Screening knowledge</li> <li>• Lack of signs and symptoms</li> <li>• Screening methods</li> </ul>	<p>“From my understanding, colorectal cancer screenings are usually geared towards people in the age bracket of like 50 and older.”</p> <p>“...Only men get colon cancer.”</p> <p>“I didn't know there [was] more than one way to test for colorectal cancer, so that's interesting.”</p>
Perceived Benefits	What are your thoughts about finding colon cancer earlier vs. finding it later?	<ul style="list-style-type: none"> <li>• Prolonged life</li> <li>• Hope of survival</li> <li>• Life-changing event</li> <li>• Better treatment options</li> <li>• Educate other</li> </ul>	<p>“I believe it’s very important to find earlier rather than later...”</p> <p>“If you find it earlier, you can treat it faster and maybe prevent it from coming back. So, get it done early as opposed to later.”</p>
Perceived Severity	How serious would it be if you developed colorectal cancer?	<ul style="list-style-type: none"> <li>• Feeling unsettled</li> <li>• Feeling troubled</li> <li>• Vulnerability to illness</li> <li>• High Severity</li> <li>• Hopelessness</li> <li>• Despair</li> </ul>	<p>“It would be very serious, yeah. It’s cancer. It’s cancer!”</p> <p>“Very serious, very serious. On a scale of one to 10, a 10.”</p> <p>“It would be so serious because it's my life and my health at risk. So, if I have it, I want to do everything I can to treat... to the best of my ability.”</p>

HBM Construct	Question Asked	Common Themes	Example Quotes
Perceived Susceptibility	Compared to other people of your age, what do you think is your chance of getting colorectal cancer?	<ul style="list-style-type: none"> <li>Lack of knowledge about the disease and screening</li> </ul>	<p>“Zero chance. I don’t know what would make me choose zero, as I don’t know how you get colon cancer. But based on my [family] history, we just don’t have a history of cancer.</p> <p>“On a scale from 0 to 10, I really don’t know. I would kind of have to do some studying on the causes and the makeup as a black man..... but I give myself a five.”</p> <p>“I don’t even know how you get colon cancer, like that’s just weird, like I don’t know how even you would get that, unless it’s hereditary or something.”</p>
Self-Efficacy	What is the confidence you have in getting a colorectal cancer screening test?	<ul style="list-style-type: none"> <li>Confident- if they said they would do it</li> <li>Not confident- if the cost is high, no signs/symptoms present, no immediate need, no recommendation from Healthcare provider, relative, family, personal schedule doesn’t allow</li> </ul>	<p>“If the process was fairly easy and it was something I can follow up with that day or you know I would follow up, I would...”</p> <p>“10 out of 10, knowing that I would definitely do it without a doubt.”</p> <p>“If I made the decision to do it, I’ll do it, but getting me to make a decision is probably the hardest part....”</p>

HBM Construct	Question Asked	Common Themes	Example Quotes
Cues to Action	“What would be your response or what you do if your doctor recommended that you have a colorectal cancer screening test? Whose opinions would be/are most important to you in deciding to have the screening?”	<ul style="list-style-type: none"> <li>• Doctor recommendation</li> <li>• Recommendation/suggestion from a person of personal significance/influence</li> <li>• God</li> <li>• Trust in those suggesting screening are not leading them astray</li> </ul>	<p>“....God, my wife, the doctor and probably my mom [opinions would be the most important]”</p> <p>“I guess the opinion of my family. If they were suggesting, I do it. I will want to know their opinion about it. And their views and perspectives. But I think it would be more important for me to hear from a medical professional. Someone who has experience dealing with those types of issues and signs.”</p>

## Health Belief Model Constructs

### *Perceived Barriers*

To determine perceived barriers the question “What do you believe would cause you not to/prevent you from getting screened for colorectal cancer?” was asked. As a result, a total of 13 themes emerged. These themes included no test recommendation, fear, test process, finances, transportation, masculinity, medical mistrust, age, availability, readiness, lack of signs and symptoms, and screening methods. The most common barriers mentioned were age and screening methods. Many respondents felt things like they were too young to be screened, that screening for colon cancer was something only men needed to do, they were not knowledgeable of the CRC screening tests, and were unaware of testing methods. Below are examples of the participants’ responses:

“Maybe just being scared, like how the screening would be.”

“Well, as [I] stated, if my health insurance [is] not going to cover it ..... that will probably prevent me from getting it.”

“Feeling like I'm healthy will prevent me. If I feel like I'm healthy and I understand that the process is going to be uncomfortable, it [would] just be weird to put something up my behind.”

### ***Perceived Benefits***

To determine perceived benefits the question “What are your thoughts about finding colon cancer earlier vs. finding it later?” was asked. All interviewees felt there to be a much greater benefit in finding CRC earlier. Themes included prolonged life, better treatment options, a life-changing event, the hope of survival if cancer is found, better treatment options, and educating others. Below are examples of the participants’ responses:

“Just hearing general stuff about cancer, if you find it [cancer] earlier, you can treat it [cancer] faster and maybe prevent it [cancer] from coming back. So, get it [colorectal cancer screening] done early as opposed to later.

“If you find it [colorectal cancer] earlier, you can control it or reverse or stop it.”

“Earlier, the better so you can treat it [colon cancer] and ... the doctors [can] do what they are supposed to do.”

### ***Perceived Susceptibility***

To determine perceived susceptibility the question “Compared to other people of your age, what do you think is your chance of getting colorectal cancer?” was asked. The perception of vulnerability to CRC fluctuated among respondents. It can be inferred that responses were widely varied towards susceptibility due to the variation of each respondent’s general knowledge of colon cancer, knowledge of colon cancer screening test types, and knowledge of family

history. Therefore, the results yielded some uncertainty of susceptibility for some, and/or a degree of certainty for others. The major theme that appeared is a lack of knowledge. Below are examples of the participants' responses:

"You know, I say "never say never" [because] you never know, but I would have thought I wouldn't have any issue until at least 50."

"I want to say they're pretty low, I think I have [a] good digestive system, but when it comes to race, I know we [African Americans] are probably more susceptible to it or more likely to have it."

"I don't know. I kind of feel like that's a scientific question and I have no knowledge or statistic about it [colorectal cancer] so; and I don't have anyone who shared that they had it [colorectal cancer] so I am largely ignorant of it [colorectal cancer] in terms of numbers."

"I believe [in] God. I walk by faith daily, but I also have to do the right steps in the natural; Faith without works is dead, so I have to do both. I'm not really talking about that [colorectal cancer] because right now, I'm not in it. I don't know."

### ***Perceived Severity***

To determine perceived severity the question "How serious would it be if you developed colorectal cancer?" was asked. While not everyone was knowledgeable about CRC, almost all interviewees felt that getting CRC was serious. The primary themes were feeling unsettled, feeling troubled, getting colon cancer is serious, vulnerability to illness, hopelessness, high severity, and despair. Following below are examples of participants' responses:

"On a scale of 1 to 10....it's [colorectal cancer] nothing to play with."

"Life-threatening; my mom just had her colon reconstructed."

“That [colorectal cancer] would suck. It [colorectal cancer] would suck because no one wants to die, and no one wants to have a main life adjustment; between the bills or just have their life stopped.”

“Aww man [colorectal cancer] will be very serious. I just had a cousin that passed away from cancer. I don't know if it was colon cancer, but he was only 45, maybe. And I [saw] him deteriorate over a four-year period of time. And I don't want to go through that. So, if I ever did get any kind of cancer, I would be all over it.”

“On a scale from 1 to 10, I would categorize it [colorectal cancer] as a 10, because cancer in general, I feel like is a red flag for me, health wise. So, it will be a very serious thing for me.”

### *Self-Efficacy*

To determine self-efficacy the question “What is the confidence you have in getting a colorectal cancer screening test?” was asked. Participants’ self-efficacy in getting screened for colon cancer revealed mixed responses. Some respondents felt that they had the self-confidence to get the testing, and some had no confidence. Other respondents noted that they had self-confidence, but only if there were additional outside factors that appealed to them. For example, if the respondent knew a family history of CRC existed or felt that the process of screening would be easy, then they would screen. This prior knowledge of disease history is consistent with the themes observed. Those who were confident and did not need any outside motivating factors to screen noted that if they said they would get the test done, then they would follow through completely. Yet, those who were not self-confident noted that they would not be confident if, for instance, the test cost was high and or there were no signs and symptoms/need or even if the personal schedule does not permit. Below are examples of the participants’ responses:

“Confidence is low. Because I know I would never wake up one day and say, “you know I want to get a colon cancer test.” However, it is thought-provoking, after doing this interview, that maybe I should look into seeing what age is for first-timers; Or even if there is an age required before you can get something like that [colorectal cancer screening] done.”

“I’m not really sure. Honestly, I am not really....sure about that, what my confidence level is. I know that there is somewhat of a small fear that if I go get one [colorectal cancer screening], they [doctors] might find something.”

“Does it [colorectal cancer screening test] cost money to get screened or [is screening] free? If it’s [colorectal cancer screening test] free or cheap, then I wouldn’t be opposed to taking it [colorectal cancer screening test] at all. But if it [colorectal cancer screening test] costs a lot of money, I’m good, bro.”

### ***Cues to Action***

To determine cues to action the questions “What would be your response or what you do if your doctor recommended that you have a colorectal cancer screening test? and “Whose opinions would be/are most important to you in deciding to have the screening?” The most significant themes for cues to action were external cues. These cues included a doctor's recommendation and or a person of influence over their life (i.e., spouse, parent, close friend, etc.). When indicating a doctor's recommendation as a cue to act for screening, many agreed that they would follow the doctor's recommendation, but they would question the doctor to inquire why the test is needed before going through any test.

Additionally, interviewees also consider their personal opinion and or the opinion of a spouse, parent, or another person of significance to be important when deciding to get screened.

Furthermore, themes here also included trust (in healthcare provider, self, a person of significance, and God). Below are examples of the participants' responses:

“If my doctor[s] recommended it, I would ask my doctor [s] why do they [doctors] recommend that I have it done? [I would also ask], is it more prevalent in African American people?...I would ask questions [about the screening process]....how does the screening go?; What would I need [to do] to be screened? Other than that, I don't see any issue as to why I would not want to be screened.”

“Mine [opinion] actually, yeah mine [opinion].”

“I think my doctor [first], because that is what he or she went to school for. I trust that opinion. I also would trust the opinions of maybe people who have had colon cancer. And say they may have some cautionary tales, “I had some symptoms early, I chose to ignore them, and this is the consequence.” If someone had it and they are like nah, I don't think you will need it. I don't know if I would necessarily take that person's opinion, as like fact and go forth with that, but a least I would take it into consideration.”

Furthermore, knowledge, or lack thereof, was also coded with several themes relating to it. These included characteristics of the disease, gender, prepping for the screening test, and test type confusion.

## **Queries**

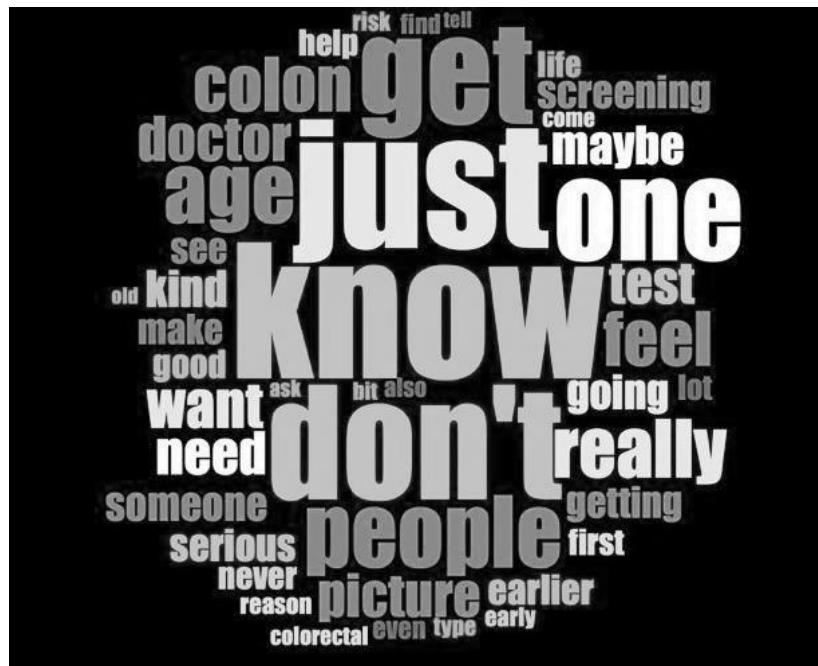
### **Word frequency**

Figure 25 provides a depiction of the most frequent words utilized throughout the interviews. Of these, the top five words included “know” a count of 170 and weighted percentage of 2.35; *just* a count of 160 and weighted percentage of 2.21; “don't” a count of 142 and weighted percentage of 1.96%; “think” a count of 140 and a weighted percentage of 1.93; and “get” a count

of 128 and weighted percentage of 1.77. Other notable words with high frequencies included “cancer” (107-word count and 1.48 weighted percent), “age” (82-word count and 1.13 weighted percent), and “want” (53-word count and .73 weighted percent).

### Figure 25

### Word Frequency

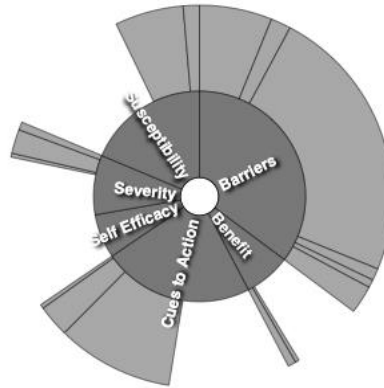


## Sunburst

As seen in Figure 26, the sunburst provides a visual comparison of nodes and their coding references. Of these, the node of perceived barriers has the most coded references followed by cues to action, perceived susceptibility, perceived severity, self-efficacy, and perceived benefits.

**Figure 26**

*Sunburst*

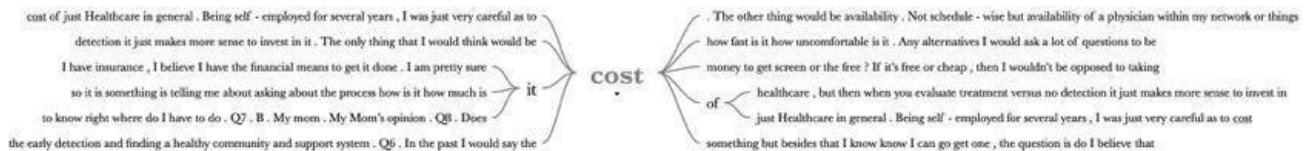
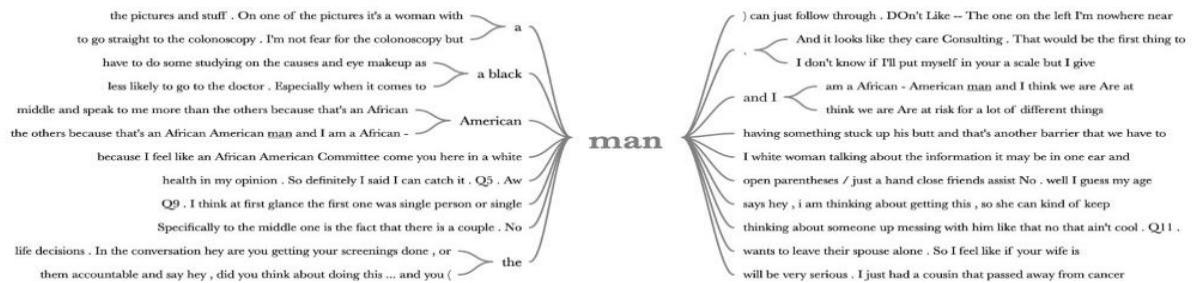
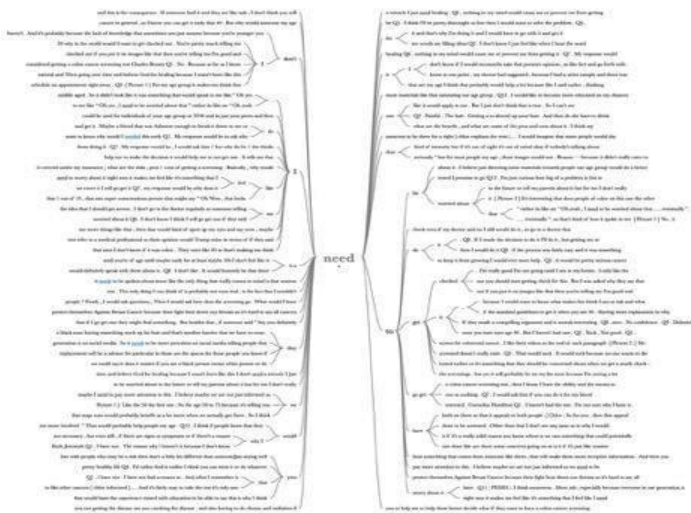
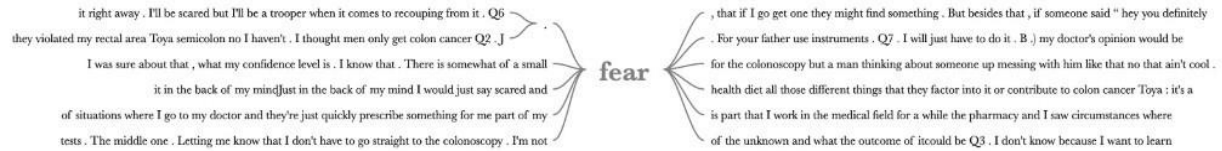


## Word Tree

Throughout the interview, a few words helped in digging deeper into the perceptions of early detection screening for CRC and the HBM constructs. These words included fear, need, man, and cost (see Figure 27).

## Figure 27

### Word Tree: Fear, Need, Man, And Cost

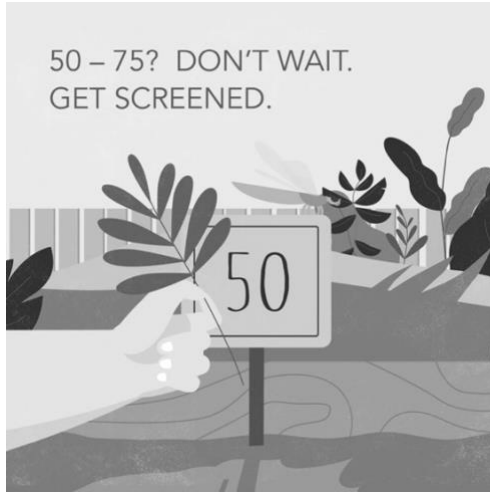


### **Centers for Disease Control and Prevention Images**

The CDC is a vital entity in providing the most accurate and updated information on diseases and public health issues. In addition to providing written information, the CDC also offers illustrations to educate and give awareness on various health topics. To determine the impact of the CDC's image campaigns to increase CRC screening, the researcher selected three images from the CDC's website for this study (see Figure 28, Figure 29, and Figure 30). During each interview, respondents were asked "Do you think these materials would help people your age decide to have a colorectal cancer screening test?", "What did you like about the materials? What didn't you like?," and "Do you think these materials would help you make the decision to have a colorectal cancer screening test?" These open-ended questions were followed by a question that asked each respondent to further explain their answers. While there were a number of varied responses, Table 16 provides some of the notable responses. The result of the analysis overwhelmingly determined that the three images utilized by the CDC would not help people of this population decide to be screened for CRC. Additionally, image one and image three were not appealing to the audience; however, Image 2 appealed to the audience primarily because the image included people of color—this was what was relatable to the target audience.

**Figure 28**

*CDC Image 1*

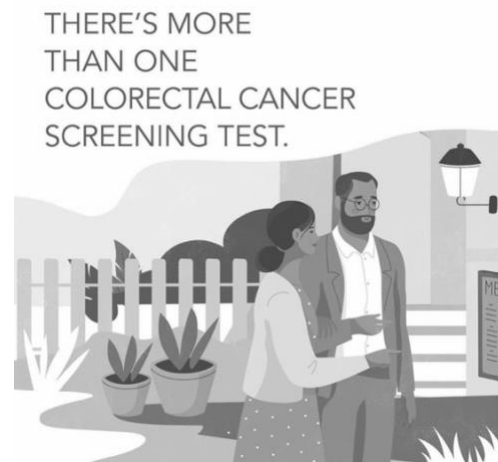


*Note.* Adapted from *2019 Social Media Posts and Images* by Centers for disease Control and Prevention National Cancer Institute, 2019

(<https://www.cdc.gov/cancer/colorectal/resources/social-media.htm>). In the public domain.

## Figure 29

### *CDC Image 2*



*Note.* Adapted from *2019 Social Media Posts and Images* by Centers for disease Control and Prevention National Cancer Institute, 2019

(<https://www.cdc.gov/cancer/colorectal/resources/social-media.htm>). In the public domain.

**Figure 30**

*CDC Image 3*



*Note.* Adapted from *2019 Social Media Posts and Images* by Centers for disease Control and Prevention National Cancer Institute, 2019

(<https://www.cdc.gov/cancer/colorectal/resources/social-media.htm>). In the public domain.

**Table 16**

*CDC Images: Respondent Quotes For Image 1, 2 And 3*

Example Quotes
<p>“I definitely think it targets an older group I don't think it targets my age at all. I like that they had different color skin and all of them. That was nice. I wonder if it was on purpose that the one with the black couple had the one with the saying that there's more options. “For most people my age, those images would not. Reason—because it didn’t really cater to my age group at all.</p> <p>“They are easy to read.”</p> <p>“They are overall aesthetically pleasing.”</p> <p>“Maybe they should have some more statistics. So, people can know about it because they might not be well informed of colon cancer. Having a little bit of Statistics. Would prompt someone to make that decision.”</p>

Example Quotes
<p>“And it's really good to know that [colorectal cancer screening facts] a younger age</p> <p>“No, not my age no, not by looking at it. By looking at it first, I said 50 to 75. I'm 38 for one, Yeah that's the only thing that caught my eye.”</p> <p>“If you're telling me 50 and I'm 30, why in the world would I want to get checked out. You're pretty much telling me I don't need to get checked out if you put it on images like that, then you're telling me I'm good, and I don't need to get checked. I'm really good. I'm not going until I am in my forties.”</p> <p>“Okay, first of all, if colorectal cancer is serious and it should be, I feel like the picture should be like a real people, not like cartoons. Then, I don't understand the whole plant vibe going on like all three. The picture like the first picture of someone holding a plant. The second picture looked like they were going to the doctor, that one makes sense, but the third picture—she likes to garden? I don't feel like the first and third picture has anything to do with colorectal cancer.”</p>

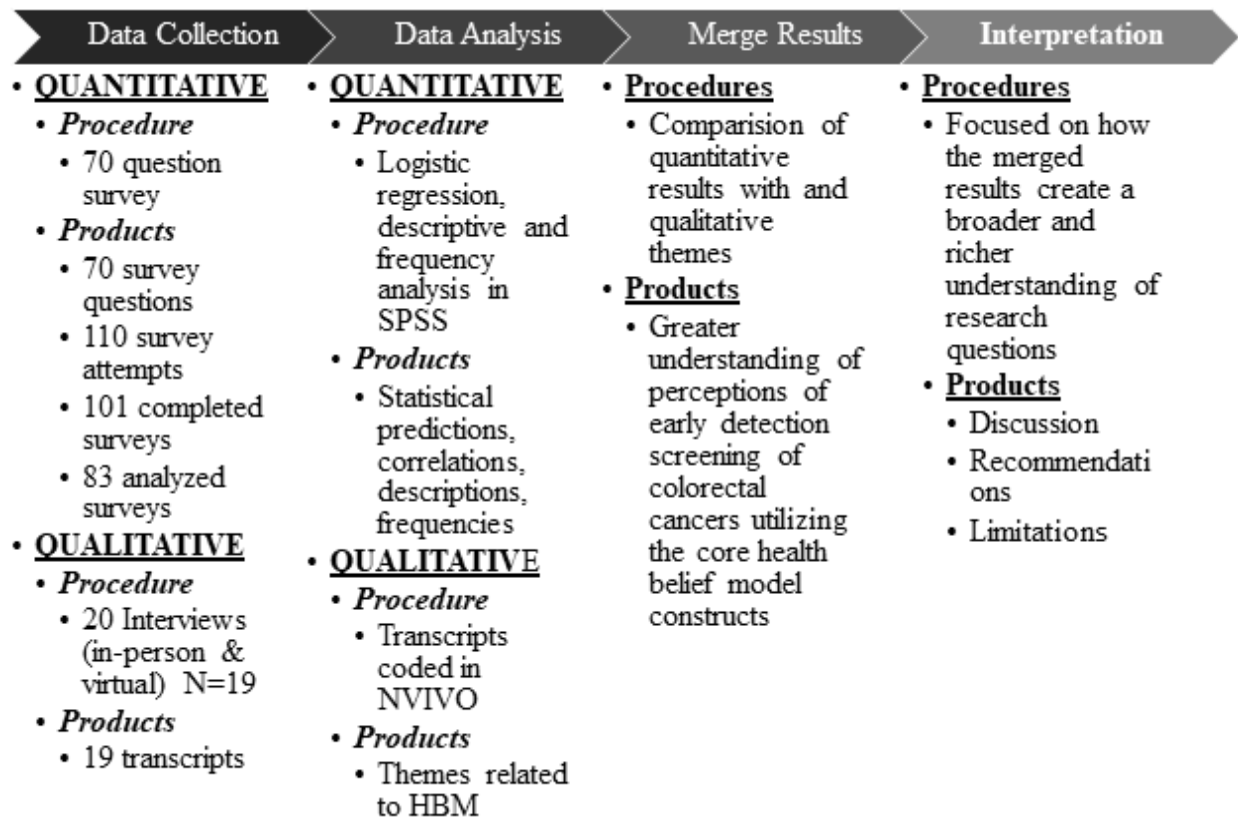
### **Mixed-Methods Comparison**

The mixed-method convergent parallel design of this research allowed for a holistic analysis of the study to be completed. Figure 31 depicts a detailed description of the process and how it yielded results. This method aided in determining what are the perceptions of early detection screening for CRC in African American men and women aged 30–44, as well as what was the role of gender. The interpretation of these merged results concluded several findings, which can be seen in Table 17, Table 18, Table 19, Table 20, Table 21, and Table 22. Each HBM construct had at least one similar perception that was found as a result of the two data collection methods. Some of the most notable results for each HBM construct included the following: perceived benefits, testing early provided a better chance of survival and a better chance of being cured; perceived severity, getting colon cancer is serious and therefore testing for the disease is important; perceived susceptibility, belief of low susceptibility, primarily because overall knowledge of the disease lacked or was incorrect; self-efficacy, intent to screen and confidence in

screening was high; and cues to action, a recommendation from someone warrants a heightened decision to partake in a CRC screening test.

**Figure 31**

*Mix-Method Process: Perceptions Of Early Detection Screening Of Colorectal Cancer In African American Men And Women, 30–44, Using The Health Belief Model*



**Table 17**

*Mixed-Methods Analysis: Side-By-Side Comparison Of Qualitative And Quantitative Results of The Perceptions Of Early Detection Screening For Colorectal Cancer, Among African American Men And Women Aged 30–44; Perceived Barriers*

Health Belief Model Constructs	Interview Results (n = 19)	Survey Results (n = 83)
Perceived Barriers	<ul style="list-style-type: none"> <li>• No test recommendation from healthcare provider</li> <li>• Fear</li> <li>• Process for testing</li> <li>• Finances</li> <li>• Transportation</li> <li>• Masculinity</li> <li>• Medical mistrust</li> <li>• Age (too young)</li> <li>• Schedule time/availability</li> <li>• Knowledge of screening</li> <li>• Lack of signs and symptoms</li> <li>• Screening methods</li> </ul>	<p>45.8% were not afraid of having abnormal test results; 38.6% are afraid of having abnormal test results; 15.7% are indifferent</p> <p>79.6% had not had a doctor recommendation; 13.5% had had a doctor recommendation; 7.2% were indifferent</p> <p>73.5% would not have difficulties finding time to go through colon cancer testing; 14.4% would have difficulty finding time to go through colon cancer testing; 12% were indifferent</p> <p>47% worry that the test will be painful; 33.7% do not worry that the test would be painful; 19.3% are indifferent</p> <p>37.3% worry they will feel vulnerable during CRC test; 40.9% do not worry that they will feel vulnerable during CRC tests; 21.7% are indifferent</p> <p>14.5% feel that having CRC tests done would be embarrassing; 69.9% feel that having CRC tests done would not be embarrassing; 15.7% are indifferent</p>

**Table 18**

*Mixed-Methods Analysis: Side-By-Side Comparison Of Qualitative And Quantitative Results of The Perceptions Of Early Detection Screening For Colorectal Cancer, Among African American Men And Women Aged 30–44; Perceived Benefits*

Health Belief Model Constructs	Interview Results (n = 19)	Survey Results (n = 83)
Perceived Benefits	<ul style="list-style-type: none"> <li>• Prolonged life</li> <li>• Hope of survival</li> <li>• Life-changing event</li> <li>• Better treatment options</li> <li>• Educate others</li> </ul>	<p>81.9% believe that colon cancer can be cured if found early; 4.8% believe that colon cancer cannot be cured when found early; 13.3% were indifferent</p> <p>92.8% believe that colon cancer testing make sense; 1.2% believe that colon cancer does not make sense; 6.0% were indifferent</p> <p>87.9% believe that the benefits of colon cancer testing outweigh any difficulty they may have in going through the tests; 1.2% do not believe that benefits of colon cancer testing outweigh any difficulty they may have in going through the tests; 10.8% are indifferent</p>

**Table 19**

*Mixed-Methods Analysis: Side-By-Side Comparison Of Qualitative And Quantitative Results of The Perceptions Of Early Detection Screening For Colorectal Cancer, Among African American Men And Women Aged 30–44; Perceived Severity*

Health Belief Model Constructs	Interview Results (n = 19)	Survey Results (n = 83)
Perceived Severity	<ul style="list-style-type: none"> <li>• Getting colon cancer is serious</li> <li>• Feeling unsettled</li> <li>• Feeling troubled</li> <li>• Vulnerability to illness</li> <li>• High severity</li> <li>• Hopelessness</li> <li>• Despair</li> </ul>	<p>73.5% believe that colon cancer testing is important; 9.6% believe that colon cancer testing is not important; 16.9% are indifferent</p>

**Table 20**

*Mixed-Methods Analysis: Side-By-Side Comparison Of Qualitative And Quantitative Results of The Perceptions Of Early Detection Screening For Colorectal Cancer, Among African American Men And Women Aged 30–44; Perceived Susceptibility*

Health Belief Model Constructs	Interview results ( <i>n</i> = 19)	Survey Results ( <i>n</i> = 83)
Perceived Susceptibility	<ul style="list-style-type: none"><li>Lack of knowledge of colorectal cancer and colorectal cancer screening led to the belief that they were not susceptible</li></ul>	<p>27.7% believe that colon cancer is a problem only for men; 41% disagree that colon cancer is a problem only for men; 31.3% are indifferent</p> <p>49.4% believe that compared to other persons of their age, they are at a lower risk of CRC; 12% believe that compared to a person of their age, they are not at a lower risk of CRC; 38.6% are indifferent</p> <p>7.2% believe that their chance for developing colon polyps is high; 64.1% do not believe that their chance for developing colon polyps is high; 28.9% are indifferent</p> <p>9.6% believe the chance they might develop colon cancer is high; 57.8% do not believe the chance they might develop colon cancer is high; 32.5% are indifferent</p>

**Table 21**

*Mixed-Methods Analysis: Side-By-Side Comparison Of Qualitative And Quantitative Results of The Perceptions Of Early Detection Screening For Colorectal Cancer, Among African American Men And Women Aged 30–44; Self-Efficacy*

Health Belief Model Constructs	Interview results (n = 19)	Survey Results (n = 83)
Self-Efficacy	<ul style="list-style-type: none"> <li>• Confident- if they said they would do it</li> <li>• Not confident- if the cost is high, no signs/symptoms present, no immediate need, no recommendation from Healthcare provider, relative, family, personal schedule doesn't allow</li> </ul>	60.3% intend to undergo colon cancer testing; 16.9% do not intend to undergo colon cancer testing; 22.9% are indifferent

**Table 22**

*Mixed-Methods Analysis: Side-By-Side Comparison Of Qualitative And Quantitative Results of The Perceptions Of Early Detection Screening For Colorectal Cancer, Among African American Men And Women Aged 30–44; Cues to Action*

Health Belief Model Constructs	Interview results (n = 19)	Survey Results (n = 83)
Cues to Action	<ul style="list-style-type: none"> <li>• Doctor recommendation</li> <li>• Recommendation/suggestion from a person of personal significance/influence</li> <li>• God</li> </ul>	15.6% believe that someone important to them feel that it is important for them to get a regular colorectal cancer screening test; 60.3% do not believe that someone important to them feel that it is important for them to get a regular CRC screening test; 24.1% are indifferent

## **Summary**

The researcher conducted mixed-methods research to identify the perceived barriers, perceived benefits, perceived severity, perceived susceptibility, cues to action, and self-efficacy towards screening for CRC for African American males and females aged 30–44.

### **Quantitative**

Quantitatively, the research study sought to examine the relationship between gender and the six core HBM constructs towards early detection screening for CRC at the current recommended age versus screening earlier than the recommended age for African American men and women aged 30–44. Based on the results from the quantitative data analysis, the null hypothesis was not rejected for each construct except for the construct cues to action and the construct perceived susceptibility. For these constructs, the null hypothesis was rejected as there was a statistically significant effect on the prediction that the construct cues to action and the construct perceived susceptibility would motivate early detection screening for CRC. In addition, gender had a statistically significant effect on cues to action and perceived susceptibility and served as a predictor for early detection screening for CRC for African Americans aged 30–44. However, there was not enough statistically significant evidence to demonstrate that the gender of African Americans aged 30–44 will predict a decision towards early detection screening for CRC.

### **Qualitative**

The qualitative analysis provided insight into common themes that arose for each core HBM construct (perceived barriers, perceived benefits, perceived severity, perceived susceptibility, cues to action, and self-efficacy) regarding early detection CRC screenings. For example, some perceived barriers included fear and finances, while prolonged life with a low belief of susceptibility was perceived benefits (see Tables 17–22). Moreover, the results

determined that a doctor's recommendation and recommendation from a person of personal significance/influence were cues to action. In all, the results determined that African Americans aged 30–44 have many perceived barriers, perceived benefits, perceived severity, perceived susceptibility, cues to action, and self-efficacy concerning CRC screening earlier than the recommended age.

## CHAPTER V

### IMPLICATIONS, RECOMMENDATIONS, AND CONCLUSIONS

The incidence and mortality rates of CRC in African American men and women are the highest among all races (ACS, 2020b; Augustus & Ellis, 2018; CDC, 2019; Desantis et al., 2019). More recently, the rates of CRC in young adults have increased about 3–6% per year, with more cases presenting in African American men and women now than in years past (ACS, 2020a; Ashktorab et al., 2016; Lapumnuaypol et al., 2018; Murphy et al., 2019; Paquette et al., 2015). Research suggests that CRC disparities exist within this population for a variety of reasons such as access to services, personal lifestyle behaviors comorbidities, socioeconomic factors, and genetic make-up (Augustus & Ellis, 2018; Jackson & Kahi, 2015; Kupfer et al., 2015; Murphy et al., 2019; Renzi et al., 2019). Using the core constructs of the HBM, this researcher sought to investigate factors that encourage and influence participation in early detection screening for CRC in African American men and women aged 30–44. Another aim of the study was to discover how the proposal of a new screening recommendation age versus the current screening recommendation age might impact this population’s colon cancer screening decisions. Using a mixed-method of convergent parallel design, the researcher posed two research questions for this study:

1. What are the perceived barriers, perceived benefits, perceived severity, perceived susceptibility, cues to action, and self-efficacy towards screening for CRC, for African American males and females aged 30–44?
2. What is the relationship between sex and the six health belief model constructs towards early detection screening for CRC at the current recommended age versus

3. screening earlier than the recommended age for African American men and women aged 30–44?

The researcher utilized 70 questions from the 126-question version of the SCREEN survey as the data collection tool for the quantitative data and analyzed the data by ordinal logistic regression in SPSS. Additionally, to collect qualitative data, in-person and virtual interviews were conducted and analyzed using NVIVO. This chapter includes a discussion and interpretation of the findings, implications for practice and theory, limitations, and recommendations for future research.

### **Exploration of Theory: Health Belief Model**

This research study utilized the framework of the HBM to determine the influences of early detection screening for CRC in African American men and women aged 30–44. In focusing on the six core constructs—perceived barriers, perceived benefits, perceived susceptibility, perceived severity, self-efficacy, and cues to action—qualitative and quantitative research methods were utilized in a mix-methods model to reach conclusions. The absence of studies focused on CRC screenings in African Americans aged 30–44, utilizing the HBM was greatly apparent within the literature, and therefore this research addressed that significant gap. However, the design and outcomes of studies in the literature that researched African Americans over the age of 44, in relation to CRC were adequate, supported the foundation of this research and were significant to the concluding results of this study.

### **Qualitative**

In using the HBM for the qualitative portion of this research, eight open-ended questions were presented, with each focusing on a specific HBM construct. These questions were designed to explore research participants' intangible thoughts, feelings, and ideas about CRC. The use of this model method to answer qualitative research was effective.

Respondents answered thoroughly, shared feedback about their feelings and thoughts of the subject matter, asked valuable questions, and sought to learn and be educated (in that moment) more about those aspects of CRC and CRC screenings that they did not know about or did not quite understand fully. The model aided in laying out a systematic process to uncover the perceptions of early detection screening for CRC without losing the integrity, sensitivity, and importance of the critical subject matter.

### **Quantitative**

The use of the HBM for the quantitative portion of this research was presented utilizing a 70-question online survey. The survey encompassed a total of 70 questions—three questions were related to personal health history, nine questions asked about experiences of discrimination, nine demographics questions, 33 questions focused on CRC test/screening knowledge and behavior, and 16 questions addressed the six core HBM constructs. Specifically, these 16 questions were designed to answer the quantitative research question and did so effectively. The questions determined whether gender had a statistically significant effect on the prediction that the specific HBM construct would warrant early detection screening for CRC. The use of this framework for the quantitative sections of this research allowed the survey participants to provide feedback by selecting clear and concise multiple-choice answers.

### **Findings**

#### **Demographics**

As part of the study design, only African American participants were included. While the online study survey targeted participants aged 30–44, adults above age 44 and below age 30 also responded to the survey due to the open access; however, data from those respondents were not included in the study findings. Overall, the study produced 110 attempted surveys, 101

completed surveys, and 83 eligible surveys. Survey respondents represented differing educational levels, employment statuses, household incomes, and marital statuses. Overall, the majority of survey respondents were single, never married, between the ages of 30 and 34, held a bachelor's degree, were employed, and had an annual income of more than \$80,000.

## **Health**

An individual's health status is the influencing factor in their health decisions. A person who perceives themselves to have good health or do not display symptoms is probably less likely to participate in screening tests (ACS, 2020c; CDC, 2020c). The current study supports this statement in that those participants who believed that their health was in an optimal state indicated they were not contemplating getting screened for CRC. The overall health of the study participants proved to be an indicator of screening intentions as well as CRC knowledge. While this research did not set out to discover the exact biological causes of the disease within this population, it did notably find (a) how those below the current screening recommendation age perceive the ideas of screening for CRC, (b) overall knowledge of the disease within this population, (c) gaps to be addressed to increase disease awareness, and (d) efforts to combat the current disease trends. Additionally, this research study was unique in that it focused on African Americans between the ages of 30 and 44. In contrast, a vast majority of studies from the literature on CRC screening within the African American population are conducted within those whose ages range from 50 to 75.

The literature suggests that African American men and women are at the highest risk for CRC when compared to other races (ACS, 2020b; Augustus & Ellis, 2018; CDC, 2019; DeSantis et al., 2019). Furthermore, current disease trends show an increased number of African Americans are developing CRC at a younger age and in advanced stages (Ashktorab et al., 2016;

Lapumnuaypol et al., 2018; Murphy et al., 2019; Paquette et al., 2015). Additionally, CRC mortality rates are high, and survival rates are low in African Americans. Yet, the current study found that African American men and women aged 30–44 are not immediately concerned with getting the disease or taking screening actions at their current age. Moreover, the literature shows that African Americans typically screen for CRC (a) if they are 50 and older, (b) if something or someone is prompting them to do so, or (c) when they notice disease presence (Brittain et al., 2016; Rogers et al., 2016). These findings are consistent with the findings from the current study in that African American men and women aged 30–44 perceive screening for CRC as a health task that should be completed by older adults, especially if signs and symptoms are present or if it is recommended by a healthcare professional.

The negative health outcomes of African Americans, overall, is an ongoing issue that continues to impact this population significantly. Colorectal cancer is only a piece of the problem. Still, it is a notable problem in that, over the years, CRC has steadily infiltrated the lives of not only a substantial number of African Americans but also younger adult African Americans who are below the current recommended age for CRC screening prevention. From this study, the researcher found that African Americans aged 30–44, care about their health, and understand the importance of CRC screening. However, while African Americans aged 30–44 may not be immediately concerned with getting CRC and partaking in CRC screening for themselves, they do understand the vital role early detection screening has on the prevention of CRC, and that discovery is one that should not be ignored.

### **Perceived Barriers**

The most prominent reasons African Americans do not adhere to CRC screening tests are due to perceived barriers. These barriers include age, lack of doctor recommendation, lack of

signs and symptoms, cost of testing and associated fees, personal financial state, insurance coverage, distrust of healthcare providers, fear of results and screening process, time constraints, lack of knowledge of CRC disease and screening options, the difference health care system policies and procedures locally and nationally, readiness to get tested despite age and symptom appearance, medical mistrust based on racial history, test process for each screening method, discomfort during invasive testing, vulnerability during invasive testing, and lack of transportation to get to testing centers (Brewer et al., 2020; Knight et al., 2015; Muthukrishnan et al., 2019; Rogers et al., 2015, Thompson, B. et al., 2018; Warren Andersen et al., 2019;). Similarly, the current research study also concluded these aspects to be perceived barriers for CRC screening. The inability to access healthcare places a wedge in one's ability to participate in preventative health tests such as a CRC screening. Research has shown that the lack of access to health care can be presented in the lives of those who live in rural areas, in that they not only have no access to specialists such as gastroenterologists, but also do not have access and ability to reach those facilities that house such providers. Additionally, the presence of comorbidities serves as a barrier in that it can overshadow a diagnosis of CRC and hinder a person from testing.

In this study, the researcher found more women than men (a) worry that the test will be painful, (b) are afraid of having abnormal results, (c) worry that they will feel vulnerable during CRC tests, and (d) feel that having the CRC test done would be embarrassing. However, more men felt that (a) it would not be difficult to find time to go through colon cancer testing, and (b) had not received a doctor's recommendation for screening within the past 12 months. The findings discovered by the researcher from the current study have similarities and differences with the literature. For example, the differences from the literature discovered by the researcher within this study for the construct perceived barriers concluded that in the literature (a) women might

feel more vulnerable and embarrassed during a CRC screening than men, (b) more men have not had a doctor's recommendation for CRC screening test, and (c) CRC is a male disease (Friedemann-Sanchez et al., 2007; Grawet al., 2019; A. White et al., 2018). The similarities from the literature discovered by the researcher within this study, for the construct perceived barriers concluded that both men and women perceived the cost of CRC screening, the cost of insurance, and transportation to be barriers. In this study, men and women expressed a strong concern that the cost of testing will be burdensome, especially if insurance will not cover the screening or they have no health insurance. Despite the many perceived barriers to early detection screening in African American men and women aged 30–44, these barriers are not predictive of CRC screening in this population.

### **Perceived Benefits**

The majority of participants in this study believe that the benefits of partaking in a CRC screening test outweigh any difficulties associated with the screening. Furthermore, the literature suggests that a person's participation in a CRC screening test can prolong their life and increase their chances for better treatment options if cancer is found early (ACS, 2018f; Issaka & Inadomi, 2018; Rex et al., 2017). Similarly, the researcher concluded from this study that African American men and women believe that a CRC screening test can help to lengthen a person's life and that in testing early, CRC can be cured. However, while benefits trend upward, overall, they were not significant enough to predict that a man or woman of this age and population, would get early detection screening based on the benefits. Additionally, it was found that for this study's population, testing for CRC makes sense and that people should begin learning about CRC in their 20s and 30s. However, research shows that most patients do not become aware and knowledgeable of this test and until age 45 or 50 when a healthcare provider recommends it as an

age-appropriate preventive screening test (ACS, 2018a; Rex et al., 2017). Furthermore, within this study, the researcher placed less emphasis on external benefits to the participants—that is how would screening benefits someone or something else other than the person screening. Instead more emphasis was placed on the benefits screening has on a person's individual health and overall life. While it did not hinder the overall investigation, it did create an unintentional gap that may need to be addressed.

### **Perceived Susceptibility**

The lack of knowledge of CRC and CRC screening tests within this population led to unique findings for perceived susceptibility. A vast majority of the participants believed that they do not have a high chance of developing polyps and developing CRC. However, while this interviewed population does not believe they are at risk of getting CRC, their knowledge is lacking about the disease and screening recommendations. Many did not know how CRC developed, when someone should be screened, how frequent screenings should take place, or even who should be screened. The lack of knowledge identified within this study for African Americans is consistent with the literature in that other studies have found a lack of CRC knowledge to equate to low perceived susceptibility among African Americans. Furthermore, the researcher discovered in the study that women who believe CRC to be a male disease, considered themselves to have low susceptibility, which is also consistent with the current literature (Bose, 2019; Graw et al., 2019). Even with the lack of knowledge about CRC ultimately led to the belief of low susceptibility for screening, for the construct perceived susceptibility, gender has a statistically significant effect on the prediction of early detection screening for CRC.

## **Perceived Severity**

Study findings showed that the participants believed that the potential of getting CRC is severe and testing for the disease is essential. This research also discovered that when discussing perceived severity for CRC, the overall tone of interviewees were tones of hopelessness and despair, leaving many to feel troubled and unsettled at the thought of the disease. As a single indicator for CRC screening, perceived severity is a construct that has not been widely studied apart from the constructs as a whole unit within the HBM. Furthermore, a gap in the literature exists for the perceived severity in CRC screening within the African American population, regardless of age. Studies that featured perceived severity as a stand-alone construct for this topic within this target population could not be found. In the conclusion of this study, the researcher found the HBM construct perceived severity to be an insignificant prediction in determining early detection screening for African American men and women 30–44. However, the researcher did significantly find that the target population's apparent feelings toward CRC are relevant and should be studied further.

## **Self-Efficacy**

The belief that participation in a CRC screening test would happen yielded positive results within this population. Many interviewees said that they intend to undergo CRC screening and are confident in themselves to do it. However, the findings in this study contradict other research findings in that African Americans have low intentions and inconsistent habits CRC screening (Brittain et al., 2016; Griffin, 2011; Kwaan & Jones-Webb, 2018; Rogers et al., 2016). Furthermore, it is essential to note that the self-efficacy towards a screening decision is multifaceted. Self-efficacy includes one's belief to effectively overcome perceived barriers and the belief that one can effectively tackle challenges ahead. Self-efficacy also includes the

confidence in one's own ability to make a decision, no matter what it may be. An example of this could be that a person intends not to screen because they do not have adequate transportation to get to and from the medical facility where the test is completed. Alternatively, the potential patient may not have someone to serve as a caregiver, at home, during the mandated recovery time. What was most interesting was that overwhelmingly, the research participants expressed their intent to screen, even though there are no formal health education or health promotion materials available that target them specifically. Ultimately, choosing the decision based on their understanding of that the disease can ultimately cause death over any other factor. The few individuals that were not confident in their screening intentions noted that they would not be confident due to various factors or barriers. These factors or barriers included things such as test cost, no presence of sign or symptoms, busy schedule, no doctor or a relative recommendation, or if they feel there is no immediate need for them to get screened.

### **Cues to Action**

Cues to action are the “stimuli needed to trigger the decision-making process to accept a recommended health action” and can be internal or external (LaMorte, 2019, p. 1). Prompts to screen for CRC are often initiated by both external and or internal cues held by the individual, and. the researcher found both types were apparent. In the study, the researcher concluded that the external cues included (a) a doctor recommendation to get screened, (b) a recommendation from someone of personal significance or someone of influence, and (c) religious beliefs and affiliations (such as the belief in God as a higher power). The researcher concluded internal cues to be the trust the respondent may have had in those who represented the external cues (doctor, family member, significant other, etc.)

Furthermore, the current literature lacks in defining cues to action for CRC screening in African Americans. For example, the researcher found no studies that specifically focused on cues to action as a primary factor for CRC screening within the African American community. In this study, the HBM construct cues to action was significant in that gender had a statistically significant effect on its prediction that testing would warrant early detection screening for CRC. This finding is significant. It suggests that overall, African American men and women 30–44, are indeed positively triggered by the effects of CRC, so much so, that they would screen for the disease earlier than the recommended age.

### **Perceived Barriers, Perceived Benefits, and Colorectal Cancer Screening**

The research set out with the expectation to hone in on the perceived barriers and perceived benefits held by African American men and women 30–44 concerning CRC screening. In doing so, it was found that African American men and women aged 30–44, ultimately uphold the same, if not similar, perceived barriers and perceived benefits towards CRC screening as African American men and women aged 50–75; the population in which the literature has overwhelmingly studied. The perceived barriers include cost, insurance, knowledge, transportation, masculinity (for men), access to provider/services, prolonged life, and early treatment options. The insight revealed by the researcher within this study, in comparison to the current literature, was notable. The researcher found trends that focus on perceived barriers and perceived benefits have been reflected across the different age ranges. However, it is crucial to understand that in tackling these common trends, the tactics must be addressed separately, as those things that may have worked best for those 50–75, will most likely not yield the same results in those 30–44. For example, when communicating information about CRC screening by reminders, updates, and spreading awareness, it may be better to send information to those 50–75,

via the United States Postal Services or through a telephone call. However, for those 30–44, communicating that same information may be better received if it is sent by text message, posted on social media (Facebook, Instagram, YouTube, etc.), or email.

### **Implications for Health Education/Promotion Practice**

The observed findings identified by the researcher concluded that perceptions of early detection CRC screening within African American men and women, 30–44, do exist and include perceived barriers, perceived benefits, perceived susceptibility, perceived severity, self-efficacy, and cues to action. Additionally, cues to action and susceptibility can serve as indicators to predict if an African American male or female will participate in early detection screening. Based on the study results the researcher suggests the following implications be considered for health education/promotion practices: (a) updated evidence-based screening guidelines, (b) guidelines for the creation of a targeted and age-appropriate health education program focusing on early detections colorectal cancer screening, (c) which include the NCHEC Areas of Responsibility and Certified in Public Health Domains in program planning and intervention, (d) creation of CRC health communication campaigns utilizing social marketing and health communication campaigns, and (e) review of current educational materials tailored to health care providers to discuss CRC screenings in health education practice.

### **Evidence-based CRC Screening Guidelines**

Health educators also need to consider how the current evidence-based screening guidelines around CRC contradict what is happening. The current CRC screening guidelines have not been updated since 2009 and suggest that only African Americans who are considered high risk for CRC should screen at the age of 45. However, as of 2019, individuals who are younger than the current CRC screening recommendation age of 45 are getting the disease at faster rates.

Furthermore, these individuals may or may not present as a person who is at high risk for the disease (ACS, 2018a, 2020a; Ahnen et al., 2014; Ashktorab et al., 2016; Chang et al., 2012; Lapumnuayapol et al., 2018; Macrae, 2018; Mork et al., 2015; MSTF, 2018; Rex et al., 2017; Siegel et al., 2017; Welch & Robertson, 2016). For health educators who are focused on helping to combat this disease based on the current trends, the outdated screening guidelines information can hinder their efforts. Therefore, using the current disease trends, a new review for evidence-based CRC screening guidelines should be conducted. The new guidelines must include a lowered screening age for African Americans with emphasis on the stool test, for those who want to partake in early detection screening.

### **Health Communication and Social Marketing Campaign to Increase Awareness and Screening**

As science-based communication strategies, health communication and social marketing aid in the process of addressing public health challenges (CDC, 2020a). While different in some respects, they both have the goal of “creating social change by changing people’s attitudes and or modifying or eliminating certain behavior” (CDC, 2020a, p. 1). Furthermore, health communication and social marketing within the public health realm use marketing principles and communication strategies to inform and influence a targeted audience to voluntarily accept, reject, modify, or abandon a health behavior to enhance health and well-being. The approach to creating a campaign for early detection screening and involves multifaceted tactics. The key is to use and identify marketing and communication techniques that specifically appeal to African American men and women aged 30–44 and influence them to change their behaviors surrounding early detection of colorectal cancer screening. For example, including pictures and wording that is representative of the culture of African Americans 30–44 (i.e., African Americans in any visual

outputs). Additionally, the inclusion of music that is relatable and favored by African Americans is possible. Furthermore, include the conduction of focus groups to generate other ideas.

Additionally, communication objectives are to be set, message concepts must be developed and pretested, and communication channels are to be selected. For example, it is important to use media channels in which the target population actively engages. Examples include social media platforms like Facebook, Instagram, Snap Chat, and TikTok and television platforms such as Netflix, Hulu, Amazon Prime, and or Apple TV. Moreover, the inclusion of churches, community groups, social clubs is also important. Additionally, the P's of marketing—product (item, good or service offered), price (cost), place (channels for distribution for obtaining the product or performing desired behavior), promotion (activities for awareness, communication), policy (current laws or legislation)—are to be carefully studied as well and incorporated to actionably address the problem and create change (CDC, 2019). Furthermore, in using health communication and social marketing techniques, the final product can be a developed health promotion campaign (whether written, verbal, and or visual). The health promotion campaign can guide early detection of CRC screening in African American men and women 30–44. Additionally, the health promotion campaign can be one in which the campaign's target population is prompted to take beneficial action against CRC. The campaign can encourage that individuals such as to “Talk to your doctor,” “Screen for CRC,” and or “Schedule your CRC Screening test” behaviors can benefit those who encounter CRC.

Furthermore, to address the emerging public health issue of early detection screening in African American men and women aged 30–44, the creation of a health communication campaign utilizing social marketing and health communication is a necessity. In understanding exactly how to reach both males and females in addition to determining what influences their attitudes and

health behaviors, a campaign can be shaped utilizing the following steps based on the concluding results discovered within this research.

***Describe the Problem for the Identified Target Population***

Research shows that African Americans make up approximately 13% of the U.S. population yet have the highest incidence and mortality rates for CRC. More recently it has been found that early onset of CRC is on the rise, affecting vulnerable populations such as African Americans and that early detection screening options are not recommended for individuals younger than the age of 45. Furthermore, African Americans aged 30–44 have not been previously studied to determine their perceptions of early detection CRC.

***Perform Market Research Through the Utilization of Focus Groups and Interviews (Virtual and In-Person) to Understand the Target Population's Characteristics***

The results of this study determined African Americans aged 30–44 (a) have low knowledge of CRC and CRC screening methods/options; (b) are educated, employed, and mostly single; (c) are healthy; (d) believe that screening earlier for CRC is best; (e) would screen for CRC if it recommended by a doctor or someone of influence to their life; (f) women will need to know that CRC is not just a man's issue; and (g) men will need to know that there are multiple methods to test and that it is different from a prostate screening.

***Define Market Strategy***

The conduction of a situation analysis is key. It is important to determine the internal factors such as strengths such as a target population that is willing to engage and distribution channels often utilized by the target population such as Facebook, Instagram, Snap Chat, and TikTok. Furthermore, the weaknesses must also be address—a completion of a CRC screening test. Additionally, external factors have to be made known, as well as the strengths and

weaknesses associated with these factors. Strengths include the availability of multiple CRC screening methods, the existence of reputable resources for education on CRC and CRC screening, as well as CRC organizations that support early detection screening. Weaknesses include the current CRC policies and screening recommendations for African Americans aged 30–44, are non-existent. This, therefore, leads to the lack of the payment of CRC screenings by insurance companies for this specific population. Furthermore, it is important to know any prior and similar efforts attempted. For this study, there have unfortunately been no attempts for this population for CRC screening

### ***Define Objectives and Goals***

SMART (Specific, Measurable, Achievable, Relevant, Time-bound) objectives and goals are necessary to reach success and should be as such:

**Obejectives.** Behavior Objective: As a result of the campaign, 25% of African American men and women aged 30–44, will schedule an appointment to participate in an early detection CRC screening test, within 30 days of learning about CRC screening methods.

**Knowledge objective.** As a result of the campaign, 25% of African American men and women aged 30–44, will become more educated and knowledgeable about at least three CRC screening methods, within 30 days of learning about CRC.

**Belief objective.** As a result of the campaign, 25% of African American men and women aged 30–44, will show they believe early detection screening for CRC is valuable, important and necessary by intentionally educating at least two people about two CRC screening methods, within 30 days of learning about CRC.

**Goals.** As a result of the campaign, 45% African American men and women aged 30–44 will become more aware of CRC and the impact it can have and will participate in an FOBT screening test, within 1 year of being introduced to the campaign.

***Develop Possible Intervention(s)***

Potential interventions for the campaign can include educational classes about CRC screening to promote awareness. Additionally, training classes can be held to teach physicians how to effectively discuss CRC screening methods with African Americans, aged 30–44, to promote health screening behaviors. Furthermore, a website site specifically tailored to the target population can be developed to promote the CRC prevention method.

***Implement the Campaign***

To implement the campaign, plan the launch (time, date, season) and utilize the channels that best suit African American men and women age 30–44.

***Evaluate the Campaign***

Determine if the health communication plan was implemented as intended and or if any changes happened that may or may not affect the outcome of African Americans, 30–44, screening for CRC.

The conclusion of these aspects will help in the creation of a health communication campaign and programs or intervention that will “promote health changes in individuals and communications” (CDC, 2019, p. 1).

**Guidelines for Health Education Programs Via NCHEC And CPH**

The researcher observed that knowledge for CRC and CRC screening was low among the study sample. As the incidence and mortality rates increase and more advanced stages of CRC are

being discovered in younger adult African Americans, health educators must not ignore the trending problem.

As the pioneers for grassroots health education efforts, a need exists for health educators to create and champion age-appropriate CRC education programs that primarily focus on the importance of early detection screening. Such programs are to be created through the utilization of social marketing and health communication. The focus of the program would be on increasing the awareness and education of CRC and CRC screening for African Americans aged 30–44, through a virtual community. This program can work best for African Americans aged 30–44 because it meets the target population where they are, allows them to take advantage of technological devices they already own, and do not require them to have previous knowledge or understanding of CRC. Additionally, unlike other CRC interventions, these programs' specific focus is on younger adult African Americans. It will cater to them by including details and programming that is appealing to the culture of their generation. The program can be virtual in all aspects; therefore, participants can join from anywhere. The small nature of the virtual program cohorts allows for intimacy, more privacy, and authenticity amongst participants. The ultimate goal can focus on increasing the use of the at-home CRC preventative screenings test; as at-home tests are easy to use, more private, and less invasive. Additionally, there will be a focus on improving diet, nutrition, and physical activity, all through at-home cooking discussions/lessons and easy to do at home exercise options. These goals are important because they focus on aspects that need to be addressed and resolved as it related to CRC and allow African Americans aged 30–44 to become active participants of early detection CRC screening and healthy living without leaving their homes.

All participants can be recruited from community centers and social platforms that primarily serve African Americans aged 30–44. The program is also unique and different from others in that it offers tangible incentives for the successful completion of the program. Those who complete the program can receive a free stool screening test and cost-free interpretations of test results. Furthermore, if test results are positive, then participants will be strongly encouraged to following up with a colonoscopy test, and resources to complete a colonoscopy can be made available. If the test is negative, then the participants will be instructed to continue to test by following the recommendations of the current CRC screening guidelines.

### **NCHEC Areas of Responsibility and Certified Public Health Domains**

#### ***NCHEC***

It is important to note that before any health education/promotion programs are created, health educators must carefully consider the National Commission for Health Education Credentialing's (NCHEC) eight areas of responsibility. The eight areas of responsibility “contain comprehensive set competencies and sub-competencies defining the role of the health education specialist” (NCHEC, 2020). These areas include Area I: Assessment of Needs and Capacity; Area II: Planning; Area III: Implementation; Area IV: Evaluation of Research; Area V: Advocacy; Area VI: Communication; Area VII: Leadership and Management; and Area VIII: Ethics and Professionalism. After a careful review of the eight areas of responsibility, the health educator must thoughtfully decide on which areas are most significant for their desired results. In addition to a health educator's self-review, this researcher suggests that the following areas must be included when developing efforts.

**Area 1: Assessment of the Needs and Capacity.** Through the use of Area, I, the health educator must thoroughly assess the need for early detection CRC screening, even beyond

findings from this study. To address this need, under Area I, the sub-competency 1.2, obtain primary data, secondary data, and other evidence-informed sources can be the most beneficial for uncovering more proof and reliable sources to support the research claim, address the issues at hand and identify other significantly beneficial findings. This assessment can also provide foundational data on how to reach the target audience best. Examples regarding the assessment of the needs and capacity can include the conduction of a literature review and or procure secondary data (NCHEC, 2020).

**Area II: Planning.** CRC educational tools and approaches for early detection screening in African Americans aged 30–40, are non-existent. Area II, including all of its sub-competencies— 2.1: Engage priority populations, partners, and stakeholders for participation in the planning process; 2.2: Define desired outcomes; 2.3: Determine health education and promotion interventions; and 2.4: Develop plans and materials for implementation and evaluation— are vital and must be effectively employed. Examples of planning can include holding meetings with stakeholder or creating specific, measurable, achievable, realistic, and time-bound objectives.

**Area V: Advocacy.** CRC is a public health issue. Advocacy efforts that speak out generally about these public health issues are most often employed through the non-profit sectors and the local, state, and federal governments. However, advocacy efforts to specifically address the current disease trends found in younger adult African Americans are not apparent. Through the Advocacy sub-competencies—5.1.3: Identify factors that facilitate and or hinder advocacy efforts; 5.1.4: Write specific, measurable, achievable, realistic, and time-bound advocacy objective; 5.2: Engage coalitions and stakeholders in addressing the health issue and planning advocacy efforts; 5.3: Engage in advocacy; and 5.4: Evaluate advocacy— an initial round of targeted advocacy efforts can be created then launched so that this emerging public health issue

among younger adult African Americans is widely made known and effectively addressed (NCHEC, 2020). The advocacy efforts can focus on (a) creating awareness about the disease, (b) the financial aspects that help to improve and expand CRC research for prevention and treatment, (c) support for those personally affected by CRC, (d) the increasing the affordability of screening methods, and (e) state and federal health policies. The advocacy aspect of CRC is the platform by which this health issue is made known to larger audiences. Advocacy can serve as a catalyst to effectively prioritizing top agenda items and incorporate the key components of early detection screening in African American men and women 30–44, and prioritize top agenda items.

***CPH Domain: Communication/health literacy***

The CPH has 10 domains that it considers to be vital to public health. These domains include – Evidence-based Approaches to Public Health, Communication, Leadership, Law and Ethics, Public Health Biology and Human Disease Risk, Collaboration and Partnership, Program Planning and Evaluation, Program Management, Policy in Public Health, and Health Equity and Social Justice. Of these 10, domain number 2—Communication— is a valued aspect of this research. “This domain addresses the strategies and methods for addressing varied populations effectively, closing gaps and assuring that information is presented at an appropriate level of health literacy” (CPH, 2020, p. 1). All of these aspects are important to a public health issue, and particularly one that has been proven by evidence-based research, but may not be widely addressed, such as CRC and early detection CRC screening in African American men and women aged 30–44. The importance of the CPH domain of communication for this public health issue is imperative for several reasons such as “creating ethical communication message especially concerning disparities; health needs, recommendations and results of evaluations” (CPH, 2020).

Furthermore, the domain of communication ensures that local, state and national health systems are aware of the overall role of public health, that effective health literacy is not only employed but also meets the needs of the targeted audience, and ensures that the populations that are being served have a proper assessment of their health literacy (CPH, 2020). To decrease the early onset of CRC in young adult African Americans and increase early detection screening in African Americans aged 30–44, the utilization of communication combined with the appropriate health literacy, as outlined in the CPH domains, has the possibility of being a groundbreaking aspect to combating this emerging public health issue. Examples of this can include the creation of a health literacy tool, but specifically for African Americans aged 30–44. Other researchers have created similar typology tools with success (Gordon et al., 2014). The health literacy tool can then be used for effective messaging of early detection CRC screening at the appropriate literacy levels for the population at hand.

## **Health Education Practice**

### ***Cues to Action***

The researcher found cues to action to be a significant factor in the prediction of early detection screening for CRC in African American men and women aged 30–44. The research participants overwhelmingly mentioned that a health care provider's screening recommendation or lack thereof can be a cue that can cause them to take action for CRC screening or prevent them from doing so, despite not ever having discussed with a provider about CRC screenings. The fact that the researcher's finding uncovered that African American men and women aged 30–44, consistently mentioned that a doctor's recommendation can be a profound indicator of screening behavior shows that African American men and women aged 30–44 can (a) screen for CRC earlier than the current recommended age, (b) believe CRC screening is beneficial and important,

(c) trust the opinions of their healthcare providers, and (d) can make positive health decision for CRC screening, without the influences of targeted social marketing campaigns.

### ***Healthcare Providers***

Although the researcher's analysis concluded that African American men and women aged 30–44, can screen for CRC despite having an actual conversation with or actual recommendation from their healthcare provider (at the time of their participation in this study), the role of the health care provider should not be ignored. Consider this, if African American men and women aged 30–44, within this study, can make such a proactive screening decision, despite talking to their doctor and despite not being old enough to screen (based on the current screening guidelines), how many more individuals of this population can make the same decisions, if health care providers were required to discuss CRC screenings to them? Ideally, these discussions can take place during annual visits and provide consistent patient education, in which healthcare providers can have the opportunity to discuss CRC surveillance scheduling with their patients (D. Sturges, personal communication, May 20, 2020). Through proper patient education, a foundational understanding of CRC can be set forth, and effective patient-provider rapport can be established. In doing so, addressing these two notions may shift the narrative widely seen in the literature, which considers improper patient education by providers and negative patient-provider communication to be hindrances to CRC screening.

Furthermore, the educational background and training of health care providers need to be addressed. Within this study, the researcher did not explicitly discuss the impact a provider's education may have on CRC screening decision and adherence in patients as a significant public health issue. However, health care providers must be not only trained on how to handle diseases, such as CRC medically, but also trained on the importance of understanding health behaviors

exhibited by their patients as it relates to the disease (D. Sturges, personal communication May 20, 2020). When a health care provider truly understands health behaviors, the discussion of CRC screening adherence to a becomes less of a mandate that a patient must follow because the health care provider says so. Instead, it transitions into more of a two-person conversation, with a trusted source whose interests are parallel and collaborative (D. Sturges, personal communication May 2020). Furthermore, factors that involve a health care provider's recommendation are important to early detection CRC screening in African American men and women aged 30–44, especially since there is limited CRC literature that can be found for this specific population. Moreover, since the current health trends show the increases in the early onset of CRC, healthcare providers should consider proactively addressing the issue of CRC screening and effective health behaviors to prevent CRC.

### **Limitations and Recommendations for Future Research**

#### **Sample Size and Recruitment**

The sample size and recruitment process are an important factor in the ultimate success or failure of a research study. This researcher's methods for obtaining the proper sample size and utilizing a sufficient recruitment process was fairly adequate. However, this study was limited in that it utilized a small convenience sample. Therefore, it is recommended that a larger sample size be collected to provide greater validity externally, as well as to offer a better representation of the intended target population. Additionally, it is also recommended that future studies recruit participants in more geographical regions, professional organizations, and professional establishments in which large numbers of the target population reside. For example, some establishments to recruit participants can include local fitness gyms, workout classes, coffee shops, barbershops, and beauty shops. Examples of professional organizations in which

participants can be recruited include commuter organizations at colleges or universities and graduate chapters of National Pan-Hellenic Greek organizations. Additionally, diversity chapters for professions such as the National Black Nurses Association, the National Alliance of Black School Educators, and the Black Doctoral Network should also be considered. Furthermore, future research should expand to other geographical regions such as the states of Mississippi, Louisiana, Georgia, South Carolina, and Maryland, all of which have large numbers of African Americans residents. Expanding the geographical regions allows for a broad review of African Americans whose experiences, attitudes, beliefs, and understanding of CRC may be different because they live in states with varying demographics, laws, health policies, political atmospheres, and environmental make-up and challenges.

### **Data Collection**

The online survey was an open-access survey accessible by anyone who possessed the survey link, regardless of race, ethnicity, or age. Therefore, the data collected yielded results from participants outside of the study's intended parameters. These included participants over the age of 44 and under the age of 30. Furthermore, results collected from ineligible participants were not utilized. For future CRC research with the specific age range 30–44, it is recommended that preliminary age-specific questions be asked in the beginning of the survey to rule out all ineligible surveys.

### **Health Belief Model**

#### ***Perceived Barriers***

The findings did not determine if the perceived barriers mentioned in this study and their prediction on CRC screening were explicitly due to the perceived barrier itself, or if the means to overcome the perceived barrier was more significant. For example, the cost of insurance was a

perceived barrier to screening within this research. However, to overcome that perceived barrier, it may mean an individual must get a new job, get a better job, pay a higher deductible or change health plans. These actions are additional layers to the perceived barrier itself and may be seen as impossible to achieve by an individual or may be seen as not important enough to overcome. Therefore it is recommended that the focus of a perceived barrier's ability to predict screening habits should not be placed only on the named perceived barrier itself (in this example, that is insurance), but the focus should also be placed on the options by which one can overcome such perceived barrier (in this example, that is a new job, a better job, higher deductible, or change health plans).

### ***Perceived Benefit***

The perceived benefits of screening for CRC that were discovered and discussed were primarily focused on internal perceived benefits for the target population. Based on the analysis from the data collected, the researcher determined that overall the target population felt there to be a perceived benefit to screening for CRC for themselves. However, what was not discussed by the research participants and cannot be analyzed were the external perceived benefits. Therefore, it is recommended that in future research, participants are asked to discuss how they feel their participation in a CRC screening can be beneficial externally (i.e. to peers, family, research).

### ***Perceived Severity***

Perceived severity was insignificant in determining early detection screening for African American men and women aged 30–44; however, study participants had strong feelings about CRC and believed it to be very serious. The study was limited in that it did not probe further to determine the exact reasons for the perceived severity. Therefore, in future research, this aspect must be addressed further through deepened questions. For example, future research should ask

follow-up questions to answers related to perceived severity. In doing this, the underlining results may breed responses significant enough to predict screening behaviors for this population.

### **Advocacy, Health Communication, and Social Marketing**

The study was limited in that it did not conduct an adequate literature review on the role of advocacy, health communication and social marketing for this public health issue. The incorporation of these aspects can have added value to study to understand what how African American men and women 30–44 can actionably take steps towards early detection screening for CRC. Additionally, the researcher recommends that future research studies include questions in the data collection instruments that seek to address advocacy, health communication, and social marketing. These additions will provide insight to determine what can most likely trigger African American men and women aged 30–44, to take action towards early detection screening for CRC. From this, the ultimate goal should be to create effective evidence-based awareness about early detection screening for CRC to a larger audience.

### **Health Educator and Health Education**

This study was limited in its scope in that it did not set clear objectives to determine the specific role a health educator may play in the education and health promotion of CRC screenings for African Americans 30–44. This study also did not discuss nor uncover the value and influence of a health educator in relation to increasing CRC screenings for African Americans aged 30–44. Therefore, it is recommended that in future research studies, an intentional focus of the health educator's role be highlighted. Future research studies should incorporate open-ended questions during interview sessions that seek to uncover the population's understanding of the health educator. For example, one question can ask "How would you describe a health educator?" A second question can ask "What aspects do you believe are most prevalent to their

role for early detection CRC screenings in African American men and women aged 30–44?” In utilizing such questions, a researcher can unveil what the target population thinks of a health educator and what value they bring to getting the target population to screen for CRC.

## **Conclusion**

Colorectal cancer is a significant public health issue. The effects that this disease has on African Americans have impacted the population so much so that they experience higher incidence and mortality rates than other races. Furthermore, in recent years there have been more cases of early-onset CRC in younger adults, but no guidelines for early detection screening for vulnerable populations, such as African American men and women 30–44, who fall within that category. Through this study, the researcher utilized a mixed-methods model and addressed the issues and gaps surrounding early detection screening of CRC in African American men and women 30–44. From the study, the researcher determined that gender has a statistically significant effect on the prediction that the HBM construct cue to action, can warrant early detection screening for CRC within African American men and women aged 30–44. The researcher also determined that gender has a statistically significant effect on the prediction that the HBM construct perceived susceptibility can warrant early detection screening for CRC, within African American men and women aged 30–44. The researcher also determined that while perceived barriers and perceived benefits were not statistically significant factors to predicting early detection CRC screening for African Americans, these constructs were consistent with older populations of African Americans that had been studied in the literature. However, while these findings were true, the research found that the overall knowledge of CRC within African American men and women aged 30–44 is low.

The finding of this study did not conclude without limitations. The study was limited in its sample size, recruitment, limited expansion of some HBM constructs, and data collection. Additionally, the study was also limited in its ability to adequately review the literature and determine the specific roles and benefits of advocacy, health communication and social marketing for early detection screening for CRC in African American men and women 30–44. The researcher suggests these limitations be addressed in future research studies.

Although limitations were present within the study, the researcher was able to uncover significant implications for health education and health promotion practices. There is no doubt that growing trends of early-onset CRC in younger adults will continue to be a public health issue. Therefore, there is a need for (a) the creation of an age-appropriate CRC health education campaign for this population, (b) updated evidence-based screening guidelines that include younger adults and gives them the option to screen via a CRC stool test, (c) advocacy efforts that fund research to assess CRC impact in African American men and women aged 30–44, and (d) streamlined approaches for health care providers to discuss CRC screening with patients younger than age 45.

In all, early detection screening for CRC should not be an exclusive health task only offered to those above the age of 50 but rather a standard for all. The findings of this study have contributed to the field of health education and promotion by exposing an area that had not been previously discussed or addressed but has had a significant negative impact in recent years. Additionally, the researcher concludes from this study that CRC is a public health issue not only for African Americans aged 50 and older, but also for those younger than 50. Furthermore, the researcher understands that all of the problems of CRC cannot be resolved in one day. However, the researcher believes that based on the findings, the progression of early onset CRC can be

slowed through early detection CRC screenings offered to high risks populations such as African American men and women aged 30–44.

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APPENDIX A  
TWU IRB APPROVAL



**Texas Woman's University**

**Institutional Review Board (IRB)**

[irb@twu.edu](mailto:irb@twu.edu)

<https://www.twu.edu/institutional-review-board-irb/>

April 8, 2019

Chloe Fields  
Health Promotion & Kinesiology

Re: Initial - IRB-FY2019-72 Perceptions of Early Detection Screening for Colorectal Cancer in African American Men & Women, ages 30 - 44, using the Health Belief Model

Dear Chloe Fields,

The above referenced study has been reviewed and approved using expedited review procedures on April 3, 2019 by TWU's TWU IRB - Denton operating under FWA00000178. If you are using a signed informed consent form, the approved form has been stamped by the IRB and uploaded to the Attachments tab under the Study Details section. This stamped version of the consent must be used when enrolling subjects in your study.

Note that any modifications to this study must be submitted for IRB review prior to their implementation, including the submission of any agency approval letters, changes in research personnel, and any changes in study procedures or instruments. Additionally, the IRB must be notified immediately of any adverse events or unanticipated problems. All modification requests, incident reports, and requests to close the file must be submitted through Cayuse.

Approval for this study will expire on April 2, 2020. A reminder of the study expiration will be sent 45 days prior to the expiration. If the study is ongoing, you will be required to submit a renewal request. When the study is complete, a close request may be submitted to close the study file.

If you have any questions or need additional information, please contact the IRB analyst indicated on your application in Cayuse or refer to the IRB website at <http://www.twu.edu/institutional-review-board-irb/>.

Sincerely,

TWU TWU IRB - Denton

APPENDIX B

INFORMED CONSENT- INTERVIEW

TEXAS WOMAN'S UNIVERSITY  
CONSENT TO PARTICIPANT IN RESEARCH

Perceptions of Early Detection Screening for Colorectal Cancer in  
African American Men & Women, aged 30-44 using the Health Belief Model

Chloe Fields, MPA, Doctoral Candidate  
Texas Woman's University: Health Studies Department  
Principal Investigator: Chloe Fields, MPA Crogers15@twu.edu 940.898.2865  
Faculty Advisor: Mandy Golman, PhD, MCHES M golman@twu.edu 940.898.2865

Key Information:

This study is being conducted for research. The purpose of this study is to investigate factors that influence why African American men and women, aged 30-44, would participate (or would fail to participate) in early detection screening for colorectal cancer, using the Health Belief Model (HBM) and focusing on the six constructs (perceived benefits, barriers, susceptibility, severity, self-efficacy, and cues to action). The study seeks to discover if the idea of a new screening recommendation age versus the current screening recommendation age would have an impact on the decision of African American men and women, aged 30-44, to get screened for colorectal cancer; and if the HBM constructs, as with those 45 and older, would have an impact on the screening decision. If you choose to participate in the face-to-face interview for this study, you will be asked to voluntarily answer the assigned interview questions.

The interview sessions will take 30 to 60 minutes. In person face-to-face interviews will take place at the Oak Cliff Family YMCA or a secure/private location in which the interviewee chooses; or securely via one of the following video media platforms—Skype, Facetime, Google Duo, Google Hangouts, or WhatsApp. During the interview, you will be asked, through discussion, to provide your thoughts, feelings, beliefs, attitudes, etc. about colorectal cancer and colorectal cancer screenings.

Initials \_\_\_\_\_

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### Key Information Continued:

The interview will be audio recorded and then written down so that the researcher can be accurate when studying what you have said. There is a potential risk of loss of confidentiality in all email, mailing, emailing of results downloading, electronic meetings, and internet transactions, document transfers, fatigue, and or discomfort. However, confidentiality will be protected to the extent that is allowed by law and resources are available to speak with a health professional about discomfort and fatigue. In order to be a participant in this study, you must be between the ages of 30 and 44, be an African American man or woman and have not have a colorectal cancer screening test. The benefit of the study will come from the results of your collected and analyzed responses. In which the researcher can accurately report on the data obtained and report to the field on the factors that would influence colorectal cancer screening within the target population.

Description of the Research Study:

### **Participation:**

As a participant, you are only needed for the study's interview. Once you complete the interview, your voluntary obligations to the study are complete. The in person face-to-face interview or interview via a secure media platform will last a minimum of 30 minutes and a maximum of 60 minutes. Each participant may participate in the interview only once.

### **Risks:**

There is a potential risk of loss of confidentiality in all email, downloading, electronic meetings, and internet transactions, document transfers, etc. However, confidentiality will be protected to the extent that is allowed by law. During the interview anonymity will be loss, strict confidentiality will be a high priority. There is a potential risk of fatigue or physical or emotional discomfort during the interview; however, participants can stop or take a break at any time during the interview. If participants feel they need to speak with a health professional about fatigue or discomfort, the researcher will provide a list of resources. There a potential risk of coercion. However, a participant's decision to participate or not participate will not impact their relationship with the organization that they are affiliated with. The results of the study may be reported in scientific magazines or journals, but your name or any other identifying information will not be included. A copy of all signed consent forms will be placed on file with the Texas Woman's University IRB when the study file is closed. The audio recording and the written/typed information will be stored in a locked in a file cabinet. Any information on computer, flash drives, and/or computers will be password protected. Only the researcher, the faculty advisor, and individuals at Texas Woman's University responsible for regulatory and research oversight will have access to data for this research study. All data will be destroyed within five years after the study is finished. The signed consent form will be stored separately from all collected information and will be destroyed five years after the study is closed. The results of the study may be reported in scientific magazines or journals, but your name or any other identifying information will not be included. A copy of all signed consent forms will be placed on file with the Texas Woman's University IRB when the study file is closed

Initials\_\_\_\_\_.

**Confidentiality:**

Confidentiality will be protected to the extent that is allowed by law.

Please note that the project's research data will be reviewed by the Principal Investigator, faculty advisor and individuals Texas Woman's University responsible for regulatory and research oversight. The research will remove all of your personal or identifiable information (e.g. your name, date of birth, contact information) from the audio recordings and/or any study information. Identifiers will be removed from the identifiable private information and after such removal, the information could be used for future research studies or distributed to another investigator for future research studies without additional informed consent from the subject or the legally authorized representative. If you would like to participate in the current study, but not allow your de-identified data to be used for future research, please initial here\_\_\_\_\_.

**Potential Benefits:**

As a participant in the study you will help to bring awareness about the perceptions of African Americans, aged 30-44, about colorectal cancer and colorectal cancer screenings. Additionally, you will also become educated on colorectal cancer, colorectal cancer screening and its impact on African Americans.

**Incentive:**

Interview participants will receive a Walmart gift card worth \$20, as an incentive gift.

Initials\_\_\_\_\_

Page 2 of 4

**Participant Rights:**

Your participation in this study is voluntary. You may choose not to participate or, if you agree to participate, you can withdraw your participation at any time without penalty or loss of benefits to which you are otherwise entitled.

**Contact for Research Study Questions:**

If you have questions, comments or concerns about this research project, you can talk to the Principal Investigator and or the faculty advisor via the information listed on page one.

If you have questions about your rights while taking part in the program or have concerns about the treatment of research participants, please contact the Principal Investigator and/or the faculty advisor using the information on page one; OR contact the Texas Woman's University Office of Research & Sponsored Programs at 940.898.3378; OR IRB@twu.edu OR write to:

Office of Research & Sponsored Programs  
PO Box 425619  
Denton, Texas 76204-5629

**Documentation of Informed Consent**

I have had the opportunity to read this consent form and have the research program explained. I have had the opportunity to ask questions about the research program, and my questions have been answered. I am prepared to participate in the research program described above. I will be offered a copy of this consent form after I sign it.

Initials\_\_\_\_\_

Page 3 of 4

***The researchers will try to prevent any problem that could happen because of this research. You should let the researchers know at once if there is a problem and they will help you. However, TWU does not provide medical services or financial assistance for injuries that might happen because you are taking part in this research.***

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Participant's Signature

---

Date

---

Participant's Name (Please Print)

*If you would like to know the results of this study tell us where you want them to be sent. Those requesting results be emailed will receive results securely via email from CRogers15@twu.edu, within 30 days of the finalized results. In providing results, via email or home address (standard USPS mail) a loss of confidentiality is possible. Confidentiality will be protected to the extent that is allowed by law:*

*Email: or Address:*

Initials\_\_\_\_\_

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APPENDIX C

INFORMED CONSENT- SURVEY

TEXAS WOMAN'S UNIVERSITY  
CONSENT TO PARTICIPANT IN RESEARCH

Perceptions of Early Detection Screening for Colorectal Cancer in  
African American Men & Women, aged 30-44 using the Health Belief Model

Chloe Fields, MPA, Doctoral Candidate  
Texas Woman's University: Health Studies Department  
Principal Investigator: Chloe Fields, MPACrogers15@twu.edu940.898.2865  
Faculty Advisor: Mandy Golman, PhD, MCHESMgolman@twu.edu940.898.2865

Key Information:

This study is being conducted for research. The purpose of this study is to investigate factors that influence why African American men and women, aged 30-44, would participate (or would fail to participate) in early detection screening for colorectal cancer, using the Health Belief Model (HBM) and focusing on the six constructs (perceived benefits, barriers, susceptibility, severity, self-efficacy, and cues to action). The study seeks to discover if the idea of a new screening recommendation age versus the current screening recommendation age would have an impact on the decision of African American men and women, aged 30-44, to get screened for colorectal cancer; and if the HBM constructs, as with those 45 and older, would have an impact on the screening decision. If you choose to participate in the survey for this study, you will be asked to voluntarily provide your thoughts and opinions about colorectal cancer and colorectal cancers screening via the survey questionnaire. The survey may take 30 to 60 minutes to complete. There is a potential risk of loss of confidentiality in all email, mailing, emailing of results downloading, electronic meetings, and internet transactions, document transfers, fatigue, and or discomfort. However, confidentiality will be protected to the extent that is allowed by law and resources are available to speak with a health professional about discomfort and fatigue. In order to be a participant in this study, you must be between the ages of 30 and 44, be an African American man or woman and have not have a colorectal cancer screening test. The survey can be complete at your own leisure and time via computer or phone, in whatever setting the participant desires. The benefit of the study will come from the results of your collected and analyzed responses. In which the researcher can accurately report on the data obtained and report to the field on the factors that would influence colorectal cancer screening within the target population.

Initials\_\_\_\_\_

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## Description of the Research Study:

### Participation:

As a participant, you are needed for the study's survey questionnaire. Once you complete the survey questionnaire your voluntary obligations to the study are complete. Survey questionnaires can take 15 to 20 minutes to complete. Each participant may participate in the survey only once.

**Risks:** There is a potential risk of loss of confidentiality in all email, downloading, electronic meetings, and internet transactions, document transfers, etc. However, confidentiality will be protected to the extent that is allowed by law. There is a potential risk of fatigue or discomfort while completing the survey. However, participants can stop or take a break at any time during the survey. If participants feel they need to speak with a health professional about fatigue or emotional or physical discomfort, the researcher will provide a list of resources. The results of the study may be reported in scientific magazines or journals, but your name or any other identifying information will not be included. A copy of all signed consent forms will be placed on file with the Texas Woman's University IRB when the study file is closed. Any information on computer, flash drives, and/or computers will be password protected. Only the researcher, the faculty advisor, and individuals at Texas Woman's University responsible for regulatory and research oversight will have access to data for this research study. All data will be destroyed within five years after the study is finished. The signed consent form will be stored separately from all collected information and will be destroyed five years after the study is closed.

Initials\_\_\_\_\_

Page 2 of 4

Confidentiality:

Confidentiality will be protected to the extent that is allowed by law.

Please note that the project's research data will be reviewed by the Principal Investigator, faculty advisor and individuals Texas Woman's University responsible for regulatory and research oversight. The researchers will remove all of your personal or identifiable information (e.g. your name, date of birth, contact information) from the audio recordings and/or any study information. Identifiers will be removed from the identifiable private information and after such removal, the information could be used for future research studies or distributed to another investigator for future research studies without additional informed consent from the subject or the legally authorized representative. If you would like to participate in the current study, but not allow your de-identified data to be used for future research, please initial here\_\_\_\_\_.

Potential Benefits:

As a participant in the study you will help to bring awareness about the perceptions of African Americans, aged 30-44, about colorectal cancer and colorectal cancer screenings. Additionally, you will also become educated on colorectal cancer, colorectal cancer screening and its impact on African Americans.

Incentive:

Participants who completed the survey are entered into a drawing to win one of three prizes—Amazon Fire TV Stick, Amazon Fire Tablet, or Amazon echo dot.

Participant Rights:

Your participation in this study is voluntary. You may choose not to participate or, if you agree to participate, you can withdraw your participation at any time without penalty or loss of benefits to which you are otherwise entitled.

Initials\_\_\_\_\_

Page 3 of 4

Contact for Research Study Questions:

If you have questions, comments or concerns about this research project, you can talk to the Principal Investigator and or the faculty advisor via the information listed on page one. If you have questions about your rights while taking part in the program or have concerns about the treatment of research participants, please contact the Principal Investigator and/or the faculty advisor using the information on page one; OR contact the Texas Woman's University Office of Research & Sponsored Programs at 940.898.3378; OR IRB@twu.edu OR write to:

Office of Research & Sponsored Programs; PO Box 425619; Denton, Texas 76204-5629

Documentation of Informed Consent

I have had the opportunity to read this consent form and have the research program explained. I have had the opportunity to ask questions about the research program, and my questions have been answered. I am prepared to participate in the research program described above. I will be offered a copy of this consent form after I sign it.

*The researchers will try to prevent any problem that could happen because of this research. You should let the researchers know at once if there is a problem and they will help you. However, TWU does not provide medical services or financial assistance for injuries that might happen because you are taking part in this research.*

---

Participant's Signature

---

Date

---

Participant's Name (Please Print)

*If you would like to know the results of this study tell us where you want them to be sent. Those requesting results be emailed will receive results securely via email from CRogers15@twu.edu, within 30 days of the finalized results. In providing results, via email or home address (standard USPS mail) a loss of confidentiality is possible. Confidentiality will be protected to the extent that is allowed by law:*

*Email: or Address:*

Initials\_\_\_\_\_

Page 4 of 4

APPENDIX D

EMAIL REPLY SCRIPT

Greetings,

Thank you for contacting me regarding the research study entitled “Perceptions of Early Detection Screenings for Colorectal Cancer in African American Men and Women, 30 - 44.” Your decision to participate in the research is greatly appreciated. If you are contacting me to learn more about how you can participate in the interview and/or the survey for this research, please refer to the attached recruitment flyers. The survey flyer provides the direct link to the survey. The interview flyer provides a direct link to register for the interview. If you, as a participant, meet the interview requirements, I will contact you to confirm your interview information—date, time, method, etc. Please note that you must complete and sign the consent form to provide informed consent, before you can participate in the survey and/or the Interview. If you are contacting me because you have asked a specific question about the study, I will

respond to your question within 48 hours of receipt.

Again, thank you for contacting me.

Your interest in this study is greatly appreciate.

Chloe Fields, MPA  
Doctoral Candidate- Health Studies  
Texas Women’s University

## APPENDIX E

### INTERVIEW INVITATION CALL AND FOLLOW-UP SCRIPT

Perceptions of Early Detection Screening for Colorectal Cancer in African American Men & Women, aged 30-44 using the Health Belief Model

Interview: Invitation Call and Email Follow-Up Script

**Invitation to participate in the interview:**

“Hi, \_\_\_\_\_ [person’s name]. This is Chloe Fields. I hope that you are well. I am calling because you have expressed interest to participate in the Interview.

I am seeking to obtain information on the perceptions of early detection screening for colorectal cancer in African American Men and Women, aged 30-44. Therefore, I am asking a few people to interview with me, to tell me what they think and feel about this topic. Because you fit within our target population, I think you have some insight that would be valuable to this research study.

The interview will only include you and I, and my goal is for you to provide me with your insight about this issue.

I am planning on [X number] of interviews; you would attend just one, which will take less than an hour. Do you think this is something you still would consider participating in?”

[If no, they will be thanked for considering and the conversation will be ended in a friendly way.

If yes or maybe, any questions will be answered and details of the interviews will be shared: date, time, method of interview, incentives offered.

If the person agrees to participate, they will be asked for his/her email so that the details can be sent to them.]

“I am so grateful that you would do this for you and your community \_\_\_\_\_ [person’s name]. Thank you, and I’ll be in touch with an email soon.”

**Example of the follow-up email to participants:**

Dear Miss/Mrs./Mr. [Name of Participant]

Thanks so much for agreeing to participate in the interview to determine the Perceptions of Early Detection Screening for Colorectal Cancer in African American men and women, aged 30-44. I truly appreciate your willingness to share your perceptions, beliefs and attitudes about colorectal cancer and colorectal cancer screenings.

Here are the details you need to know:

The Interview will take place on [Date].

I respect and value your time. We will start right on time at [Start Time] and we will finish no later than [End Time] . We'll meet via the method of your choosing: Skype, In Person Face-to-Face, Facetime, Google Duo, Google Hangouts, or WhatsApp. If in person Face-to-Face, we can meet a secure/private location of your choosing or the Oak Cliff Family YMCA.

The interview discussion will be led by me, Chloe Fields, to provide a frank and open discussion. Please note that childcare will not be provided while the interview are taking place. If you are unable to attend your selected interview because of a childcare issue, we can possibly reschedule you for another interview session. Please contact me if you need to reschedule your session.

If you have questions, please don't hesitate to email or call me at 337-250-0105. If a last-minute emergency prevents you from attending, please call or email me to let me know.

Again, thank you for your generosity in agreeing to participate in the interview! I'll see you on the [Date, Time, Method]!

Sincerely,

Chloe Fields, MPA  
Doctoral Candidate- Health Studies  
Texas Woman's University  
337-250-0105  
Crogers15@twu.edu

APPENDIX F

FLYERS: SURVEY AND INTERVIEW



**TEXAS WOMAN'S UNIVERSITY**

**SURVEY PARTICIPANTS  
NEEDED!!**

**EXAMINING COLORECTAL CANCER SCREENING  
ATTITUDES IN AFRICAN AMERICANS**

**1**

**ARE YOU AN AFRICAN AMERICAN  
MALE OR FEMALE?**

**2**

**ARE YOU BETWEEN THE AGES OF  
30 - 44?**

**3**

**NEVER HAD A COLORECTAL  
CANCER SCREENING TEST?**

**4**

**WANT TO PARTICIPATE IN THE SURVEY?**

**GO TO: [WWW.SURVEYMONKEY.COM/R/CRCEARLYDETECTION](http://WWW.SURVEYMONKEY.COM/R/CRCEARLYDETECTION)  
OR  
USE YOUR PHONE TO SCAN THE QR CODE**



**QUESTIONS? CONTACT CHLOE FIELDS: [CROGERS15@TWU.EDU](mailto:CROGERS15@TWU.EDU)**

**ALL SURVEY PARTICIPANTS WHO COMPLETE THE SURVEY WILL BE  
ENTERED INTO A DRAWING TO WIN AN AMAZON FIRE TV STICK,  
AMAZON FIRE TABLET OR AMAZON ECHO DOT**

**This study is for research. Participation in this study is voluntary.  
There is a potential risk of loss of confidentiality in all email, downloading,  
electronic meetings and internet transactions.**



**TEXAS WOMAN'S UNIVERSITY**

**INTERVIEW PARTICIPANTS  
NEEDED!!**

**EXAMINING COLORECTAL CANCER SCREENING  
ATTITUDES IN AFRICAN AMERICANS**

**1**

**ARE YOU AN AFRICAN AMERICAN  
MALE OR FEMALE?**

**2**

**ARE YOU BETWEEN THE AGES OF  
30 - 44?**

**3**

**NEVER HAD A COLORECTAL  
CANCER SCREENING TEST?**

**4**

**WANT TO PARTICIPATE IN AN INTERVIEW?  
REGISTER AT:**

**[HTTPS://WWW.SURVEYMONKEY.COM/R/CRCINTERVIEW19](https://www.surveymonkey.com/r/CRCINTERVIEW19)**

**OR**

**USE YOUR PHONE TO SCAN THE QR CODE**



**QUESTIONS? CONTACT CHLOE FIELDS: CROGERS15@TWU.EDU**

**ALL INTERVIEW PARTICIPANTS WILL RECEIVE A  
\$20 WALMART GIFT CARD FOR PARTICIPATING**

**This study is for research. Participation in this study is voluntary.  
There is a potential risk of loss of confidentiality in all email, downloading,  
electronic meetings and internet transactions.**

APPENDIX G

PERMISSION TO UTILIZE SURVEY

## Permission to use the SCREEN Survey Inbox X



**Chloe Rogers** <crogers15@twu.edu>  
to Melissa Partin, Part0028, Mandy ▾

Jul 27, 2018, 11:11 AM ☆ ↩ ⋮

Chloe Fields  
Texas Woman's University  
Health Studies Departments  
304 Administration Drive  
Denton, Texas 76204

Dear Dr. Partin,

I am a Doctoral Candidate from Texas Woman's University writing my dissertation titled *Colorectal Cancer: Screening Earlier than the Recommended Age for African American Men and Women*. I would like your permission to use the Survey of Colorectal Cancer Educational and Environmental Needs (SCREEN) survey/questionnaire instrument in my research study. I would like to use and print your survey under the following conditions:

- I will use the surveys only for my research study and will not sell or use it with any compensated or curriculum development activities.
- I will include the copyright statement on all copies of the instrument.
- I will send a copy of my completed research study to your attention upon completion of the study.

I am conducting my research under the direction of my dissertation committee, chaired by Dr. Mandy Golman. Dr. Golman can be reached at by phone at 940-898-2865 or by email at [Mgolman@twu.edu](mailto:Mgolman@twu.edu). Additionally, if you should have IRB related questions, the Texas Woman's University IRB Committee Chair, Dr. Nick Cohen, can be contacted at 940-989-3378 or by email at [IRB@twu.edu](mailto:IRB@twu.edu).

If these are acceptable terms and conditions for my use and print of your survey, please indicate so by replying to me through e-mail at [CRogers15@twu.edu](mailto:CRogers15@twu.edu).

Sincerely,

Chloe Fields  
Doctoral Candidate



**Partin, Melissa** <Melissa.Partin@va.gov>  
to me, Part0028@umn.edu, Mandy ▾

Aug 1, 2018, 4:38 PM ☆ ↩ ⋮

Thank you for your interest in the questionnaire we developed on barriers and facilitators to colorectal cancer screening.

You are welcome to use the questionnaire in your work. If you do, please cite the following manuscript in any publications or reports resulting from your work:

**Partin MR**, Noorbaloochi S, Grill J, Burgess DJ, van Ryn M, Fisher DA, Griffin JM, Powell AA, Halek K, Bangerter A, Vernon SW. The interrelationships between and contribution of patient background, cognitive, and environmental factors to colorectal cancer screening adherence. *Cancer Causes and Control* 2010;21:1357-1368.

Please also note that many of the measures we used were developed by others (the original sources are indicated in the questionnaire in parentheses in the left-most column in the attached version).

Good luck with your research!

---

Melissa R. Partin, Ph.D.  
Professor of Medicine, University of Minnesota  
Co-Associate Director and Investigator, Minneapolis VA HSR&D Center of Innovation  
1 Veterans Drive (152/Bldg 9)  
Minneapolis MN 55417  
Phone (612) 467-3841  
Fax (612) 467-5699  
email: [melissa.partin@va.gov](mailto:melissa.partin@va.gov)

\*\*\*

APPENDIX H

SURVEY INSTRUMENT

## **SURVEY OF COLORECTAL CANCER EDUCATIONAL AND ENVIRONMENTAL NEEDS (SCREEN)**

A National patient survey of colorectal cancer screening behavior

\*modified for this research study

### **The first questions are about your health.**

<b>Topic area/Source</b>	<b>Question</b>	<b>Response Categories</b>
Health	How would you describe your overall health? Would you describe it as excellent, very good, good, fair, or poor?	<input type="checkbox"/> Excellent <input type="checkbox"/> Very Good <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> I Don't Know
Family History	Have any of your relatives ever had colon cancer?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> I Don't Know
Personal Test History	Have you ever had a colon cancer screening test?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> I Don't Know

**The next questions are about tests for colon cancer. There are different kinds of tests for colon cancer. The first questions are about the fecal occult blood test (or FOBT) for colon cancer.**

FOBT. A fecal occult blood test or stool blood test is a test to check for colon cancer. It is done at home using a set of 3 cards. You smear a sample of your fecal matter or stool on a

card from 3 separate  
bowel movements  
and return the cards to  
be tested for blood.

Screening Behavior  
(NCI questionnaire)

Before this test was  
described, had you  
ever heard of a fecal  
occult or stool blood  
test?

- ☐ Yes  
☐ No  
☐ I'm not sure/I  
don't know

Screening Behavior  
(NCI questionnaire)

During the past 12  
months, did a doctor,  
nurse, or other health  
professional advise  
you to do a stool  
blood test using a  
"home" test kit?

- ☐ Yes  
☐ No  
☐ I'm not sure/I  
don't know

**The next questions  
are about two other  
tests to check for  
colon cancer –  
sigmoidoscopy and  
colonoscopy. Both of  
these tests look at  
the colon using a  
narrow, lighted tube  
that is inserted in  
the rectum.**

With the  
sigmoidoscopy:  
Only the lower part of  
the colon is  
examined.  
You are awake.  
You are able to drive  
yourself home.  
You are able to  
resume normal  
activities after the  
test.

With the  
colonoscopy:  
The entire colon is  
examined.

You are given medicine through a needle in your arm to make you sleepy. You need someone to drive you home. You may need to take the rest of the day off from normal activities.

The following questions are about the sigmoidoscopy, also called the flexible sigmoidoscopy or “flex sig.”

Sigmoidoscopy examines only the lower part of the colon. You are awake during the test, can drive yourself home, and can resume normal activities after the test.

Screening Behavior  
(NCI questionnaire)

Before these tests were described, had you ever heard of sigmoidoscopy?

- ☐ Yes
- ☐ No
- ☐ I’m not sure/I don’t know

Screening Behavior  
(NCI questionnaire)

During the past 12 months, did a doctor, nurse, or other health professional advise you to get a sigmoidoscopy?

- ☐ Yes
- ☐ No
- ☐ I’m not sure/I don’t know

**. The next questions are about colonoscopy. Colonoscopy is a test that uses a narrow, lighted tube to examine the entire colon. With a**

**colonoscopy, you are given medicine through a needle in your arm to make you sleepy, you need someone to drive you home, and you may need to take the rest of the day off from normal activities.**

Screening Behavior  
(NCI questionnaire)

Before this test was described, had you ever heard of colonoscopy?

- ☐ Yes  
☐ No  
☐ I'm not sure/I don't know

Screening Behavior  
(NCI questionnaire)

During the past 12 months, did a doctor, nurse, or other health professional advise you to get a colonoscopy?

- ☐ Yes  
☐ No

**The next few questions are about barium enema. A barium enema, also known as a lower GI (gastrointestinal) series, is another test to check for colon cancer. During the barium enema, x-rays are taken of the colon after barium liquid or barium liquid with air is put in your rectum by enema. The day before the test you are asked to drink a lot of liquids and to take laxatives. You do not drink the barium.**

Screening Behavior  
(NCI questionnaire)

Before this test was described, had you

- ☐ Yes

	ever heard of barium enema or lower GI series?	<input type="checkbox"/> No <input type="checkbox"/> I'm not sure/I don't know
Screening Behavior (NCI questionnaire)	During the past 12 months, did a doctor, nurse, or other health professional advise you to have a barium enema or lower GI series?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> I'm not sure/I don't know

**The next questions ask what you think about colon cancer tests.**

Screening Preferences	Which colon cancer test would you most want to use if your doctor recommended you be tested for colon cancer?	<input type="checkbox"/> FOBT (fecal occult blood test/stool blood test) <input type="checkbox"/> Sigmoidoscopy <input type="checkbox"/> Colonoscopy <input type="checkbox"/> DCBE (barium enema) <input type="checkbox"/> I would not want to be tested <input type="checkbox"/> I don't know
Screening Recommendations	Has your doctor or health care provider ever told you that you should be tested for colon cancer?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> I don't know
Stage of change	Which statement is closest to where you are now in your plans to get tested for colon cancer?	<input type="checkbox"/> I am not thinking of getting tested for colon cancer. <input type="checkbox"/> I think I need to consider getting tested for colon cancer. <input type="checkbox"/> I think I should get tested for colon cancer, but I am not quite ready. <input type="checkbox"/> I think I will probably get tested for colon cancer. <input type="checkbox"/> I am committed to getting

		tested for colon cancer.
Screening Knowledge (HINTS)	At what age are people supposed to start getting tested for colon cancer? (Your best guess is fine)	_____
Screening Knowledge (HINTS)	In general, once people start doing “home” stool blood tests for colon cancer, about how often should they do them? (Your best guess is fine).	<input type="checkbox"/> Once a year <input type="checkbox"/> Every 5 years <input type="checkbox"/> Every 10 years <input type="checkbox"/> Only when there is a problem <input type="checkbox"/> Other (specify) _____
Screening Knowledge	In general, once people start having sigmoidoscopy exams, about how often should they have them? (Your best guess is fine)	_____ <input type="checkbox"/> Once a year <input type="checkbox"/> Every 5 years <input type="checkbox"/> Every 10 years <input type="checkbox"/> Only when there is a problem <input type="checkbox"/> Other (specify) _____
Screening Knowledge (HINTS)	In general, once people start having colonoscopy exams, about how often should they have them? (Your best guess is fine)	_____ <input type="checkbox"/> Once a year <input type="checkbox"/> Every 5 years <input type="checkbox"/> Every 10 years <input type="checkbox"/> Only when there is a problem <input type="checkbox"/> Other (specify) _____ _____

**The next questions ask for your opinions about colon cancer and colon cancer testing. For each statement below, check whether you strongly agree, agree, neither agree nor disagree, disagree, or strongly disagree.**

Attitudes & Beliefs Scale (Vernon et al., 1997)		Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree
Perceived Susceptibil	I believe the chance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

ity	I might develop colon cancer is high.					
Salience & Coherence	Doing colon cancer testing makes sense to me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Self-Efficacy	Arranging my schedule to go through colon cancer testing is an easy thing to do.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Salience & Coherence	I think the benefits of colon cancer testing outweigh any difficulty I might have in going through the tests.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Social Influence	I want to do what members of my immediate family think I should do about colon cancer testing.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Salience &	Going	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Coherence	through colon cancer testing is an important thing for me to do.					
Salience & Coherence	I believe that having colon cancer testing can help to protect my health.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Self-Efficacy	Finding time to go through colon cancer testing would be difficult for me to do.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Intention	I intend to undergo colon cancer testing.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Worries & Fears	I am afraid of having an abnormal test result.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Perceived Susceptibility	I think it is very likely that I will develop colon cancer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Efficacy of Screening	I think that when colon polyps are found and	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	removed, colon cancer can be prevented. Going through colon cancer testing would be difficult for me to do.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Self- Efficacy						
Worries & Fears	I am worried that testing will show that I have colon cancer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Perceived Susceptibil ity	I believe that the chance that I will develop colon polyps is high.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Worries & Fears	I am bothered by the possibility that testing might be physically uncomforta ble.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Efficacy of Screening	I believe that when colon cancer is found early, it can be cured.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Self-	I think that	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Efficacy	going through colon cancer testing would be an easy thing for me to do.					
Perceived Susceptibility	I think that compared to other persons my age, I am at lower risk for colon cancer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Knowledge / Sex	I believe that colon cancer is mainly a problem for men.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Knowledge (Manne et al., 2007)	I believe that a person could have colon cancer but not have any symptoms.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Knowledge (HINTS)	I think that getting checked regularly for colon cancer increases the chances of finding cancer when it's easy to treat.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Sex	People should learn about colon cancer tests in their 20s and 30s.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-----	--	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Statements on Perceptions (Wells & Thompson-Robinson, 2016)		Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree
Cues to Action	My doctor never recommended to me that I get a colonoscopy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cues to Action	My family history of colorectal cancer worries me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cues to Action	Someone important to me feels that it is important that I get regular colorectal cancer screening test	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**The statements below ask you about experiences you may have had with your health care providers. For each statement below, state whether you strongly agree, agree, neither agree nor disagree, disagree, or strongly disagree.**

Trust in Physician (Dugan et al., 2005)		Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree
Trust in Physician	Sometimes my doctor cares more about what is convenient for him/her than about my medical needs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Trust in Physician	My doctor is extremely thorough and careful.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Trust in Physician	I completely trust my doctor's decisions about which medical treatments are best for me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Trust in Physician	My doctor is totally honest in telling me about all of the different treatment options	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	available for my condition.					
Trust in Physician	All in all, I have complete trust in my doctor.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Group- Based Medical Mistrust Scale (Thompson, H.S. et al., 2004)	I have personally been treated poorly or unfairly by doctors or health care workers because of my ethnicity.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Group- Based Medical Mistrust Scale	People I know have been treated poorly or unfairly by doctors or health care workers because of their ethnicity.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**The next questions ask your opinions about sigmoidoscopy and colonoscopy tests for colon cancer. For each statement, state whether you strongly agree, agree, neither agree nor disagree, disagree, or strongly disagree.**

		Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree
Sex	I worry that the tests	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Sex	will be painful. I worry I will feel vulnerable during the tests.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sex	Having my body exposed during the tests bothers me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sex	Having the tests done would be embarrassi ng.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**The next questions ask about how you like to make health care decisions. For each statement below, check whether you strongly agree, agree, neither agree nor disagree, disagree, or strongly disagree.**

Control Preferences Scale  
(Degner et al., 1997)

Which statement best  
describes how you prefer to  
make health care decisions.  
Please check only one box.

- ☐ I prefer to make the final decision.
- ☐ I prefer to make the final decision after seriously considering my doctor's opinion.
- ☐ I prefer that my doctor and I share responsibility for the decision.
- ☐ I prefer that my doctor makes the decision after seriously considering my opinion.
- ☐ I prefer my doctor to make the decision.

**Below are a few additional statements that ask about your experiences with your doctor or health care provider. For each statement, please indicate how often it is true for you by selecting always, almost always, sometimes, rarely, or never.**

		Always	Almost Always	Sometimes	Rarely	Never
Patient- Provider Communic ation Scale (Katz et al., 2004)	I receive enough understand able informatio n from my doctor/heal thcare provider to make good decisions about my health.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Patient- Provider Communic ation Scale	My doctor/heal thcare provider involves me in decisions about my health care treatment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Patient- Provider Communic ation Scale	My doctor/heal thcare provider understand s my health needs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Please indicate how often the following statement is true for you.**

		Every week or more often	Almost every <u>week</u>	Once or twice a month	A few times a year	Less than that
SHAPE	How often are you in situations that make you feel unaccepted	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

because of  
your race,  
ethnicity or  
culture?

**The next questions ask how you usually respond when you are treated in certain ways. For each question, please select the best response.**

Experiences of Discrimination (EOD) (Krieger et al., 2005) EOD	If you feel you have been treated unfairly, do you usually:	<input type="checkbox"/> Accept it as a fact of life
		<input type="checkbox"/> Try to do something about it
	If you feel you have been treated unfairly, do you usually:	<input type="checkbox"/> Talk to other people about it
		<input type="checkbox"/> Keep it to yourself

**The next questions ask how often you have experienced discrimination, been prevented from doing something or been hassled or made to feel inferior because of your race, ethnicity or color in different situations.**

		Never	Once	Two or three times	Four or more times
Experiences of Discrimination (EOD) (Krieger et al., 2005)	How often have you experienced discrimination, been prevented from doing something or been hassled or made to feel inferior because of your race, ethnicity or color...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EOD	... At school?				
	... Getting hired or getting a job?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EOD	... At work?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EOD	... Getting housing?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

EOD	... Getting medical care?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EOD	... Getting services in a store or a restaurant?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EOD	... Getting credit, bank loans, or a mortgage?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EOD	... On the street or in a public setting?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EOD	... From the police or in the courts?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**The next questions are about you and your household.**

Demographics	Are you currently...	<input type="checkbox"/> Employed for wages <input type="checkbox"/> Self-employed <input type="checkbox"/> Out of work for more than one year <input type="checkbox"/> Out of work for less than one year <input type="checkbox"/> A homemaker <input type="checkbox"/> A student <input type="checkbox"/> Retired <input type="checkbox"/> Unable to work
Demographics	Are you of Hispanic origin (that is Mexican, Puerto Rican, Cuban, or another Latino group)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Demographics	Which of the following best describes your race? Please check all that apply.	<input type="checkbox"/> American Indian or Alaska Native <input type="checkbox"/> Asian <input type="checkbox"/> Black or African American <input type="checkbox"/> Native Hawaiian or other Pacific Islander <input type="checkbox"/> White

		<input type="checkbox"/> Other <hr/>
Demographics	What is the highest grade or year of school you have completed?	<input type="checkbox"/> None <input type="checkbox"/> First through 11 <sup>th</sup> grade <input type="checkbox"/> High school graduate <input type="checkbox"/> One to three years of college (some college) <input type="checkbox"/> College graduate <input type="checkbox"/> Master's degree <input type="checkbox"/> Doctorate or professional degree
Demographics	What is your annual household income from all sources before taxes?	<input type="checkbox"/> Less than \$10,000 <input type="checkbox"/> \$10,001 to \$20,000 <input type="checkbox"/> \$20,001 to \$40,000 <input type="checkbox"/> \$40,001 to \$60,000 <input type="checkbox"/> \$60,001 to \$80,000 <input type="checkbox"/> More than \$80,000
Demographics	Are you...	<input type="checkbox"/> Married <input type="checkbox"/> Living with someone <input type="checkbox"/> Separated <input type="checkbox"/> Divorced <input type="checkbox"/> Widowed <input type="checkbox"/> Single, never been married
Demographics	How many people under the age of 18 are currently living with you?	<hr/>
Demographics	How many people, including yourself, live on your household's income?	<hr/>
Demographics	What is your age?	<input type="checkbox"/> 30-34 <input type="checkbox"/> 35-39 <input type="checkbox"/> 40-44

APPENDIX I

INTERVIEW DISCUSSION GUIDE

**Individual Interview Question Guide**  
(Adapted from a Focus Group Discussion and Questions Guide)

**A. General Questions about Cancer and Colon Cancer**

1. Have you ever had a colorectal cancer screening test? If so, what has caused you to have the test? If not, why have you not had a test?
2. What words or feelings or ideas come to mind when you think about colon
3. cancer? (knowledge)
4. Compared to other people of your age, what do you think your chance of getting colorectal cancer (susceptibility)- scale
5. What are your thoughts about finding colon cancer earlier vs. finding it later?
6. (benefits)
7. How serious would it be if you developed colorectal cancer? (severity)
8. What do you believe would cause you not to/prevent you from getting screened for colorectal cancer? (barriers)
9. What would be your response or what you do if your doctor recommended that you have a colorectal cancer screening test? Whose opinions would be/are most important to you in deciding to have the screening? (cues to actions)
10. What is the confidence you have in getting a colorectal cancer screening test? (self-efficacy)

**B. Provide interview participants with the information on colorectal cancer screening used by the CDC. Distribute materials and briefly go over it. Then explore the following:**

11. Do you think these materials would help people your age decide to have a colorectal cancer screening test? What did you like about the materials? What didn't you like?
12. Do you think these materials would help you make the decision to have colorectal cancer screening test?

**C . Ask interview participants to suggest how to talk to their peers about colon cancer and the colon cancer screening test**

13. What do you think would help your peers become more knowledgeable about colon cancer?

**D. Wrap up individual interview.**

Thank you for talking with me about these colorectal cancer and colorectal screening tests today. Is there anything else that you'd like to say about them?

(Temple University, 2007)