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An assessment of knowledge levels regarding informed decision-making of older African American and white men residing in two Alabama counties.

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AN ASSESSMENT OF KNOWLEDGE LEVELS REGARDING INFORMED DECISION-MAKING OF OLDER AFRICAN AMERICAN AND WHITE MEN RESIDING IN TWO ALABAMA COUNTIES

by

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A DISSERTATION

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ABSTRACT OF DISSERTATION
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The objective of the study was twofold: (1) to ascertain the relationship between prostate knowledge and perceived readiness to be screened for prostate cancer in older African American and White men living in Alabama; and (2) to identify the role of knowledge in the relationship between sociodemographic factors and perceived readiness for prostate cancer screening.

One hundred eighty men ages 50 and older residing in Tuscaloosa and Birmingham, Alabama, were surveyed on their demographic characteristics, knowledge of prostate cancer, perceived barriers to prostate cancer screening, and perceived personal risk of prostate cancer. The relationship between knowledge and sociodemographic factors (age, education, employment, income, marital status, and symptoms) and perceived readiness was also assessed.

Eighty-one percent of the respondents answered at least 50% (7 out of 14) of the prostate cancer knowledge questions correctly. Mediation analyses revealed that knowledge fully mediated the relationship between age and perceived readiness. Knowledge partially mediated the relationship between education, income, marital status, and perceived readiness.

Through the identification of the relationship between sociodemographics, knowledge, and perceived readiness, appropriate programs may be developed to aid in reducing the incidence and mortality of prostate cancer currently being witnessed among men, particularly African American men, in Alabama. With the identification of the impact of knowledge in the decision-making process, both members and nonmembers of populations at high risk will be empowered with the knowledge to make informed decisions about being screened for prostate cancer, thus enabling early detection and treatment.

DEDICATION

Granddad (Willie Rivers, Sr.)

We love you and miss you.

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Praise to God our Father and the Lord and Savior Jesus Christ for grace and mercy. Thank you for empowering me with your gifts to be a mere expression of your magnificence. Thank you for life, health, strength, ability, and the power to make a difference. May I now start to live. May everything I do and accomplish be recognized and added to your glory. To God be the Glory, forever, Amen.

To my beautiful and precious jewel, my wife Desiree. I thank and praise God for you. Thank you for adding to my strength daily. I love you!

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LIST OF ABBREVIATIONS

ACS	American Cancer Society
AUA	American Urological Association
CDC	Centers for Disease Control and Prevention
CHCS	Center for Health Care Strategies, Inc.
DCS	Decisional Conflict Scale
DRE	Digital rectal exam
HBM	Health Belief Model
PSA	Prostate specific antigen
SES	socioeconomic status
TRUS	Transrectal Ultrasound

CHAPTER 1

INTRODUCTION

Prostate cancer is the second leading cause of cancer-related death in African American and White men in the United States. For reasons yet to be determined, African American men have the highest rates of prostate cancer in the world. It has been suggested that the differences in incidence and mortality between African American and White men can be attributed to knowledge, screening, stage diagnosis, and environmental and biological factors. These represent significant barriers to early detection among men. In this study, knowledge as a mediator of sociodemographic factors and perceived readiness will be examined. With the identification of the relationship of sociodemographic factors, knowledge, and perceived readiness, appropriate programs may be developed to aid in the proper dissemination of information, thus empowering members of populations at high risk with the knowledge to make informed decisions about being screened for prostate cancer.

Significance

Lack of cancer knowledge may be a potential barrier to prostate cancer screening and/or seeking health care when symptoms are present. Recent evidence suggests that the level of prostate cancer knowledge is influenced by race, socioeconomic status, literacy levels, marital status, and whether the patient has a regular physician (Centers for Disease

Control and Prevention [CDC], 2000). In the CDC document, *Prostate Cancer Conference Report: Future Directions of Public Health Practice and Research in Prostate Cancer*, a variety of recommendations are made regarding prostate cancer control activities. According to this report, to understand the comprehensive effects of knowledge on prostate cancer screening, further research is needed on three main barriers: health messages that lack clarity, primary care providers who lack time and knowledge, and the general population's level of health literacy. The report also mentions the need to include an accurate and precise measure of informed decision-making for prostate cancer screening/treatment. According to the CDC, research should be conducted to better describe the disparities in risk and disease burden among underserved populations (CDC, 2000). The CDC suggests the use of race/ethnicity, socioeconomic status, geographic location, and other measures to develop materials and messages for underserved populations, particularly African American men. The mandates outlined in the CDC's report regarding prostate cancer control and the advocacy for informed decision-making among healthcare organizations and entities highlight the importance of men possessing a sufficient level of knowledge. While knowledge is not a predictor for adoption of a behavior change, it is a critical first step to informed decision-making. A second step may entail preparation to engage in the desired behavior change, which includes assessing the accuracy and applicability of the information and ascertaining their congruency with individual values.

Purpose

The purpose of this research is to ascertain the relationship of sociodemographic factors, knowledge, and perceived readiness, to the informed decision-making process regarding prostate screening in older African American and White men living in Alabama. While a consensus does not exist regarding recommendations for prostate cancer screening, current recommendations ask patients to make an informed decision regarding screening. While many agencies and organizations are advocating informed decision-making, there has been little discussion regarding the composition of an informed decision. According to a recent study in the American Journal of Public Health, physicians do not have enough time to carry out the recommended preventive services (Yarnell, Pollack, Ostbye, Krause, & Michener, 2003). Given that the physician's time with the patient is limited, it is imperative that relevant and applicable information be communicated to the patient prior to the physician visit, such as knowledge of prostate disease and potential barriers, to ensure that the patient will be able to participate in the informed decision-making process.

Through the assessment of knowledge as mediator, appropriate programs may be developed to aid in reducing the incidence and mortality of prostate cancer currently being witnessed among African American men in Alabama. With the identification of these barriers, members of populations at high risk will then be empowered with the knowledge to make informed decisions about being screened for prostate cancer, thus moving them toward the stage of early detection and effective treatment.

Conceptual Model

The concept of this research is to examine what sociodemographic and cognitive factors predict decision-making patterns among men considering prostate cancer screening. This research will be guided by the conceptual model in Figure 1.

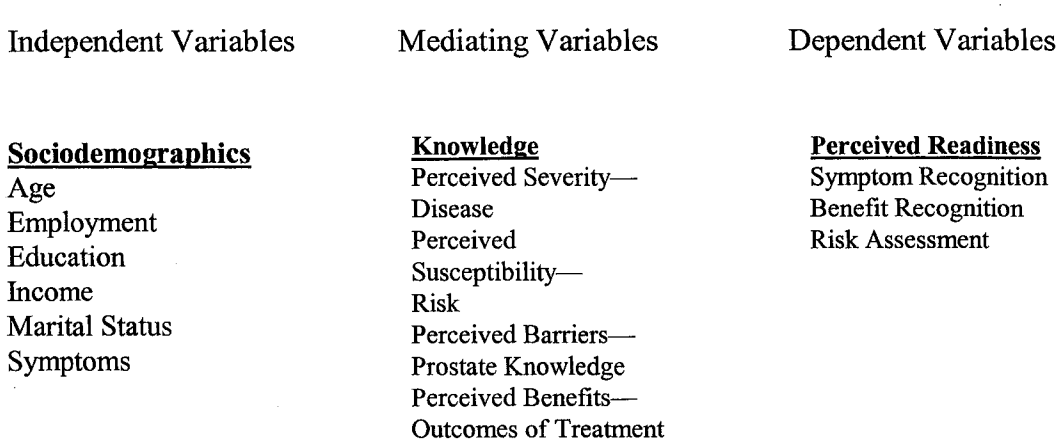

Figure 1. Conceptual model.

Theoretical Concept

The Health Belief Model (HBM) was the behavioral theory used to guide the conceptual framework. Since the development of the HBM in the 1950s, it has been one of the most widely used frameworks for examining and explaining health-related behavior. The origin of the HBM is in sociopsychological theory. It was developed by Hochbaum to examine individuals' readiness to obtain x-rays for TB screening detection (Maiman & Becker, 1974). Becker modified the HBM that was initially proposed to predict which people would use screening tests and why some people without illness take actions to avoid disease occurrence and others avoid such protective behaviors (Maiman

& Becker). The HBM is currently used to determine whether an individual is likely to participate in disease prevention and health protecting activities. The primary components of the HBM are perceived susceptibility, perceived severity, perceived barriers, and perceived benefits (Maiman & Becker).

The revised HBM, in addition to the four aforementioned constructs, consists of Internal and External Cues to Action and Self-efficacy. Cues include items responsible for triggering action, such as bodily events and environmental factors (e.g., media). Cues to action are thought to mobilize or bring relevant beliefs into the receiver's consciousness and then have a bearing upon a particular health decision. Cues may be incidental and unplanned, or planned (e.g., advertisement), or a health communication delivered via print or audiovisual media or in person by a health-care provider or educator. Cues to action provide how-to information, promote awareness, and provide reminder systems (Bandura, 1977).

Self-efficacy is one's confidence in one's ability to take the required action and produce the desired outcomes. Bandura posits that the *belief* that one can perform necessary act(s) that lead to preferred results is a required precursor for action (Bandura, 1977). The self-efficacy concept was added to the HBM by Rosenstock in 1988 to allow the HBM to better fit the challenges of changing habitual unhealthy behaviors, such as being sedentary, smoking, or overeating. Self-efficacy has been used in a variety of research circumstances, including training, offering guidance in performing a specific action, progressive goal setting, verbal reinforcement, to demonstrate desired behaviors, and to reduce anxiety. Due to the research design for this study, self-efficacy will not be explored any further than in this brief explanation.

Perceived Readiness for Decision-making

Because of the uncertainties mentioned in the preceding paragraphs regarding prostate cancer screening, patients are urged to practice shared decision-making with their physicians (Elit et al., 2003). The implications of such a process are twofold: first, it ensures that patients are properly informed prior to engaging in the recommended course of action, and the action is aligned with their values and preferences; and second, patient involvement will increase their independence over how such actions will affect their well-being and compliance, moving the patients toward better health outcomes. Informed decision-making has been defined in the literature as a simultaneous process between the physician and patient involving information exchange, deliberation of treatment preferences, and determination of treatment through consensus (Charles, Gafni, & Whelan, 1997). The assumption guiding this process is that the physician and patient have an investment in the process. The informed decision-making process is one attempt to reduce and eliminate the informational and power imbalance between physicians and patients.

In recent years, there has been much discussion of the idea of informed decision-making, but not much research has been conducted exploring the attitudes and experiences of men being screened or treated for prostate cancer. In this study, the attitudes of men will be measured through the variable of perceived readiness. Perceived readiness was first introduced and expounded by Prochaska and DiClemente's Transtheoretical Model of Change, a model which attempts to describe readiness and how people with varying readiness progress towards making behavior changes (DiClemente et al., 1991). The Transtheoretical Model of Change has been used mostly to explain a

number of aspects of smokers' behavior. For example, smokers reporting previous quit attempts are more likely to attempt to stop, developing negative attitudes towards smoking antedates smokers' attempts at stopping, and cessation is a dynamic process with frequent lapses (DiClemente et al.).

Besides the Transtheoretical Model of Change applications with smoking cessation, there are no comprehensive descriptions of readiness behaviors assessments or applications. Thus, using the previous applications for the Transtheoretical Model of Change as a standard for this project, perceived readiness will be considered an attitudinal measure and will be measured through a series of decisional statements. Based on the total score achieved by the study participants regarding the decision scale, their level of psychological readiness will be measured as the variable perceived readiness.

Hypotheses

The following hypotheses helped guide this study:

1. To make an informed decision regarding screening for prostate cancer, knowledge is a mediator of the relationship between a man's age and his readiness.
2. To make an informed decision regarding screening for prostate cancer, knowledge is a mediator of the relationship between a man's education and his readiness.
3. To make an informed decision regarding screening for prostate cancer, knowledge is a mediator of the relationship between a man's employment and his readiness.

4. To make an informed decision regarding screening for prostate cancer, knowledge is a mediator of the relationship between a man's income and his readiness.
5. To make an informed decision regarding screening for prostate cancer, knowledge is a mediator of the relationship between a man's marital status and his readiness.
6. To make an informed decision regarding screening for prostate cancer, knowledge is a mediator the relationship between a man's symptoms and his readiness.

Summary

The uncertainty of prostate cancer screening is a very controversial issue. Due to the disproportionate impact of this disease on certain races and ethnicities, more research is needed to decrease and eliminate such disparities. While most men are being advised to make an informed decision before being screened for prostate cancer, not much emphasis has been placed on the composition of such a decision and what factors are involved in a male's decision to be screened. In this study, the health belief model will be used to examine the relationship of knowledge, sociodemographic factors, and perceived readiness.

Prostate Cancer Background

Prostate cancer develops from cells of the prostate gland. Eventually the cancer cells may spread outside the gland to other parts of the body. Most prostate cancers grow

very slowly. Autopsy studies show that many elderly men who died of other diseases also had prostate cancer which neither they nor their doctor were aware of. But some prostate cancers can grow and spread quickly (National Institutes of Health, 1996).

The prostate gland is about the size of a small walnut and is located in front of the rectum, behind the base of the penis, and under the bladder. The prostate surrounds the upper part of the urethra, the tube that carries urine and semen to the penis. It is found only in men, and produces the seminal fluid, which protects and nourishes sperm cells. Nerves located next to the prostate take part in causing an erection of the penis, and treatments that remove or damage these nerves can cause erectile dysfunction, also known as impotence. Lymph is a clear fluid that contains tissue water products and immune system cells. Lymphatic vessels carry this fluid to lymph nodes (small, bean-shaped collections of immune system cells important in fighting infections). Most lymphatic vessels of the prostate lead to pelvic lymph nodes. Cancer cells may enter lymph vessels and spread out along these vessels to reach lymph nodes where they can continue to grow. If prostate cancer cells have multiplied in the pelvic lymph nodes, they are more likely to have spread to other organs of the body as well (American Cancer Society [ACS], 2002).

Epidemiology

Prostate Cancer in the U.S. and the World

The highest incidence of prostate cancer is in North America and northwestern Europe (ACS, 1999). Prostate cancer is rare in Asia, Africa, Central America, and South

America. Differences in diet may, in part, account for these geographic differences in the development of prostate cancer (Giovannucci, Rim, & Colditz, 1993).

Prostate cancer in the United States shows great racial variations. African American men have the highest rate of prostate cancer incidence in the world, and this rate seems to be constantly increasing. We can substantiate the increase by comparing the incidence rates from 1985 to those of 1991. The rates among African American men were 127.6 per 100,000 in 1985. The rate among Whites for the same time period was 84.9 per 100,000. In 1991 African American men continued to have considerably higher incidence rates (180.6 per 100,000) than White men (154.2 per 100,000). The incidence among Asian men is one of the world's lowest [Japanese men's incidence is 39 per 100,000 (person/years), Chinese men's is 28 per 100,000 (person/years), and Korean men's is 24.2 per 100,000 (person/years)]. The incidence for African American men is the highest in the world , at 209.6 per 100,000 (person/years) (ACS, 2002).

Prostate Cancer in Alabama

Prostate cancer is the second most commonly diagnosed cancer among men and is second only to lung cancer as a cause of cancer-related death among men in Alabama. There will be an estimated 4,000 newly detected cases of prostate cancer in Alabama this year (ACS, 2002). Alabama crude death rates among African American men have been an average of 106.1% higher than for Whites. By contrast, U.S. rates for African American men were an average of 38.7% higher than Whites during the same time period. This racial gap in rates has been consistent in both the United States and Alabama for the past 20 years. African American men have a higher burden of prostate

cancer deaths. This disparity in rates between the U.S. and Alabama standards for African American men could be explained in part by an older African American male population in Alabama (Center for Health Care Strategies, Inc. [CHCS], 1998).

Prostate Cancer in African American Men

African American men have an 85% greater chance of being diagnosed with prostate cancer and a 114% greater chance of dying from it than do White men (ACS, 2002). In addition, prostate cancer mortality for African American men is twice as high as the rate for White Americans. In 1991, mortality rates were 24.7 per 100,000 White men, and 55.1 per 100,000 African American men. Mortality rates also are increasing much more rapidly among African American men (about 1.8% annually from 1973 to 1991) than among Whites (about 1.0% annually). The 5-year survival rates are lower for African American men (66.4% during 1983 to 1990) than for White men (81.3% during 1983 to 1990). This difference is due in part to the fact that African American men tend to be diagnosed at later stages of the disease (ACS, 2002).

Prostate Cancer Risk Factors

According to the CDC, prostate cancer is most common among men aged 65 years and older. About 80% of all clinically diagnosed cases of prostate cancer are among men in this age group. At all ages, African American men tend to be diagnosed with the disease at later stages and to die of prostate cancer more often than White men. The most important risk factor for prostate cancer is age. It has been apparent for several years that age-adjusted incidence rates, as well as death rates, from clinical prostate cancer vary

dramatically from the United States to other countries, such as Japan, even if one allows for differences in and availability of screening programs (Pienta & Esper, 1991).

Age. Age is the primary risk factor associated with prostate cancer. Estimates are that as many as 70% of men over 80 years of age have histological evidence of cancer in their prostate (Oesterling, Fuks, Lee, & Sacher, 1997). After the age of 50 years, both incidence and mortality rates from prostate cancer increase at a nearly exponential rate. Prostate cancer rates increase faster with age than any other major cancer and, with an aging population, the burden of prostate cancer will probably continue to increase in the future. Men in their thirties and forties have a high incidence of small foci, whereas older men have larger lesions, implying possible stepwise progressions (Sakr, Grignon, & Crissman, 1994). However, the finding of histological cancer does not imply that the disease will become clinically manifest in the lifetime of the individual (Oesterling et al.). Estimates from one series reported that 1 in 10 histological cancers never progress. That the frequency of histological cancers in men of equivalent age is similar in the United States, Japan, and Germany seems to confirm the importance of yet unknown factors that ultimately determines which men will be clinically be affected by their cancers.

Family history. Genetic predisposition is defined as the diagnosis of prostate cancer in three generations, more than three affected first-degree relatives, or two individuals in the same generation who are diagnosed below the age of 55 years (Oesterling et al., 1997). Family history or genetic predisposition is believed to represent 9% of the cancers diagnosed in the United States (Carter, Bova, & Beaty, 1993). A

genetic predisposition for prostate cancer development was proposed on the basis of epidemiological studies showing that if the disease was diagnosed in one first-degree relative the risk increased by a factor of 2, and by a factor of 4 if two or more first-degree relatives were affected (Oesterling et al.). Several studies have suggested that the incidence of prostate cancer in male relatives of patients with prostate cancer is increased. Spitz and colleagues showed an increased risk among men with first-degree relatives with the disease (odds ratio/2.41) (Spitz, Currier, Fueger, Babaian, & Newell, 1991). Carter et al. published a series of analyses that show that men with a father or brother with prostate cancer are twice as likely to develop prostate cancer than as men without affected relatives, and the risk increases with an increasing number of affected relatives. Estimates are that 5% to 10% of all, and 40% of early onset, cancers are hereditary and follow a Mendelian inheritance pattern.

Race. A recent study conducted by the National Cancer Institute based on the data extracted by the Surveillance, Epidemiology, and End Results program as well as census data revealed that men of African descent living in the United States have a higher incidence rate of clinical prostate cancer than do White men of similar education and socioeconomic classes (Pienta & Esper, 1991). Furthermore, men of African descent are routinely diagnosed with later-stage disease, and the survival rates are uniformly shorter for African American men. Pienta and Esper examined the impact of race and survival for men diagnosed with prostate cancer in the metropolitan Detroit Tri-County area from 1973 to 1987. They found that men of African descent have a lower survival rate than White males for all stages of prostate cancer, even when the cancer is diagnosed at a

younger age. These differences in survival were not demonstrated for men diagnosed with prostate cancer after age 70. These researchers suggest that race should be taken into account when assessing the survival of patients with prostate cancer.

Diet. Another risk factor that researchers associate with the development and progression of prostate cancer is diet. Giovannucci et al. studied a total of 1,655 African American, European American, Chinese American, and Japanese American patients diagnosed with prostate cancer from 1987 to 1991, evaluating for differences in diet, physical activity, and body size. They found a statistically significant association of prostate cancer risk with total fat intake for all ethnic groups. High consumption of dietary fats, and in particular the fatty acid a-linoleic acid in red meat and butter, is believed to increase risk two- to threefold (Giovannucci, Rim, & Colditz, 1993).

The relationship between other dietary factors and prostate cancer is complex. It is very difficult to separate the effect of a given nutrient from other parts of the diet to identify an association with a given cancer (Oesterling et al., 1997). Mills, Beeson, Phillips, and Fraser (1994), in their cohort study of 14,000 Seventh-Day Adventist men, found that increasing consumption of beans, lentils, peas, tomatoes, raisins, dates, and dried fruit significantly decreased risk for prostate cancer. In general, the results from dietary intake studies support the concept that a high-fiber, low-fat diet may protect men against the development of prostate cancer (Pienta & Esper, 1991).

Hormones. The effect of dietary fat may be mediated through endogenous (produced by the body) hormones. The interaction of steroid hormones with the

development of prostate cancer is poorly understood. A low-fat, high-fiber diet has been shown to affect male sex hormone metabolism by decreasing circulation testosterone (Giovannucci, Rim, & Coldtiz, 1993). Testosterone is necessary for normal prostate epithelium to grow, and early prostate cancer has been shown to be endocrine-dependent. It has been suggested that altered hormone metabolism may play a role in the progression of prostate cancer from histologic to clinically significant forms, and it has been noted that the incidence of prostate cancer is very low in castrated men. However, higher levels of testosterone in patients with prostate cancer have not been consistently observed. Other hormones, especially prolactin and estrogen, may play an undefined role in prostate metabolism (Oesterling et al., 1997).

Other Proposed Risk Factors

Currently, studies to assess the association between prostate cancer and controversial risk factors, those that have not been proven scientifically, are being debated. It is evident from the incidence and mortality data presented that African American men are at a greater risk of developing prostate cancer than any other population in the world. Other factors, such as occupation, socioeconomic status, smoking, and vasectomy, are currently under investigation to determine whether there are any significant associations between these factors and prostate cancer.

Socioeconomic status. Differences in socioeconomic status between men of African descent and White men have been suggested as the reason for differences in prostate cancer incidence between these two groups. Baquet et al. (1991) at the National

Cancer Institute recently investigated this issue in terms of population density, education, and income level. Using incidence data from the Surveillance, Epidemiology, and End Results program, these authors found that incidence was generally higher in African American men than in White men, but that no statistically significant association existed between socioeconomic status and prostate cancer incidence (Pienta & Esper, 1991).

Occupation. Industries that have received scrutiny as increasing the risk for prostate cancer have been those in which workers are exposed to cadmium. Cadmium is a naturally occurring element. Pure cadmium is a soft, bluish-white metal. It is most often found in combination with other elements, such as oxygen, chlorine, or sulfur. These combinations or compounds are all stable solids that do not evaporate, although small particles of cadmium oxide are often found in the air. Most cadmium in the United States is obtained as a by-product from the smelting of zinc, lead, or copper ores. Cadmium has a number of industrial applications, but is used mostly in metal plating, pigments, batteries, and plastics (Pienta & Esper, 1991).

Cadmium can enter the blood by absorption from the stomach or intestines following ingestion of food or water, or by absorption from the lungs after inhalation. Very little cadmium is absorbed through the skin. Usually only about 1% to 5% of what is ingested is absorbed into the blood. About 30% to 50% of what is inhaled is absorbed. Once cadmium enters the body, it is retained; therefore, even low doses may build up significant cadmium levels if the exposure is long-term (Pienta & Esper, 1991).

It has been suggested that cadmium increases the risk for prostate cancer by interacting with zinc. Zinc is a necessary trace element in multiple intracellular metabolic

pathways, and the prostate contains high amounts of zinc. Several enzymes that are involved in the replication and repair of Deoxyribonucleic acid and Ribonucleic acid, such as the polymerases, require zinc to function properly. The prostate has the highest concentration of zinc of any organ in the body. Prostate glands containing cancer have lower levels of zinc than do non-cancerous glands; however, it remains unclear whether zinc is associated with prostate cancer (Pienta & Esper, 1991).

Vasectomy. It has been suggested that vasectomy may increase the risk for prostate cancer because of the observation that vasectomized men have higher levels of circulating testosterone (Oesterling et al., 1997). The role of vasectomy is controversial. Two studies (Giovannucci, Tosteson, et al., 1993; Giovannucci, Ascherio, et al., 1993) suggested a 1.56 to 1.66 increase in incidence, particularly for men with a greater than 20-year time span since the procedure. A panel convened by the National Institutes of Health reviewed available information regarding causal relationships between vasectomy and prostate cancer. They concluded that the data were inconsistent, as were associations between the two, and that vasectomy should not be considered a risk factor (Oesterling et al.).

Screening Recommendations

Preventable risk factors for prostate cancer are unknown, and effective measures to prevent this disease do not currently exist. Although screening is controversial and may not alter the course of the disease (Kramer, Brown, Prorok, Potusky, & Gohagan, 1993), it offers the only possibility for detecting cancer early in high-risk African

American men. Screening is technically feasible (Bretton, 1994), and generally acceptable (Kirby et al., 1994). However, even when the opportunity for prostate cancer screening is available, many African Americans refuse rectal examinations. Although screening and early detection have been proposed as methods to reduce the risk of dying of prostate cancer, health professionals have not come to a consensus on early detection guidelines.

To date, the scientific evidence has been insufficient to determine if screening for prostate cancer reduces deaths or if treatment of early disease is more effective than no treatment in prolonging a patient's life. Currently, health practitioners cannot accurately determine which cancers will progress to become clinically significant and which will not. Thus, widespread screening and testing for early detection of prostate cancer are not scientifically justified at this time (CDC, 2000).

With regard to prostate cancer screening, professional medical organizations are divided on the issue. The U.S. Preventive Services Task Force recommends against routine screening, and the CDC supports these recommendations (CDC, 1999). The ACS and the American Urological Association (AUA) recommend an annual digital rectal examination (DRE) and prostate-specific antigen (PSA) blood test beginning at the age of 50. They also recommend that screening start at a younger age for African American men and for men with a family history of prostate cancer. The AUA suggests that these high-risk groups be tested beginning at age 40 (CDC, 2000). The National Comprehensive Cancer Network recommends that a DRE be performed and a PSA measurement be offered annually, beginning at age 50 years, to men who have at least a 10-year life expectancy, and to younger men who are at high risk (ACS, 2002).

The ACS, the AUA, and the National Comprehensive Cancer Network believe that the majority of available evidence, though not conclusive, supports the view that prostate cancer early detection can save lives. These organizations recommend that providers offer men the option of prostate cancer screening and discuss the potential benefits, side effects, and uncertainties regarding early prostate cancer detection and treatment prior to testing (ACS, 2002).

Early Detection Modalities

Many uncertainties remain surrounding the early detection of prostate cancer (ACS, 2002). Cancers found by early detection testing (using the prostate-specific antigen blood test and/or digital rectal examination) are, on average, smaller and have spread less than cancers discovered because of symptoms they cause. There are currently three types of screening procedures used in the detection of prostate cancer.

Prostate Specific Antigen Blood Test

The ACS recommends that this blood test to measure PSA (a protein which is made by prostate cells) be offered annually by health care providers to men 50 years and older with a life expectancy of at least 10 years, and to younger men with high prostate cancer risk. PSA blood tests are reported as nanograms per milliliter or ng/ml. Results under 4 ng/ml are usually considered normal. Results over 10 ng/ml are high, and values between 4 and 10 are considered borderline. The higher the PSA level, the more likely the presence of prostate cancer. The PSA estimates how likely a man is to have prostate cancer, but the test does not provide a definite answer. Men with a high PSA result or a

significant increase between PSA examinations are advised to have a biopsy to find out whether cancer is present. Test results in the borderline range may cause some confusion (ACS, 2002).

Digital Rectal Exam

The ACS recommends that health care providers offer men who are 50 years and older (as well as younger men with high prostate cancer risk) the opportunity to have a DRE as part of their annual physical check-up. During this examination, a doctor inserts a gloved, lubricated finger into the patient's rectum to feel for irregular or abnormally firm areas that might be a cancer. The prostate gland is located next to the rectum, and most cancers begin in the part of the gland that can be reached by a rectal exam. While it is uncomfortable, the exam causes no pain and only takes a short time.

DRE is less effective than the PSA blood test in finding prostate cancer but can sometimes find cancers in men with normal PSA levels. Thus, the ACS guidelines recommend use of both the DRE and PSA blood test for men who choose to undergo testing for early prostate cancer detection. The DRE is also used once a man is known to have prostate cancer, in order to help predict whether the cancer has spread beyond his prostate gland, and to detect cancer that has come back after treatment (ACS, 1999).

Transrectal Ultrasound (TRUS)

TRUS uses sound waves to create an image of the prostate on a video screen. Sound waves are released from a probe placed in the patient's rectum. The sound waves create echoes as they bounce off of the prostate. The same rectal probe detects the echoes

that bounce back from the prostate and a computer translates the pattern of echoes into a picture. TRUS is useful when the PSA or DRE indicates an abnormality, to guide the biopsy needle into exactly the right area of the prostate. TRUS has been evaluated as a screening modality, as an aid to establishing the diagnosis, and for staging. The most important uses of a diagnostic TRUS are to ensure that all portions of the gland with hypoechoic lesions are biopsied when trying to establish a diagnosis and to estimate prostate volumes for calculation of prostate-specific antigen density (ACS, 2002).

Controversy Over Screening and Treatment

As indicated in the recommendations of the U.S. Preventive Services Task Force, and despite the recommendations of the AUA and the ACS, there are many physicians who do not believe that annual PSA tests are necessarily a good thing. They argue that, while it may be possible to find indications of prostate cancer using DREs and PSAs, the really tough questions are how hard one must search to discover whether a particular patient actually has prostate cancer and then how one should treat the disease. An option that some men consider is annual DREs without PSA testing. Ultimately the decision whether a man should have regular tests for prostate cancer and what those tests should be is a topic that should be discussed with the physician (ACS, 2002).

Prostate cancer is a serious public health problem in the United States, accounting for 35,000-40,000 deaths each year (ACS, 2002). Autopsy studies indicate, however, that these cases arise from a much larger population of latent prostate cancers that are present in over nine million American men. Although tests such as the PSA have adequate sensitivity to detect clinically important cancers at an early stage, they are also likely to

detect a large number of cancers of uncertain clinical significance. The natural history of prostate cancer is insufficiently understood to be able to determine with certainty which cancers are destined to produce clinical symptoms or affect survival, which cancers will grow aggressively, and which will remain latent. Prostate cancer has a complex biological manifestation with many unanswered questions about heterogeneity and how the tumor-host interacts (ACS, 2002).

Currently, there is no evidence to determine the efficacy of treatment or whether the various treatment options improve survival. For men with well and moderately differentiated disease, treatment appears to offer little benefit over expectant management, whereas the most aggressive tumors may have spread beyond the prostate by the time they are detected by screening. Although it is possible that treatment is beneficial for an unknown proportion of men with early prostate cancer, definitive evidence regarding effectiveness will not be available for over a decade. Evidence will be presented when ongoing randomized controlled trials are completed, such as the National Institutes of Health Prostate, Lung Colorectal, and Ovarian Cancer Trial.

The American College of Physicians has established a criteria for healthcare providers to adhere to when informing individuals about prostate cancer screening. This criteria was used as the basis for identifying the knowledge questions in this study. The American College of Physicians has specifically recommended that all men who are considering having a DRE and a PSA measurement be fully informed as follows:

1. Prostate cancer is an important health problem
2. The benefits of one-time or repeated screening and aggressive treatment of prostate cancer have not yet been proven.

3. Digital rectal examinations and PSA measurements can both have false-positive and false-negative results.

4. The probability that further invasive evaluation will be required as a result of testing is relatively high.

5. Aggressive therapy is necessary to realize any benefit for the discovery of a tumor.

6. A small but finite risk for early death and a significant risk for chronic illness, particularly with regard to sexual and urinary function, are associated with these treatments.

7. Early treatment may save lives.

8. Early detection and treatment may avert future cancer-related illness (ACS, 2002).

Methods of Treatment

Grading

Grading is used as an estimate of the potential aggressive behavior of a tumor based on cellular patterns observed in biopsy specimens at the time of diagnosis. Prostate cancers are graded according to how much they look like normal prostate tissue when viewed under a microscope. The Gleason System is the most commonly used prostate cancer grading system. This system assigns a grade ranging from 1 through 5 for two areas of the cancer and a combined score between 2 and 10. This system also assigns a grade ranging from 2 through 4, meaning that the cancer tissue looks similar to normal prostate tissue. A score of 5 and 6 (*intermediate*) means that the cancer does not look as similar to normal prostate tissue. A Gleason score of 7 to 10 (*high*) means that the cancer is more abnormal in its microscopic appearance (ACS, 1999).

Radial Prostatectomy

Radical prostatectomy or complete surgical removal of the prostate is frequently used for patients younger than 70 years who are otherwise in good health. Complications of radical prostectomy may be short- or long-term. Between 5% to 19% of men become incontinent, and 24% to 62% become sexually impotent. The risk for these complications increases with age and with the amount of damage to nerve and blood supplies during the surgical procedure. Currently, definitive evidence that this surgical procedure reduces death or prolongs life is not available (ACS, 1999).

Radiation Therapy

Radiation therapy, or treatment of the tumor site with low levels of radiation, is used for cancer that is confined to the prostate or surrounding tissue. Some side effects of radiation therapy, which can include acute inflammation of the bladder, rectum, and intestines, are generally reversible. Following radiation therapy, 25% to 44% of men experience some degree of sexual impotence, and 0.5% to 7% of men become incontinent (CDC, 1999).

Hormone Therapy

Hormone therapy is often used for patients whose prostate cancer has spread beyond the prostate or has recurred after treatment. The goal of hormone therapy is to lower levels of the male hormones, called androgens. The main androgen is testosterone. Androgens are produced mainly in the testicles and cause prostate cancer cells to grow. Lowering androgen levels can make prostate cancer shrink or grow more slowly. But,

hormone therapy does not cure the cancer. There are several forms of hormone therapy. Orchiectomy is the removal of the testicles. This operation eliminates the main source of testosterone. The use of a luteinizing hormone-releasing hormone agonist is another type of hormone therapy. Luteinizing hormone-releasing hormone agonists prevent the testicles from producing testosterone. In another form of hormone therapy, patients take estrogen to stop the testicles from producing testosterone. Sometimes the patient is given anti-androgen, a drug that blocks the effect of any remaining male hormones. Prostate cancer that has spread to other parts of the body usually can be controlled with hormone therapy for a period of time. Eventually, most prostate cancers are able to grow with very little or no male hormones. Once this happens, hormone therapy is no longer effective, and the doctor may suggest other forms of treatment (ACS, 1999).

Watchful Waiting

Watchful waiting or no immediate treatment is also an option for men with prostate cancer because of the often-slow progress of this disease. When this option is chosen, the tumor is evaluated periodically for changes that suggest rapid growth. Recent studies have found that watchful waiting may be an acceptable management alternative, particularly for older men with small low-grade tumors that are unlikely to spread (CDC, 1999).

Research Question

The research question that will guide this project asks: Taking into consideration the sociodemographic factors of older African American and White men in Alabama,

what is the role of their prostate cancer knowledge in mediating their readiness to make an informed decision? Subquestions that will be used to answer this question are listed below:

1. Does knowledge mediate the relationship between age and perceived readiness?
2. Does knowledge mediate the relationship between education and perceived readiness?
3. Does knowledge mediate the relationship between employment and perceived readiness?
4. Does knowledge mediate the relationship between income and perceived readiness?
5. Does knowledge mediate the relationship between marital status and perceived readiness?
6. Does knowledge mediate the relationship between symptoms and perceived readiness?

Assumptions

For the purpose of this study, the following assumptions are made:

1. Patient education is needed to make an informed decision.
2. Patients' knowledge level can be assessed through the constructs of the HBM.
3. A patients' decision-making skill is contingent in part on the type of knowledge they possess and, thus can be modified.

CHAPTER 2

LITERATURE REVIEW

Barriers to Healthcare

When considering the distribution of health care, assuming the example set in the literature, it must be explored on multiple levels, including the race/ethnicity of the patient, the healthcare provider, and the surrounding social structures.

To begin this discussion of the major barriers to health and securing adequate health care, we must begin with the patients and their interaction with their healthcare providers. According to a recent report, *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care* by the Institute of Medicine (Smedley, Stith, & Nelson, 2002), "A large body of published research reveals that racial and ethnic minorities, in particular African Americans, experience a lower quality of health services, and are less likely to receive even routine medical procedures than are White Americans." Barlett discovered that many African American patients complain that their health care providers fail to provide complete information, are hurried in the provision of their care, and lack sufficient time to spend with them under the existing managed care system (1999). Baldwin concluded that African American patients complain that doctors do not listen to their concerns and believed that this insensitivity is the result of racial bias and discrimination (Baldwin, 1996). Smedley et al. found that many physicians believe that

they make decisions under time pressure, with limited information and clinical uncertainty.

Shavers and Brown categorized the potential barriers to seeking healthcare in three categories: patient factors, clinical factors, and structural barriers (2002). The patient factors, similar to other research findings, include socioeconomic status, patient preferences/decision-making, cost/co-payment, transportation, time required for treatment, and family and other support. The clinical factors include physician recommendations on the diagnosis and prognosis of disease, other clinical indicators, co-morbidity, pain assessment, and physician perceptions/biases. The structural barriers include health insurance status, type of health insurance, type of institution where care is received, and geographic region where care is received (Shavers & Brown).

A barrier not mentioned by Shavers, but one that is mentioned throughout the literature, is health literacy (CHCS, 1998). Health literacy is the end or goal of health education and promotion. Health literacy becomes even more important as patients are asked to take a more active and accountable role in their own health care. According to the Partnership for Clear Health Communication (2003), health literacy is the ability to read, understand, and act on information. Research shows that regardless of reading ability, patients prefer medical information that is easy to read and understand. It has been projected that the health of 90 million people in the United States may be at risk because of the difficulty some patients experience in understanding and acting upon health information. Many researchers have correlated low knowledge levels to low literacy levels. To overcome the knowledge barriers, the literacy levels of the patient must be taken into consideration.

The aforementioned barriers to seeking and securing adequate health care seem compounded in the case of prostate cancer, particularly regarding African American men. Due to the inherent systematic biases regarding African American men and their receipt of healthcare, as documented by the literature, they are also affected disproportionately in comparison to any race or ethnic group in the world. The barriers to prostate cancer must be taken in the context presented in the literature. In general, the major barrier to prostate cancer screening is a lack of knowledge. Diefenbach, Ganz, Pawlow, and Guthrie (1996) found that patients either forget information about the PSA test or that providers do not tell patients they are being screened for cancer. The researchers concluded that further research and interventions are needed to improve patient knowledge and understanding about prostate cancer screening. Steele, Miller, Maylahn, Uhler, and Baker (2000) found that men appear to be unaware of risk factors for prostate cancer. Fitzpatrick, Corcoran, and Fitzpatrick assessed the public's awareness of prostate cancer and willingness to seek medical attention for urinary symptoms and found a marked social-class gradient in knowledge and willingness to seek medical advice. The researchers concluded that there is a need to improve prostate cancer awareness and knowledge, in particular among the lower social classes (1998). Agho and Lewis examined the knowledge levels of African American men and found that respondents demonstrated a poor knowledge of prostate cancer (2001). Weinrich examined the impact of prostate cancer knowledge on cancer screening and found that prostate cancer knowledge was a predictor in participation in screening (2001). Thus, according to the literature, a major barrier to prostate cancer screening appears to be a lack of knowledge. Kim et al. found that, although patient involvement in the treatment decision process has been encouraged, low health literacy

could limit patient understanding of the complex information about treatments and their probable quality of life outcomes. Through their research they concluded that lower prostate cancer knowledge scores correspond to lower literacy scores, indicating that low literacy may have hindered patient understanding of the shared decision-making program (2001).

It must also be stated that ethnic minority groups are disproportionately affected by low health literacy, even though the majority of those with low literacy skills in the U.S. are White, native-born Americans. Older patients, recent immigrants, people with chronic diseases, and those with low socioeconomic status are especially vulnerable to low health literacy (CHCS, 1998). Bridging the gap between patients and their health care providers is the first major hurdle to health literacy. An immediate solution to such a problem is distributing as much information as possible regarding prostate cancer, but caution must be exercised. Guidry and Walker found that most of the printed cancer education materials were culturally insensitive, not addressing the cultural beliefs, values, and rules of behavior related to the healthcare of the intended audience (1999).

In consideration of the structural barriers researched by Shavers and Brown (2002), and due to gaps in the literature dealing with these issues, it is evident that more work should be done to fully understand the role of structural barriers with regard to prostate cancer screening. Health education and promotion professionals must address the social and cultural factors that extend beyond the doctor/patient relationship in order for society to overcome barriers to improved healthcare, such as low levels of health literacy, lack of knowledge, and poor accessibility to preventive services. Given the barriers to healthcare -- patient, clinical and structural -- it is necessary to investigate and

intervene beyond the individual to social institutions, such as healthcare facilities and school systems (Shavers & Brown).

Barriers to Prostate Cancer Screening and Treatment

The lives of many African American men, living in inner cities and rural areas, are influenced by multiple social and cultural factors, including income and unemployment, education level, inadequate or nonexistent medical insurance, diet/nutritional status, psychological issues and stress, knowledge and attitude toward disease, and cultural and linguistic barriers. The combination of poverty, inadequate support systems, and unstable family life are significant factors that result in epidemic morbidity and mortality prostate cancer rates (Myers et al., 1999).

Currently, there is a substantial amount of research being conducted to explain the burden of prostate cancer. According to recent statistics by the ACS, African American men have the highest rates of prostate cancer in the world. African American men also have poorer survival rates for prostate cancer than Whites. Current research identifies various reasons as to why we see such a disparity. The differences in incidence and mortality between African American men and Whites have been attributed to screening, environmental, and biological factors. When compared with White controls, African American men present at a younger age, with higher grade and stage disease, and with a greater delay in diagnosis. This has been attributed to important differences in access to screening, as well as perception of the disease and its treatment. These represent significant barriers to early detection among African American men. The differences in screening between races became evident in 1994 when the incidence of prostate cancer

declined for the first time in White males but continued to rise for African American men (ACS, 1999).

The mortality differences between African American men and White men may be attributed to the fact that prostate cancer is usually diagnosed at a more advanced stage among African American men. This stage disadvantage, which is the result of a reduced incidence of prostate cancer screening and preventive care among African American men, is thought to lead to the inflated death rates (Targonski, Guinan, & Phillips, 1991). However, other studies show that African American men are more likely to die than White men, even among men diagnosed at the same stage (Ragland, Selvin, & Merrill, 1991). This may be related to the reluctance of African American men to seek care even after diagnosis. African American men were found to delay seeking medical attention for more than 3 months 72% of the time, as compared to a delay in White men of only one month 28% of the time (Targonski et al.).

Current research shows that African American men comply poorly with recommended annual rectal examinations to detect prostate cancer. It has been hypothesized that a delay in seeking early detection or evaluation of urinary symptoms may be a result of economic, racial, and ethnic factors; social or family circumstances; and sex role rigidity (Myers et al., 1999). In addition, there is a study that established an association between prostate cancer incidence and lower educational levels and nonprofessional occupation for both African American men and White men (Dayal & Chiu, 1982).

While no report has been able to successfully separate racial and economic issues in the screening and detection of prostate cancer, some studies of access to cancer care for

African American men implicate social, racial, and economic factors (Brown, 1997). A study released by the Barbara Ann Karmanos Cancer Institute and Wayne State University found that African American men at risk for prostate cancer tend to have less income, lack medical insurance, and are less likely to have routine physical exams than those who are not at risk. According to Diane Brown, Ph.D., director of the Wayne State University Urban Health Research Program, "These findings stress the need to target outreach efforts to low income, uninsured African American men through the media, particularly television, to increase their knowledge of cancer prevention" (Brown, 1997). The study examined African American men at risk for cancer because of health-related behavior or lack of knowledge, comparing them with those who follow cancer-screening guidelines. At-risk persons included men who lacked knowledge about prostate cancer symptoms (Brown).

Brown concluded that at-risk respondents were similar in terms of income level and access to medical care, received fewer routine physical checkups, and had fewer opportunities to learn about cancer screening than respondents who followed screening guidelines. Sixty-nine percent of African American men who lacked knowledge about prostate cancer had incomes of less than $35,000, compared to 34% of knowledgeable African American men. At-risk respondents were less likely to have transportation to medical facilities. In addition, fewer at-risk respondents reported having a routine physical within the previous year, likely due to a lack of health insurance and transportation. Two-thirds of men less knowledgeable about prostate cancer received information from doctors/nurses and the remainder from television. These barriers, according to Brown (1997), increase cancer risk for some African American men.

In assessing the barriers to prostate cancer screening, Dayal and Chiu discovered various environmental factors. It has been established that African American men frequently present with more advanced stages of prostate cancer at initial diagnosis than Whites (Dayal & Chiu, 1982). This study suggests that the poorer prognosis is more likely due to the "environment" defined in the broadest sense, than any inherent factors. According to Dayal and Chiu, various social structures established in the environment might be responsible for limited access to medical care, leading to late diagnosis as well as reduced host resistance to tumor spread due to nutritional and immunological deficiencies.

In addition, Dayal and Chiu found that socioeconomic status (SES) is of importance to survival prognosis. Patients with a high SES have the best survival prognosis, followed by middle and low SES categories. They found that if African American and White men were to have a similar distribution with respect to SES, the two races might not differ significantly in prostate cancer survival. Thus, they concluded that SES explains the racial difference. They found that race and SES are highly associated in most populations. Patients at the upper end of the SES get screened more often than those at the lower end. They concluded that this is the reason for the difference we see in screening between the races that directly contributes to the higher incidence and mortality (Dayal & Chiu, 1982).

A study conducted at Thomas Jefferson University by Myers et al., examined adherence by African American men to prostate cancer screening recommendations. The study indicated that background characteristics, cognitive and psychological representations regarding early detection (i.e., perceived salience and coherence of early

detection and belief in the efficacy of early detection), and social support and influence were associated with intention to have an exam. They found that the cost of screening, transportation, knowledge about prostate cancer, and previous knowledge about family history were barriers that impacted the decision for African American men to either be or not be screened for prostate cancer (Myers et al., 2000).

Reports from other studies conducted by Myers et al. show that men may be discouraged from seeking care for symptoms because of the expense of physical examinations and screening blood test and ultrasound studies. Access to primary care physicians in many urban and rural communities is difficult for lower socioeconomic groups, regardless of race. In addition, access to an urologist (the primary specialty treating prostate cancer) is even more limited in the medical care system of the United States (1999).

In a study conducted at the University of Chicago Medical Center in 1993, Myers et al. (1994) examined the receptivity of African American men to prostate cancer screening. They found that most African American men were aware that they are at increased risk for prostate cancer. A substantial proportion of study subjects appeared to believe that it was likely that they would have the disease at some time in life, and more than one in ten subjects thought that they might already have undetected prostate cancer that may be diagnosed as a result of screening. Myers et al. also found that a number of subjects indicated that they worried about the physical discomfort of screening procedures and were concerned that screening could cause sexual problems. The subjects' concern about physical discomfort centered on the DRE rather than the PSA (Myers, Wolf, Balshem, Ross, & Chodak, 1994).

Myers et al. (1994) found that among older African American men (60 years and older) awareness of population risk may serve to condition their receptivity to a more intensive screening examination schedule. The notion that older African American men are at risk for prostate cancer is readily accessible in psychosocial terms and resonates with a strong feeling of community that exists in that segment of the population. As a result, they found that there could be convergence of the notions of populations and personal risk in terms of social identity (Myers et al., 1994). The existence of such a sociocultural dimension of risk perception is consistent with the view that a "collective construct" of risk is a powerful motivating force that can influence the willingness of the individual to undergo early detection examinations. Although awareness of population risk may affect one's willingness to engage in more intensive screening, it is not known how this factor might relate to the readiness of the individual to take other preventive actions.

A study conducted in 1995 by Smith and colleagues looked at African American men and prostate cancer in Jacksonville, Florida. The study examined the level of knowledge African American males had about prostate cancer and the factors affecting knowledge levels. First, they found that a substantial number of African American men did not have adequate knowledge about prostate cancer. Second, lower SES was related to how much a respondent knew about prostate cancer. This study found that income, marital status, education, and type of insurance were significantly related to knowledge. Smith and colleagues related all of these variables, with the exception of marital status, as indicators of a respondent's SES. The individuals with relatively little knowledge about

prostate cancer had lower values on the SES variables (Smith, DeHaven, Grudnig, & Wilson, 1997).

In addition, this study suggested that physicians play an important role in educating patients about prostate cancer. Many of the respondents denied ever having discussed prostate cancer, DREs, or PSA testing with their physicians or having undergone a DRE. Only 38.4% of the respondents reported that their physician "had not" ever mentioned prostate screening to them. Smith et al. concluded that if screening for cancer were available and could make a difference, African American males would participate; they also discovered that there was a need for additional prostate cancer education in the community and that physicians could play a role in providing this education (1997).

Knowledge and Informed Decision-making

Finnegan & Viswanath defines knowledge as factual and interpretive information that leads to understanding or is useful for taking informed action (1989). A study by Viswanath (1993) showed the importance of knowledge in understanding and remembering new information. The researchers concluded that a good basis of knowledge could be more important than good learning strategies in understanding and remembering (Viswanath). Thus, to improve patients' understanding of the benefits and harmful effects of treatments related to prostate cancer and their impact on living, a sufficient level of knowledge must be established by the patient. To ensure that the patient possesses such knowledge, educational efforts must address the patient's

surrounding socio- and structural support systems (Finnegan, Viswanath, Kahn, & Hannan, 1993).

The difficulty of treatment decision-making in early stage prostate cancer is heightened by the lack of scientific evidence to support the choice of one treatment option over another. Optimal treatment remains uncertain and is hampered by an inadequate understanding of the natural history of the disease. Treatment options supported by research to date include radical prostatectomy, radiation therapy, hormonal therapy, or "watchful waiting" (ACS, 2002). Important factors in selecting among options are considerations of potential side effects, such as the incontinence and the impotence associated with radical prostatectomy and radiation therapy and impotence associated with hormonal therapy. The potential for increased morbidity and accelerated mortality are consequences of the watchful waiting approach. Balancing treatment options with predication of average life expectancy is complicated by the lack of precise indicators of tumor aggressiveness, as well as by attitudes of healthcare providers toward aging that continue to influence cancer care. Lacking data to suggest that one treatment option is clearly superior to another complicates the decision process for patients and their families. It is therefore paramount that patients possess enough knowledge to make an informed decision (ACS, 2002).

To increase the knowledge of patients to a level which allows them to make informed decisions is a unique challenge. Patients often look to the physician as their primary source of information regarding treatment options but, due to the lack of scientific credibility of the available treatments, patients must take an active role in the decision-making process. This presents a challenge to the patient and physician alike.

Yarnall and colleagues concluded that, due to the time constraints of the physicians, they are limited in their ability to being able to fully educate their patients (2003). Educational efforts must continue at the patient level, but a change must take place in the source and method of administering such information. Myers et al. found that men were more likely to participate in the informed decision-making process by the provision of health education messages that emphasize the salience and coherence of early detection and elevation population risk (1999). The knowledge levels of prostate cancer treatment options of many of the men in their study were very low to non existent. A group of researchers lead by Wilkinson demonstrated that prostate cancer awareness and knowledge could improve dramatically after a 1-hour seminar on the topic of treatment options for prostate cancer (Wilkinson, List, Sinner, Dai, & Chodak, 2003). Similar to the Wilkinson study, researchers are increasingly turning to decision aids as a primary source of education regarding prostate cancer treatments. Schapira et al. concluded that a videotape decision aid would benefit clinical practice by conveying knowledge to patients regarding treatment options and outcomes and encourage them to participate with their physicians in medical decision-making (Schapira, Meade, & Nattinger, 1997). Onel et al. concluded that standardized video presentations of treatment alternatives for prostate cancer could be incorporated into busy office practices (1998). Both patients and physicians benefited from an increased level of understanding that allowed physician/patient discussions to focus on the critical risk/benefit tradeoffs rather than simply on a description treatment of alternatives. Similar studies assessing the role of videos in the shared decision-making process have led to similar conclusions. Besides videos, researchers have also concluded that brochures and pamphlets have a significant

role. Schapira and VanRuiswyk concluded that an illustrated pamphlet decision -aid was effective in increasing knowledge of prostate cancer treatments when used in a primary care setting (2000). These findings were echoed by Cegala et al., who highlighted the role of brochures in enabling patients to communicate effectively (Cegala, McClure, Marinella, & Post, 2000). Thus, we see decision aids as a promising source for educating patients regarding health matters, in our case prostate cancer treatments, enabling them to eventually make informed decisions. Decision aids may hold promise toward taking the burden of fully educating patients in such matters.

Educational efforts must not be limited to the patient level. Due to the psychological and other mental effects that persons diagnosed with such a disease undergo, it is improper to assume that they fully understand the benefits, harms, or treatment outcomes and how they may affect their lives. Educational efforts to increase their understanding must extend beyond the patient to the patient's social support, which may include spouses, siblings, extended family, or friends. O'Rourke and Germino studied the idea of incorporating the patient's social support, in most cases a spouse, in the decision-making process (1998).

The literature examining the preferences of men and spouses regarding the tradeoffs involved in prostate cancer treatment decisions reflect similar attitudes. Volk and colleagues found that women opted for more radical treatment choices than did their husbands when presented with hypothetical scenarios (Volk, Cass, & Spann, 1999). Women were largely motivated by their desire to prolong time together, as opposed to concerns regarding treatment side effects. When men were presented with similar scenarios, they were more conservative in their choices and rated potential side effects as

more burdensome than their wives. We thus see a difference in viewpoints among patients and their spouses. Educational efforts should be targeted to increase the knowledge levels of couples, with a focus on beliefs about cancer and cure. O'Rourke and Germino (1998) found that such beliefs were identified as major influential factors in the prostate cancer treatment decision-making process among men and their spouses. Methods of education rendered to couples and the patients' other social support included videotapes, brochures/pamphlets, hypermedia programs integrating CD-ROM and internet technology, and the desire to discuss the cancer experiences of friends and relatives and compare them to their own. While the idea of incorporating spouses and other social support in the informed decision-making process is in the developmental stages, researchers must continue to build on the present work to identify patient and spousal/partner needs to ensure that an informed decision is made.

Role of Physician

According to Ajzen and Fishbein (1980), a person's attitude is determined by his or her belief about the outcomes or attributes of performing the behavior, weighted by evaluations of those outcomes or attributes. For physicians to more fully understand the attitudes and values of patients and how these attitudes relate to treatment options, they must undergo training regarding cultural sensitivity and effective communication.

According to the Census Bureau, the proportion of the overall population considered to be "minority" (those persons who are non-White and non-Hispanic origin) would increase from 26.4% in 1995 to 47.2% in 2050. The racial and ethnic composition of the U.S. population has continued to diversify over the past decade.

Between 1990 and 2000, minorities represented 29% of the total U.S. population, and racial minorities grew at a rate that was six times that for non-Hispanic Whites. The implications of these statistics are profound, indeed. Taking these statistics into consideration, along with the Institute of Medicine report, *Unequal Ttreatment: Confronting Racial and Ethnic Disparities in Health Care* (2003), which stresses the need for health care providers to understand cultural variations, it is clear that cultural competence training among health care providers is long overdue.

Culture is reflected in everything we learn through the process of socialization. Culture is a dynamic pattern of learned behavior, values, and beliefs exhibited by a group that shares history and geographic proximity. Especially when a particular racidal/ethnic group has had a negative experience with the scientific community, how can good rapport be built? Culture determines the health attitudes, roles, and behaviors of providers and patients. Culture refers to beliefs and values and includes symbols and language. To more fully understand the attitudes and values of their patients, physicians must enter the dimension of cultural knowledge, which entails becoming familiar with the socioeconomic and demographic characteristics, the belief system, and the health behaviors of the members of another culture. Once a sufficient level of knowledge exists, then healthcare providers can progress to a level of cultural competency, which is the application of cultural knowledge, behaviors, and interpersonal and clinical skills that enhances a provider's effectiveness in managing patient care.

According to the National Medical Association agenda on increasing cultural competence among physicians, health care professionals must welcome the challenge. To properly align themselves with the mission and goals of the National Medical

Association, health care providers must invest the time and effort to gain some basic understanding of the ethno-cultural and racial groups they expect to encounter in their practices. The agenda goes into great depth, providing critical instructions as to how one should assess the environment of patients. For physicians to be able to understand the attitudes and values of their patients, they must be open, unassuming, and attempt to extract information through direct questioning or observation (National Medical Association, 2003).

While this may appear to be a daunting task and quite burdensome, given the heavy workload and time constraints of the physician, I am convinced it will be beneficial in the long term. Feasible methods to ensure that physicians obtain the knowledge, skills, and training to become culturally competent may include offering such training through continuing medical education; introducing a curriculum-based program during medical students' third year, which is usually the beginning of their rotations in healthcare facilities; or offering training during their residency.

Besides increasing the cultural competence levels of physicians, focus should also be given to effective patient-provider communication, which is crucial in the healthcare field. It allows patients to share their attitudes and values with their providers. If the provider does not listen attentively, due in part to cultural and communicative barriers, the chances for a misdiagnosis are increased. Communication is commonly linked to a person's culture and their belief system (Roter, 1987). The terminology and jargon used depends mostly on the culture in which a person was reared. Post, Cegala, and Marinelli (2001) analyzed patient-provider communication through a workbook training session and concluded that patient race accounted for the results, since the workbook training

session had a greater impact on White men than on African American men (2001). It was concluded that taking into account patient characteristics, such as race and culture, could enhance the benefits of communications training for physicians.

To enable physicians to more fully understand the attitudes and values of patients and how they relate to treatment options, efforts aimed at increasing physicians' levels of cultural competency and their ability to communicate with patients should be increased.

Health Belief Model

The constructs, perceived barriers, benefits, susceptibility, and severity of the HBM will be used as framework to develop measures to ascertain the level of knowledge among African American men. Many health educators and researchers alike have utilized various constructs of the HBM to assess the lack of knowledge in the African American community regarding prostate cancer. Shelton and colleagues implemented various constructs of the HBM with a sample of 1,395 African American men. The constructs of interest were perceived barriers and the benefits of prostate cancer screening. The barriers identified were "would be embarrassed," "no way to get there," and "refuse to go." The knowledge about barriers identified in this study could be used to develop interventions aimed at increasing participation in prostate cancer screening among African American men (Shelton, Weinrich, & Reynolds, 1999).

Price, Colvin, and Smith (1993) conducted a study to determine African American adult males' knowledge and perceptions of prostate cancer by using all constructs of the HBM. A total of 290 African American males responded to the survey. As a result, the researchers found that less than half of the subjects knew the age at which one should

begin having prostate examinations. Forty percent did not believe they were more likely than most men to develop prostate cancer. Almost 60% did not know that black men were more likely than White men to develop prostate cancer, whereas 45% thought that if they had prostate cancer it would kill them, and another 28% were uncertain of the effects of the disease. The majority of respondents did not perceive any barriers to having their prostate checked, yet 19% identified the cost of the examination as a potential barrier. Analysis of the effects of age, education level, and income level on the HBM variables showed that level of education had the most significant effect, followed by level of income. This knowledge will be useful in the planning, implementation, and evaluation of health education and intervention programs.

Perceived Susceptibility

Perceived susceptibility is defined as the subjective assessment of the risk of contracting an illness, disease, or condition. The HBM postulates that feeling vulnerable to a condition is a motivating factor to take action to prevent the condition. Several studies have used the perceived susceptibility construct during research on cancer screening. Harewood and colleagues developed a questionnaire to assess patients' perceptions regarding screening for colon cancer (Harewood, Wiersema, & Melton, 2002). The construct of perceived susceptibility was operationalized to determine whether those individuals with higher levels of perceived susceptibility to cancer (e.g., those individuals with a family history of cancer) are more likely than others to agree to screening. To assess the patients' risk perception of colon cancer, four items were used and responses were measured through a four-point Likert-type scale summated with

markers from 1 (*strongly disagree*) to 5 (*strongly agree*). Han and colleagues researched the knowledge and beliefs about breast cancer and breast cancer screening among Korean American women (Han, Williams, & Harrison, 2000). The HBM was the theoretical framework that guided this study. The perceived susceptibility construct was defined as individuals' perceptions of their susceptibility to the illness producing a readiness to take action. The HBM construct, perceived susceptibility, was measured using a 5-point Likert scale summated with markers from 1 (*strongly disagree*) to 5 (*strongly agree*) on a cross-sectional survey. There were three items measuring women's perceived susceptibility about getting breast cancer. Burak and Meyer used the HBM to examine and predict college women's cervical cancer beliefs and screening. Susceptibility to STDs and cervical cancer was assessed using 5-point Likert-type scales where respondents were asked to ascertain the likelihood of their getting STDs or cervical cancer (1, *very unlikely*, to 5, *very likely*) (Burak & Meyer, 1997). Similar to the aforementioned studies, I intended to operationalize the construct "perceived susceptibility" to ascertain if men have enough information regarding their risk of prostate cancer to make an informed decision about screening.

Perceived Severity

Perceived severity refers to how serious or severe an individual views a condition as being. It is assumed that the more serious a health problem, the more likely a person will take action. Burak and Meyer measured college women's perceptions of the seriousness of STDs and cervical cancer with items that assessed levels of agreement about the ease of treating and curing STDs and cervical cancer (1997). The researchers

found that 99% of the women were able to discuss the seriousness of STDs and cervical cancer.

Perceived Barriers and Benefits

The HBM posits that the likelihood of taking an action is determined by beliefs that barriers to action are outweighed by the benefits of the action. Perceived benefits refer to the perception that an action will result in a positive outcome or benefit to one's health. Perceived barriers are those costs or impediments that might prevent an individual from undertaking an action or behavior. Burak and Meyer operationalized the constructs of barriers and benefits through 5-point Likert-type items. Three barriers were examined: pain, embarrassment, and cost. Benefits were measured with 5-point Likert-type items that assessed the importance of gynecological exams and pap test to reproductive and overall health (1997). The researchers found that participants were positive in their beliefs that gynecological screening and Pap tests were beneficial to their health. The women were also able to disclose their barriers, such as the level of embarrassment, pain, and cost. In a similar method, the author of this research study intends to operationalize the constructs, benefits, and barriers, using a 5-point Likert scale.

Summary

While much research has been conducted regarding prostate cancer screening, not much research has been rendered toward informed decision-making. This literature review exemplifies the lack of attitudinal measures regarding men making a decision to

be screened for prostate cancer and what factors impact such an attitude. The HBM should be a useful tool in examining the role of knowledge in the linear pathway of sociodemographic factors and perceived readiness.

CHAPTER 3

METHODOLOGY

The type of data this study will utilize is cross-sectional. The data was extracted from a population of men residing in Tuscaloosa and Jefferson counties in Alabama. Cross-sectional data will only allow inference regarding the specific time the data was extracted from the population. There are two limitations of such a data set: the researcher is not able to make retrospective or prospective projections, and is limited to the time period and place the data were collected. Many of the explanatory variables used are also dependent on time, which makes a certain level of assumption necessary.

Data Collection

Data will be collected through the CDC Special Interest Project-16, *Developing Tools and Methods to Study the Use, Impact and Cost Effectiveness of Prostate Screening*. The investigators collected data from 90 asymptomatic and 90 symptomatic men receiving services from healthcare providers in Tuscaloosa or Birmingham. At the time of enrollment, men were interviewed to collect information related to prostate cancer, including knowledge, awareness of risk, prostate cancer screening experience, and decision-making. The University of Alabama at Birmingham Institutional Review Board reviewed and approved the prescribed protocol (Appendix E).

Instrumentation

The measures used to analyze the variables were extracted from a prostate cancer survey developed by Dr. Robert Hamm, Director for the Clinical Decision-Making Program in the Department of Family and Preventive Medicine at the University of Oklahoma Health Sciences Center. Dr. Hamm developed and modified this survey for his CDC-funded prostate cancer study. The location of his study was Oklahoma City, Oklahoma. The design of the study entailed surveying, via telephone, 316 African American and White men from Oklahoma City (personal communication with Dr. Robert Hamm). For this study, I extracted the six demographic questions, knowledge questions developed by Robert Volk (Volk et al., 1999), and Annette O'Connor's decisional conflict scale (DCS) (O'Connor et al., 1998).

Recruitment

Respondents for the interviews were obtained by systematically selecting men age 40 year and older. The Parker Group, an agency specializing in survey research, conducted 180 surveys for the project. The participants for this project were selected from a list of registered voters in Tuscaloosa and Jefferson counties. Table 1 reports the incidence rates employed to acquire the 180 surveys. In compliance with the University of Alabama Institutional Review Board, we obtained verbal consent from each participant. An Institutional Review Board-approved statement was read to each participant prior to administering the survey. Men presenting for acute care and those planning to move from the area were excluded from the recruitment efforts.

Table 1

Incidence Rate Reports

Survey acquisition qualifiers	Value
Completes	180
Break offs	84
Save	17
Over quota	0
Not qualified	98
Overall incidence rate	74.14%
Complete to break off ratio	2.142857143

The descriptive data for the dialing dispositions are reported in Table 2. The total number of participants eligible for this study was 11,557. The total number of attempts made to contact the participants eligible for this study was 27,181. There were 2,709 call backs scheduled, and the number of those completed was not recorded by the Parker Group. The total time to complete each survey was 29 min and 49 s. Breakoffs and saves are people who started the survey but for some reason did not finish. The difference between them is that the saves have said that we could attempt to call them back and complete the survey at a later time.

Table 2

Total Variance Explained for DCS

	Extraction sums of squared loadings			Rotation sums of squared loadings		
Component	Total	% Variance	Cumulative %	Total	% Variance	Cumulative %
1	5.895	36.841	36.841	3.495	21.841	21.841
2	1.603	10.022	46.863	3.370	21.062	42.903
3	1.359	8.493	55.356	1.746	10.914	53.817
4	1.113	6.959	62.315	1.360	8.498	62.315

Note. Extraction Method: Principal Component Analysis. DCS = decisional conflict scale.

Hypothesis

For this study, the researcher hypothesized that a man's readiness to make an informed decision regarding screening for prostate cancer is mediated by knowledge, which is associated with his sociodemographic factors (age, education, employment, income, marital status, and symptoms status).

Dependent Variable

The dependent variable for this study is perceived readiness. Based on findings from other attitudinal studies related to prostate cancer screening, perceived readiness will be a composite measure of symptom recognition, benefit recognition, and risk assessment for this study (Davison, Degner, & Morgan, 1995; Diefenbach et al., 1996). These variables will be measured through a series of 16 statements comprising the DCS, asking the patient if they strongly agree, agree, are neutral, disagree, or strongly disagree (see Appendix A). The scores range from 16 to 80. A higher score ($\geq$ 48) will reflect a higher level of psychological readiness to make a decision about getting screened for prostate cancer. The internal consistency reliability of the DCS was assessed using Statistical Package for the Social Sciences (SPSS) software. The DCS has good internal consistency reliability (Cronbach alpha coefficient 0.84). A factor analysis was conducted to examine the validity of the DCS. The extraction method used was principal component analysis. To explain the total variance, Eigenvalues were examined, and components with an Eigenvalue $\geq$ 1 were extracted and loaded into a separate model. Table 3 lists the unrotated component matrix. Thus, the factor analysis showed that the items in the DCS are not separate scales.

Table 3

Component Matrix for DCS

	Component			
	1	2	3	4
DECISI	.376	.151	-.119	.585
SUREPC	-2913E-02	.580	.551	-2.092E-02
CLEARCH	.491	-.330	-.364	.334
AWARE	.748	.173	.207	-9.052E-02
BENFITS	.743	-.246	7.930E-02	-.184
RISKS	.584	-.358	9.320E-02	-.195
IMPTBEN	.745	-.241	.276	6.758E-04
ADVICE	-6.449E-02	-2.915E-02	.780	.310
DISADV	.359	-.482	.253	.368
CLCHOIC	.580	-.270	.110	-.362
PRESSU	.792	-2.716E-02	2.737E-02	-.345
SUPPO	.712	.193	5.946E-02	.135
HAVINFO	.707	.389	-.146	-3.987E-02
CONFID	.706	-8.320E-02	-.132	.257
DECCHOI	.684	.363	-.152	.102
SATISD	.658	.474	-.156	-2.495E-02

Note. DCS = decisional conflict scale.

Independent Variable

The independent variables for this study are six socio-demographic factors. The sociodemographic variables that will be examined in this study include age, education, employment, income, marital status, and symptom status. A list of the questions measuring each of the aforementioned variables can be seen in Appendix D.

Mediating Variable

The mediating variable for this study is prostate cancer knowledge. Knowledge measures are based on the constructs from the HBM. The four constructs of the model are perceived susceptibility, perceived severity, perceived barriers, and perceived

benefits. The constructs were operationalized through four separate scales representing each construct (see Appendix C). To ascertain which questions would be used to measure knowledge, the American College of Physicians recommendations were used as a standard. The knowledge questions selected were developed by Robert Volk for a prostate cancer study (Volk et al., 1999) and modified by Dr. Robert Hamm for a separate prostate cancer study (personal communication with Dr. Robert Hamm). Dr. Hamm did not conduct Cronbach's alpha on the knowledge scale, but factor analyzed the DCS and found the subscales to be separate factors. The internal consistency reliability was assessed using SPSS software. The knowledge scale has moderate internal consistency (Cronbach alpha coefficient 0.66).

Analysis Approach

Relationships among the variables were assessed through multiple linear regression analyses. Multiple linear regression analyses are appropriate for continuous independent and dependent variables such as those in the study. The method was also chosen due to its capabilities to describe the extent, direction, and strength of the relationship between several independent variables and a continuous dependent variable. The use of multiple regression analysis to estimate a mediational model requires the following assumptions: that there is no measurement error in the mediator and that the dependent variable does not cause the mediator. Regarding these data, informed decision-making could not be considered a cause of any of the mediating variables I intend to assess. Secondly, the methods of measuring the mediating variables are standardized, having been tested for validity and reliability. For mediation analysis, three

regression equations are estimated. The three regression equations provide the tests of the linkages of the mediation model. A more traditional approach would have been to use ANOVA or chi-square, but they provide a limited test of a mediational hypothesis (Baron & Kenny, 1986).

The central idea of mediational analysis is that various transformation processes internal to the organism mediate the effects of stimuli on behavior (Baron & Kenny, 1986). For example, knowledge is an internal transformational process that may mediate the effects of age on behavior. There is a confounder present in the linear relationship that must be accounted for to understanding the true interaction. A variable is assumed to be a mediator if it accounts for the relation between the predictor (e.g., education) and the dependent variable (e.g., readiness for screening). Through mediational analysis, researchers are allowed to explain how external physical events take on internal psychological significance, speaking to how or why such effects occur (Baron & Kenny). The basic pathway of the model assumes a three-variable system such that there are two causal paths feeding into the dependent variable (Baron & Kenny). Graphically, mediation can be depicted as in Figure 2.

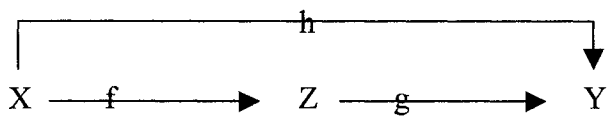

Figure 2. Pathway of the model.

Paths *f* and *g* are called direct effects. The mediational effect, in which X leads to Y through Z, is called the indirect effect. The indirect effect represents the portion of the relationship between X and Y that is mediated by Z.

According to Baron and Kenny, a variable must meet the following criteria to be considered a mediator:

1. Variations in levels of the independent variable significantly account for variations in the presumed mediator
2. Variations in the mediator significantly account for variations in the dependent variable
3. When the paths of the independent and mediating variable are controlled, a previously significant relation between the independent and dependent variables is no longer significant, with the strongest demonstration of mediation occurring when the relationship between independent and dependent variable is zero.

(1986)

Mediational analysis thus assists in accounting for the role of the additional variables, once a relationship between two variables is established. A third variable may provide a clearer interpretation of the relationship between the two variables. Mediation implies a causal hypothesis where an independent variable causes a mediator, which causes a dependent variable. For this study, mediation analysis through multiple regressions was utilized to ascertain the effect of the independent variable (age, education, employment, income, marital status, and symptoms) regressed on the mediating variable,

knowledge, and the mediating variable regressed on the dependent variable, perceived readiness. Two assumptions will guide the regression analysis: the values are independent, and error is normally distributed with a constant variance.

Regression Model

The mediational analysis for this study will be accomplished in the following four steps (Baron & Kenny, 1986). The first step is to determine the effect of the sociodemographic factors (independent variable) on perceived readiness (dependent variable) (Figure 3). The second step is to determine the effect of the sociodemographic factors on knowledge (mediator) (Figure 4). Lastly, the effect of knowledge on perceived readiness is determined (Figure 5). If there is evidence that the sociodemographic factors caused the level of knowledge and this knowledge caused the perceived readiness, there is evidence for mediation of the relationship between sociodemographic factors and perceived readiness (Figure 6).

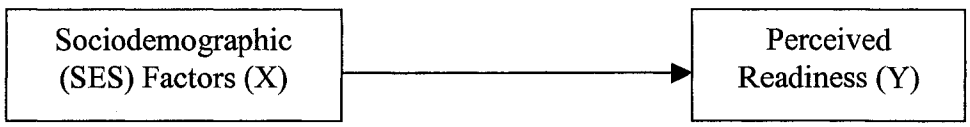

Figure 3. First step in the mediation analysis. ($Y = a + bX_1 + bX_2 + bX_3 + bX_4 + bX_5 + bX_6 + e$).

Figure 4. Second step in the mediation analysis. ($Z = a + bX_1 + bX_2 + bX_3 + bX_4 + bX_5 + bX_6 + e$) .

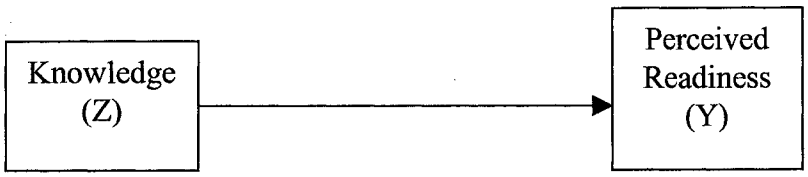

Figure 5. Third step in the mediation analysis. ($Y = a + bZ + e$).

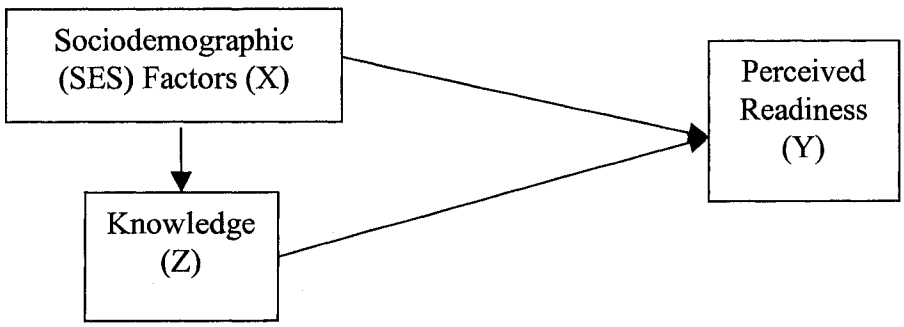

Figure 6. Fourth step in the mediation analysis. ($Y = a + b_1X + b_2Z + e$).

The purpose of steps one through three to establish whether a zero-order relationship exists among the variables. If one or more of these relationships are nonsignificant, researchers usually conclude that mediation is not possible or likely. Assuming that there are significant relationships from steps one through three, one proceeds to step four (Figure 5). In the step four model, some form of mediation is supported if the effect of knowledge remains significant after controlling for SES. If SES

is no longer significant when knowledge is controlled, the finding supports full mediation. If SES remains significant, after accounting for knowledge, the finding supports partial mediation.

Statistical Analyses

Data were analyzed using SPSS (Version 11.0) and Statistical Analysis Software (SAS) (Version 8.1). Descriptive statistics were generated for frequencies, percentages, and means (± standard deviation) to describe the population in terms of age, employment status, marital status, education level, household income, general health status, knowledge levels, and decision levels regarding prostate cancer screening. SAS was used to conduct the mediation analysis. Six multiple regression models were run to assess the role of knowledge in the linear pathway of the independent variables and the dependent variables. They were: (a) age and perceived readiness; (b) education and perceived readiness; (c) employment and perceived readiness; (d) income and perceived readiness; (e) marital status and perceived readiness; and (f) symptoms and perceived readiness.

CHAPTER 4

RESULTS

This chapter presents the results of the data analyses. The primary aim was to ascertain the role of knowledge in the informed decision-making process. For the purpose of the analysis, the extent to which a man was informed and prepared to make a decision regarding prostate cancer screening was measured through the variable perceived readiness. Relationships between the sociodemographic factors and a man's level of readiness were noted, and the role of the mediator, knowledge, was examined. A detailed description of each of the analyses and results follows.

Descriptive Statistics

The participants (N = 180 males) were 50% African American and 50% White. None of the participants were identified as Hispanic/Latino. The mean age was 64 years, standard deviation 10.9, with a range of 40-92 years. None had been diagnosed with cancer, thus they were eligible to participate in the survey. Fifty-six percent (n = 100) reported being told by their doctor that they have high blood pressure. Sixty percent (n = 108) reported being told by their doctor they have high cholesterol. Fifty-nine percent (n = 106) reported being told by their doctor they were not overweight. Seventy-three percent (n = 131) reported their health as being good to excellent. Twenty-one percent of the men had gone to the doctor because they had prostate problems. Eighty-three percent

of the men had never been diagnosed with cancer of any type. Eighty-eight percent of the men reported having health insurance. Eighty-seven percent of the men reported that their health insurance would cover a PSA blood test. Eighty-two percent of the men reported having a general physical exam or health check-up in the past 12 months. Eighty-two percent of the men reported having a DRE conducted at least once, while 39% reported having six or more. Sixty-eight percent of the men reported that if they visited their doctors in the next 6 months, they intended on talking about whether they should be screened for prostate cancer. Over 90% of the men reported that they intended to get screened for prostate cancer each year. Forty-eight percent of the men reported that they would get screened for prostate cancer as recommended for the rest of their lives. These questions were asked prior to the knowledge and readiness items.

Independent Variables

The frequencies for the independent variables are reported in Table 4. Eleven percent of the participants reported having some high school and 25% graduated from high school. Thirty-two percent of the participants reported having some college education, while 18% reported graduating from college. Sixty-eight percent of the participants reported being married, while 12% reported being divorced or separated. Forty-five percent of the participants reported a family income of $40,000 or less. Twenty-five percent of the participants reported a family income of $60,000 or more.

Table 4

Frequencies of All Independent Variables

	N	%
Education level		
(Highest grade or year of school completed)		
Some high chool	20	11
High school graduate	45	25
Some college	58	32
College graduate	33	18
Graduate degree	23	13
Marital status		
Married	122	68
Divorced/Separated	21	12
Widowed	19	11
Never been married	18	10
Family income		
≤ $20,000	38	21
$20,001 to $40,000	44	24
$40,001 to $60,000	26	14
$60,001 to $80,000	20	11
More than $80,000	26	14
Don't know/Refused	26	14
Employment		
Work part time	11	6
Work full time	42	23
Self-employed	8	4
Retired	96	53
Unemployed	5	3
Government assistance	18	10
Age		
≤ 64	97	54
≥ 65	83	46
Symptoms		
Have you ever gone to a doctor because you had prostate problems?		
Yes	37	21
No	143	79
Did the doctor tell you that you had prostatitis, benign prostate enlargement, prostate cancer or something else? *(respondents answered Yes to previous question)?*		
Prostatitis	7	19
Benign prostate enlargement	22	59
Prostate cancer	1	3
No	5	14
Don't know	1	3
Refused	1	3

Twenty-three percent of the participants reported working full-time, while 53% reported being retired. Twenty-one percent of the participants reported going to the doctor because of prostate problems. Of the 21%, 59% reported having benign prostate enlargement, and 19% reported having prostatis.

Mediating Variables

The mediating variable, knowledge, was measured through four domains formulated using the constructs of the HBM—perceived severity, susceptibility, barriers, and benefits. Representative knowledge domains are listed in Table 5 respective to the HBM constructs. The results of the participants' responses to the respective knowledge domains are listed in Table 5. Table 6 lists the percentages of participants identifying the correct knowledge items.

Table 5

Frequencies for the Knowledge Constructs

Health Belief Model constructs	Representative knowledge domains	Survey Question	*N*	%
Perceived Severity	Disease	The most common cause of cancer death in men in the US:		
		Bladder	1	0.56
		Lung	33	18.33
		Prostate	120	66.67
		I don't know enough to guess	26	14.44
		A man always becomes impotent (can't get an erection) after he is treated for prostate cancer.		
		True	21	11.67
		False	102	56.67
		DK	57	31.67
		Refused	0	0

Table 5 (Continued)

Health Belief Model constructs	Representative knowledge domains	Survey Question	*N*	%
Perceived Susceptibility	Risk	Compared to younger men, older men are:		
		More likely to have prostate cancer	134	74.44
		About equally likely to have prostate cancer	17	9.44
		Less likely to have prostate cancer	11	6.11
		I don't know enough to guess	18	10
		Older men are more likely to get prostate cancer.		
		True	156	86.67
		False	20	11.11
		DK	4	2.22
		Refused	0	0
		Black men are more likely to get prostate cancer.		
		True	95	52.78
		False	33	18.33
		DK	52	28.89
		Refused	0	0
		Men who smoke are more likely to get prostate cancer.		
		True	86	47.78
		False	41	22.78
		DK	53	29.44
		Refused	0	0
		Prostate cancer runs in families.		
		True	93	51.67
		False	43	23.89
		DK	44	24.44
		Refused	0	0
Perceived Barriers	Prostate Knowledge	Men have a prostate gland. Can you tell me what the function of the prostate gland is? That is, what does it do for your body?		
		Produce fluid to help urinate	23	12.78
		Produce fluid to help sex activity	46	25.56
		Produce fluid and smooth muscles that contract during sex	31	17.22
		DK/NS	80	44.44
		Where is the prostate gland located?	8	4.44
		Between the bladder and the stomach	127	70.56
		Between the bladder and the rectum	13	7.22
		Between the bladder and the intestines	32	17.78
		DK/NS	0	0

Table 5 (Continued)

Health Belief Model constructs	Representative knowledge domains	Survey Question	*N*	%
		A man can have prostate cancer without having any pain or other symptoms.		
		True		
		False	146	81.11
		DK	23	12.78
		Refused	11	6.11
		If a man has stopped having sex, he doesn't need to be tested for prostate cancer anymore.	0	0
		True		
		False	5	2.78
		DK	167	92.78
		Refused	8	4.44
		After a couple of tests that show everything is ok, it is no longer necessary to be tested for prostate cancer.	0	0
		True		
		False	9	5
		DK	165	91.67
		Refused	6	3.33
Perceived Benefits	Outcomes of Treatment	Which one of these is a possible advantage of screening for prostate cancer?	0	0
		Feeling some reassurance that you do not have cancer if the screen is normal		
		Identify which patients will die of prostate cancer	80	44.44
		Identifying men with a high chance of developing prostate cancer cells	6	3.33
		I don't know enough to guess	46	25.56
		Prostate cancer can be cured if caught early enough.	48	26.67
		True		
		False	169	93.89
		DK	6	3.33
		Refused	5	2.78
			0	0

Table 6

Number of Correct Knowledge Items

Number correct	Frequency	%
0	3/180	1.7
1	6/180	3.3
2	12/180	6.7
3	27/180	15.0
4	37/180	20.6
5	42/180	23.3
6	26/180	14.4
7	16/180	8.9
8	8/180	4.4
9	2/180	1.1
10	1/180	.6

Disease

The respondent's total score for this domain was calculated by summing the correct response. The mean score was 1.0650, standard deviation was .52385, with a range of 0-2. Table 5 shows the distribution of responses. Thirty-three (18%) of the men selected the correct answer to item one, and 102 (57%) selected the correct answer to question two.

Risk

The respondent's total score for this domain was calculated by summing the correct responses. The mean score was 1.3187, and the standard deviation was 1.21910. The scores ranged from 0-5. The distribution of the responses is shown in Table 5. Most men (48%-87%) gave a correct response to all questions, except the one about smoking.

Prostate Knowledge

The respondent's total score for this domain was calculated by summing the correct responses. The mean score was 3.0736, and the standard deviation was .82819. The scores ranged from 0-5. The distribution of the responses is shown in Table 5. Most men (71%-92%) gave a correct response to all questions, except the one about the function of the prostate gland.

Outcomes of Screening

The respondent's total score for this domain was calculated by summing the correct responses. Scores ranged from 0-2. The mean score was 0.686, and the standard deviation was .27519. The distribution of the responses is shown in Table 5. Eighty (44%) of the respondents selected the correct answer to question one, and 169 (94%) selected the correct answer to the second item.

Summary

In summary, the respondent answers to the prostate knowledge questions were presented in this section through four domains: disease, risk, prostate knowledge, and outcomes of screening. Most of the respondents answered the majority of the questions correctly. Overall knowledge scores are summed in Table 6 for each respondent. The mean overall score was 4.6056, and the standard deviation was 1.85357. The ranges of the scores were 0 to 14. Seventy (39%) answered 9 to 10 items correctly, while 3 (2%) answered three items correctly.

Dependent Variable

The results of the participants' responses to the 16 statements used to measure perceived readiness are listed in Table 7. Twelve percent of participants had higher levels of psychological readiness to make a decision about getting screened, i.e., a score ≥ 48. The perceived readiness variable was measured using a Likert scale, with scores ranging from 1-5, with 1 (*strongly disagree*) and 5 (*strongly agree*). The range of perceived readiness was 16-80, the mean was 31.0368, and the standard deviation was 8.49872. The majority of the men (91%) agreed or strongly agreed that they were making the decision to be screened without any pressure from others. The majority of men (74%) disagreed or strongly disagreed that they were not sure whether to be screened for prostate cancer.

Table 7

Frequencies of the Perceived Readiness Variable

	N	%
The decision whether or not to get screened for prostate cancer is easy to make.		
Strongly Agree	54	30
Agree	93	51.67
Neither Agree or disagree	4	2.22
Disagree	20	11.11
Strongly Disagree	7	3.89
Don't Know	2	1.11
Refused	0	0
I am not sure whether I should get screened for prostate cancer.		
Strongly Agree	9	5
Agree	27	15
Neither Agree or disagree	7	3.89
Disagree	97	53.89
Strongly Disagree	38	21.11
Don't Know	2	1.11
Refused	0	0

Table 7 (Continued)

	N	%
It's clear what choice is best.		
Strongly Agree	50	27.78
Agree	91	50.56
Neither Agree or disagree	3	1.67
Disagree	16	8.89
Strongly Disagree	5	2.78
Don't Know	15	8.33
Refused		
I am aware of the prostate cancer screening options available.		
Strongly Agree	55	30.56
Agree	105	58.33
Neither Agree or disagree	2	1.11
Disagree	10	5.56
Strongly Disagree	2	1.11
Don't Know	5	2.78
Refused	1	0.56
I feel I know the benefits of prostate cancer screening.		
Strongly Agree	49	27.22
Agree	108	60
Neither Agree or disagree	0	0
Disagree	3	6.67
Strongly Disagree	7	3.89
Don't Know	1	0.56
Refused	0	0
I feel I know the risks and limitations of prostate cancer screening.		
Strongly Agree	41	22.78
Agree	104	57.78
Neither Agree or disagree	2	1.11
Disagree	15	8.33
Strongly Disagree	5	2.78
Don't Know	11	6.11
Refused	2	1.11
I am clear about how important the benefits of prostate cancer screening are in this decision.		
Strongly Agree	55	30.56
Agree	105	58.33
Neither Agree or disagree	4	2.22
Disagree	8	4.44
Strongly Disagree	1	0.56
Don't Know	5	2.78
Refused	2	1.11
I need more advice about the options (getting screened, or not getting screened).		
Strongly Agree	24	13.33
Agree	59	32.78
Neither Agree or disagree	9	5
Disagree	72	40
Strongly Disagree	12	6.67
Don't Know	3	1.67
Refused	1	0.56

Table 7 (Continued)

	N	%
I am clear about how important the disadvantages (the risks, limitations, and side effects) of prostate cancer screening are in this decision.		
Strongly Agree	31	17.22
Agree	107	59.44
Neither Agree or disagree	5	2.78
Disagree	13	7.22
Strongly Disagree	4	2.22
Don't Know	19	10.56
Refused	1	0.56
I am clear about which is more important (the benefits or the disadvantages).		
Strongly Agree	41	22.78
Agree	118	65.56
Neither Agree or disagree	2	1.11
Disagree	10	5.56
Strongly Disagree	4	2.22
Don't Know	5	2.78
Refused	0	0
I am making this decision without any pressure from others.		
Strongly Agree	51	28.33
Agree	114	63.33
Neither Agree or disagree	2	1.11
Disagree	6	3.33
Strongly Disagree	3	1.67
Don't Know	3	1.67
Refused	1	0.56
I have the right amount of support from others in making this choice.		
Strongly Agree	49	27.22
Agree	110	61.11
Neither Agree or disagree	1	0.56
Disagree	11	6.11
Strongly Disagree	3	1.67
Don't Know	5	2.78
Refused	1	0.56
I feel I have the information I need to make a choice about getting screened for prostate cancer.		
Strongly Agree	54	30
Agree	112	62.22
Neither Agree or disagree	1	0.56
Disagree	6	3.33
Strongly Disagree	5	2.78
Don't Know	1	0.56
Refused	1	0.56

Mediation Analysis

The results of the regression analyses are presented in this section. The dependent variable, perceived readiness, was regressed on the mediating variable, knowledge, and knowledge was regressed on the independent variables (age, education, employment, income, marital status, and symptoms). A p-value of < 0.05 was considered statistically significant.

Age

Table 8 presents the results of regressing the dependent variable, perceived readiness, on the mediating variable, knowledge, and regressing knowledge on the independent variable, age. In step 1, age was significantly related to perceived readiness ($p = 0.0140$). In step 2, age was significantly related to knowledge ($p = 0.0008$). In step 3, knowledge was significantly related to perceived readiness ($p < 0.0001$). In step 4, when controlling for knowledge, age was no longer significantly related to perceived readiness ($p = 0.1522$), and knowledge remained significantly related to perceived readiness resulted in significance ($p < 0.0001$). Because age is no longer significant when knowledge is controlled, the finding supports full mediation of the relationship of age to perceived readiness.

Symptoms

Table 9 presents the results of regressing the dependent variable, perceived readiness, on the mediating variable, knowledge, and regressing knowledge on the independent variable, symptoms. In step 1 symptoms were significantly related to

perceived readiness ($p = 0.0638$). In step 2, symptoms was significantly related to knowledge ($p = 0.0081$). In step 3, knowledge was signifantly related to perceived readiness ($p < 0.0001$). In step 4, when controlling for knowledge, symptoms were no longer significantly related to perceived readiness ($p = 0.3048$), and knowledge remained significantly related to perceived readiness ($p < 0.0001$). As a result of the findings, mediation is not possible or likely because at least one of steps 1-3 is nonsignificant.

Table 8

Age Regression, Full Mediation

Step	Dependent variable	Independent variable	*p*-value
1	Perceived readiness	Age	0.0140
2	Knowledge	Age	0.0008
3	Perceived readiness	Knowledge	< 0.0001
4	Perceived readiness	Age	0.1522
5	Perceived readiness	Knowledge	< 0.0001

Table 9

Symptoms Regression, No Mediation

Step	Dependent variable	Independent variable	*p*-value
1	Perceived readiness	Symptom	0.0638
2	Knowledge	Symptom	0.0081
3	Perceived readiness	Knowledge	< 0.0001
4	Perceived readiness	Symptom	0.3480
5	Perceived readiness	Knowledge	< 0.0001

Marital Status

Table 10 presents the results of regressing the dependent variable, perceived readiness, on the mediating variable, knowledge, and regressing knowledge on the independent variable, marital status. In step 1, marital status was not significantly related to perceived readiness ($p = 0.0006$). In step 2, marital status was significantly related to knowledge ($p = 0.0005$). In step 3, knowledge was significantly related to perceived readiness ($p < 0.0001$). In step 4, when controlling for knowledge, marital status was significantly related to perceived readiness ($p = 0.0235$), and knowledge remained significantly related to perceived readiness ($p = 0.0002$). Since marital status is still significant when knowledge is controlled, the finding supports partial mediation of the relationship of marital status to perceived readiness. Partial mediation occurs because the nature of the relationship changed; for example, the *p*-value is not small as it used to be.

Table 10

Marital Regression, Partial Mediation

Step	Dependent variable	Independent variable	*p*-value
1	Perceived readiness	Marital	0.0006
2	Knowledge	Marital	0.0005
3	Perceived readiness	Knowledge	< 0.0001
4	Perceived readiness	Marital	0.0235
5	Perceived readiness	Knowledge	0.0002

Education

Table 11 presents the results of regressing the dependent variable, perceived readiness, on the mediating variable, knowledge, and regressing knowledge on the independent variable, education. In step 1, education was significantly related to perceived readiness ($p = 0.0011$). In step 2, education was significantly related to knowledge ($p = 0.0004$). In step 3, knowledge was significantly related to perceived ($p < 0.0001$). In step 4 when controlling for knowledge, education was still significantly related to perceived readiness ($p = 0.0142$), and knowledge remained significantly related to perceived readiness ($p = 0.0002$). As a result, the relationship between education and perceived readiness is partially mediated by knowledge. Partial mediation occurs because the nature of the relationship changed; for example, the *p*-value is not as small as it used to be.

Table 11

Education Regression, Partial Mediation

Step	Dependent variable	Independent variable	*p*-value
1	Perceived readiness	Education	0.0011
2	Knowledge	Education	0.0004
3	Perceived readiness	Knowledge	< 0.0001
4	Perceived readiness	Education	0.0142
5	Perceived readiness	Knowledge	0.0002

Income

Table 12 presents the results of regressing the dependent variable, perceived readiness, on the mediating variable, knowledge, and regressing knowledge on the

independent variable, education. In step 1, income was significantly related to perceived readiness ($p = 0.0025$). In step 2, income was significantly related to knowledge ($p < 0.0001$). In step 3, knowledge was significantly related to perceived readiness ($p < 0.0001$). In step 4, when controlling for knowledge, income was significantly related to perceived readiness ($p = 0.0280$), and knowledge remained significantly related to perceived readiness ($p = 0.0001$). As a result, the relationship between income and perceived readiness is partially mediated by knowledge. Partial mediation occurs because the nature of the relationship changed; for example, the p-value is not as small as it used to be.

Table 12

Income Regression, Partial Mediation

Step	Dependent variable	Independent variable	p-value
1	Perceived readiness	Income	0.0025
2	Knowledge	Income	< 0.0001
3	Perceived readiness	Knowledge	< 0.0001
4	Perceived readiness	Income	0.0280
5	Perceived readiness	Knowledge	0.0001

Employment

Table 13 presents the results of regressing the dependent variable, perceived readiness, on the mediating variable, knowledge, and regressing knowledge on the independent variable, employment. In step 1, employment was not significantly related to perceived readiness ($p = 0.7791$). In step 2, employment was significantly related to knowledge ($p < 0.0050$). In step 3, knowledge was significantly related to perceived

readiness ($p < 0.0001$). In step 4, when controlling for knowledge, employment was not significantly related to perceived readiness, ($p = 0.6875$), and knowledge remained significantly related to perceived readiness ($p < 0.0001$). As a result, mediation is not possible or likely because at least one of steps 1-3 is nonsignificant.

Table 13

Employment Regression, No Mediation

Step	Dependent variable	Independent variable	*p*-value
1	Perceived readiness	Employment	0.7791
2	Knowledge	Employment	0.0050
3	Perceived readiness	Knowledge	< 0.0001
4	Perceived readiness	Employment	0.6875
5	Perceived readiness	Knowledge	< 0.0001

Summary

In this chapter, descriptive statistics regarding the sample and findings from the mediation analyses were presented. Knowledge was found to fully mediate the relationship of age to perceived readiness. Knowledge was found to partially mediate the relationship of education, income, and marital status to perceived readiness. Knowledge did not mediate the relationships between symptom and employment and perceived readiness.

CHAPTER 5

DISCUSSION

Currently, there is limited information regarding the type of information needed for older men to make an informed decision regarding prostate cancer screening. Due to the uncertainties surrounding prostate cancer screening, many agencies and groups advocate that patients make an informed decision. While much emphasis has been placed on including the patient in the decision-making process, not much work has been done towards the composition of an informed decision. This study explored the role of knowledge in the decision-making process. Knowledge was treated as a mediating variable in the linear relationship between six sociodemographic variables (age, education, employment, income, marital status, and symptoms) and the outcome variable, perceived readiness, which was used to measure informed decision-making. For the purpose of this research, mediation variables were defined as those internal mechanisms impacting the linear relationship of an independent and dependent variable. The mediating variable changes or accounts for the relationship of the two variables. Findings are discussed in this chapter, and recommendations are made based on the results, which can serve as a catalyst for future prostate cancer screening research.

Conclusions From the Data Analyses

The purpose of this research was to assess the role of knowledge in the informed decision-making process for prostate screening in older African American and White men, living in Alabama. The research question and hypothesis guiding this project and the study conclusions are discussed in this section.

The research question that guided this project is as follows: taking into consideration the sociodemographic factors of older African American and White men in Alabama, what is the role of their prostate cancer knowledge in mediating their readiness to make an informed decision? The sociodemographic variables examined in this study include age, education, employment, income, marital status, and symptoms.

1. Does knowledge mediate the relationship between Age and Perceived Readiness? For this study, the researcher hypothesized that the relationship between a man's age and his readiness to make an informed decision is mediated by knowledge. After controlling for knowledge, age was no longer significantly related to perceived readiness, thus the regression analyses supported full mediation. The findings supported the hypothesis. These results suggest that the relationship between a person's age and his perceived readiness to be involved in the decision-making process is mediated by knowledge. The findings are consistent with national findings that indicate a relationship between age and perceived readiness (Weinrich, Boyd, et al., 1998; Weinrich, Weinrich, Boyd, & Atkinson 1998; Smith et al., 1997).
2. Does knowledge mediate the relationship between Education and Perceived Readiness? The hypothesis for the relationship between education and

perceived readiness was formulated based on the findings of Smith and others (1997). They found the relationship between education and knowledge to be statistically significant. Based on these findings, the researcher hypothesized that the relationship between a man's readiness to make an informed decision regarding screening for prostate cancer and education is mediated by knowledge. After controlling for knowledge, education was still significantly related to perceived readiness. We concluded that knowledge partially mediated the relationship between education and perceived readiness. These findings support the hypothesis and the findings of Smith and others that a relationship exists between education and perceived readiness (Smith et al.).

3. Does knowledge mediate the relationship between Employment and Perceived Readiness? For this study, the researcher hypothesized that the relationship between a man's readiness to make an informed decision regarding screening for prostate cancer and employment is mediated by knowledge. Because employment was not related to perceived readiness ($p = 0.7791$), mediation was not possible. The hypothesis was thus not supported regarding knowledge mediating employment status and perceived readiness.
4. Does knowledge mediate the relationship between Income and Perceived Readiness? The hypothesis for income and perceived readiness was based on the findings of Smith et al. (1997), who found that the relationship of income and knowledge to be statistically significant. Based on their findings, for this study, the researcher hypothesized that the relationship between a man's readiness to make an informed decision regarding screening for prostate cancer and income

is mediated by knowledge. After controlling for knowledge, income remained significantly related to perceived readiness. Thus, partial mediation of the relationship between income and knowledge was seen. These findings supported the hypothesis and the findings of Smith et al. that indicate a relationship between income and perceived readiness (1997).

5. Does knowledge mediate the relationship between Marital Status and Perceived Readiness? The relationship of marital status and knowledge was based on the findings of Smith et al. (1997). The hypothesis was developed based on their findings that marital status is significantly related to knowledge. For this study, the researcher hypothesized that the relationship between a man's readiness to make an informed decision regarding screening for prostate cancer and marital status is mediated by knowledge. After controlling for knowledge, marital status remained significantly related to perceived readiness. Thus, partial mediation of the relationship between marital status and perceived readiness was found. These findings support the hypothesis and the findings of Smith et al. that indicate a relationship between marital status and perceived readiness (1997).
6. Does knowledge mediate the relationship between Symptoms and Perceived Readiness? For this study, the researcher hypothesized that the relationship between a man's readiness to make an informed decision regarding screening for prostate cancer and a symptom is mediated by knowledge. Because symptoms were not related to readiness, mediation was not possible. Thus, the hypothesis was not supported.

Limitations

The results and findings from this study will be useful to researchers and healthcare practitioners involved in prostate cancer research. A number of potential limiting factors were identified through the administration of this research. Those limitations are discussed in an effort to strengthen such research endeavors in the future.

The primary limitations of this study are the lack of random selection, the researcher not being able to make retrospective or prospective projections, and being limited to the time period and place the data were collected. Participants were randomly assigned to this study from a list of men registered to vote in Tuscaloosa and Jefferson Counties in Alabama. Due to this systematic selection of participants, it reduces the ability to generalize the findings and results to the majority of the population. Since this study was conducted only among Alabama males aged 40 years and older, it can only be generalized to males with similar characteristics. A threat to the external validity of this study was inadequate sampling. Future research should entail gathering samples representative of every socioeconomic strata. The sample for this study surpassed the average educational, employment, and income levels of African American and White men residing in Tuscaloosa and Jefferson Counties in Alabama. As a result of the sample not being representative of the entire population, it is not possible to generalize the findings to those men in lower socioeconomic strata. This is problematic, in particular since correlations have been established between low education and income levels as it relates to low prostate cancer knowledge (Smith et al., 1997).

Many of the explanatory variables used are also dependent on time, which makes certain assumptions necessary. The research design for this study was cross-sectional.

This proved to be an effective design since the aim was not to establish a cause and effect relationship but rather an association between two or more variables, which is implied by mediational analysis to some extent.

Efforts to minimize the threats to internal validity entailed assessing the psychometric properties of the instrument. Cronbach alpha test and factor analysis were performed on both of the scales, knowledge and DCS, used in this study. The findings from these analyses were consistent with Dr. Hamm's findings, suggesting that the scales are reliable and valid. To a certain degree, the threat to internal validity was minimized, since the sample in our study was similar to the sample for which the instrument was originally developed, but an additional threat to internal validity this study did not assess was stability reliability or test-retest reliability. The stability of the scales over time was not taken into consideration and thus threatens the internal validity. Various questions may not be as valid or reliable as when they were initially developed. An interesting finding in this study was that symptoms were not related to perceived readiness, even though knowledge is. There is currently a lack of published studies examining this relationship; thus the researcher is not able to expound upon this particular finding. This finding could be the result of the symptoms being measured based on self-reports. The information supplied by the participants has not been substantiated by medical record abstracts. Recall bias could have been introduced, causing inaccurate responses to the survey, thus skewing the results.

Delimitation could have possibly been introduced to the study, since the scales were developed for a specific population, men 40 and older receiving regular healthcare.

As a result, certain populations of men may not be able to answer the items in the instrument correctly due to its structure and development.

Another possible threat to the internal validity was the respondent's ability to answer truthfully to the items on the instruments. Based on some of the responses and the monothematic structure of the survey, it is apparent that the men became cognizant of the survey's topic. As a result, they began to provide answers that were inconsistent with their true perceptions, thus introducing social desirability into the study. Future surveys should avoid monothematic approaches and include a broader scope of questions. Interviewer bias was minimized by the standard method employed by the Parker Group, the agency responsible for data collection. The Parker group used standard language during the administration of the 180 surveys.

Implications for Prostate Cancer Research

In this study, the role of knowledge in the informed decision-making process was examined. Many studies have concluded that "lack of knowledge" is a primary reason why men do not engage in various behaviors. Knowledge may not be a direct cause of a desired behavior change, but it assists in moving the individual toward the desired behavior change. The findings from this study may assist in ensuring that proper educational materials are developed and used. For example, men in this study did not know the function of the prostate gland. One implication of this study is that various sociodemographic factors do not directly affect behavior, but are mediated by internal processes, such as knowledge of the risks and benefits of screening. Thus, educational

materials may be developed and tailored to both age (or income or education) and knowledge levels.

Knowledge of prostate cancer screening and treatment is unique due to the uncertainties regarding the current screening modalities and treatment options. With the absence of data from randomized clinical prospective trials documenting the effectiveness of prostate cancer screening, it is difficult for health care officials to unwaveringly endorse a course of action regarding prostate cancer screening (Weinrich, Boyd, et al., 1998; Weinrich, Weinrich, Boyd, & Atkinson, 1998). Without adequate evidence and documentation regarding the screening modalities for prostate cancer, many health-care agencies and organizations have reservations endorsing a particular method of screening. Decision-making for prostate cancer screening is difficult for men, in particular due to the many unanswered questions concerning the efficacy of treatment (Weinrich, Boyd, et al., 1998; Weinrich, Weinrich, Boyd, & Atkinson, 1998). While much uncertainty exists regarding prostate cancer screening, Farkas and colleagues and Hankey et al. have documented the benefit of screening with increased detection of localized prostate cancer and declines in prostate cancer mortality (Farkas, Schneider, Perrotti, Cummings, & Ward, 1998; Hankey et al., 1999).

Thus, in consideration of the various barriers facing men with regard to screening for prostate cancer, a comprehensive plan should be developed to impact every barrier. This plan suggests an approach some may find difficult to design, implement, and evaluate. Using a comprehensive model, such as the Social Ecology Model, as a basis for such a plan is a good start. While clinical trials are currently being conducted to examine the efficacy of prostate cancer screening, professional organizations are developing

mandates to ensure informed patient decision-making. Informed decision-making must begin, but not end, with the patient. Current literature defines informed decision-making as an interaction between the patient and his healthcare provider, and an exchange of information regarding a particular health topic. To an extent, this method seems to ensure the right balance is obtained when a decision is needed regarding unscientifically proven screening modalities. In view of the current dilemma, the findings of this study and the potential strategies for prostate cancer research are discussed in the subsequent section.

1. The findings from this study demonstrate the roles of sociodemographic variables and perceived readiness and how their relationship is mediated by knowledge. This study found that knowledge mediated the relationship between age, education, income, marital status, and perceived readiness, while employment status and symptoms were found to be unrelated. The findings from this study can be used in the process of developing adequate interventions for men seeking knowledge about prostate cancer. In the process of developing interventions, one cannot assume a man's perceived readiness level is based on SES alone. Knowledge level must be considered as well. For example, even though age was significantly related to perceived readiness, you would not be correct to tailor materials to age alone because the influence of age on perceived readiness is through knowledge. Thus tailoring should take into account both age (or income or education) and knowledge level. Myers et al. found that men were more likely to participate in the informed decision-making process by the provision of health education messages that emphasize the salience and coherence of early detection and population risk (1999). For many of the men in their study, their knowledge

levels of prostate cancer treatment options were very low to non-existent. Building on these findings, the knowledge transmitted in health education messages can be tailored specifically to men based on their age, education, income, and marital status, thus ensuring that they receive a salient and coherent health message.

2. In consideration of the findings from this study, it is paramount that researchers continue to build upon research aimed at identifying the role of knowledge and the type of knowledge desired and used by men engaged in the informed decision-making process. Until further evidence is available regarding the effectiveness of treatment modalities, informed decision-making will be advocated continuously among healthcare workers. The composition of health messages among older men needs further research.

Recommendations

Research regarding informed decision-making should continue to be expanded. As researchers, we should focus on effective educational methods for increasing understanding of the complex issues, involvement of significant others, and development of decision aids and techniques for keeping men informed as the knowledge base for prostate cancer treatments evolve. Shared decision-making by patients and clinicians has been advocated as the ideal method for medical decisions, but research shows that this may not be the most dependable method. Strull, Lo, and Charles researched the role that patients want in medical decision-making and concluded that clinicians underestimate patients' desire for information and discussion, but overestimate patients' desire to make

decisions (1984). Deber and colleagues conducted similar research and concluded that although patients do not wish to be involved in problem solving, few wish to hand over decision-making control to their physicians (Deber, Kraetschemer, & Irvine, 1996). These findings suggest that clinicians need to assist patients in weighing clinical options and support them in making difficult decisions. Both of these studies reinforce the need of a patient educator in healthcare settings. Due to the unintentional limitations of the physicians, the task of educating men should be assumed by individuals capable of making it their priority. Prostate cancer research priorities include the following:

1. The measure of perceived readiness to be screened for prostate cancer or to take an active role in the informed decision-making process should be further examined. There is a lack of scientific evidence explaining the relationship of perceived readiness as an attitudinal measure and informed decision-making. Since informed decision-making is being advocated by many in regards to prostate cancer healthcare, it is paramount this issue is researched and findings are published.
2. The role and impact of health literacy should be further examined. In this study, education was found to impact the level of knowledge that subsequently impacted the level of perceived readiness of the male. Health literacy should be examined further in regards to prostate cancer education. To ensure that salient and coherent messages are being disseminated to men of various socio-strata, it is critical that the men are able to comprehend the information.
3. An area requiring further research, particularly in the context of informed decision-making, is the role of psychosocial factors, such as fear, anxiety, stress,

and embarrassment. Even when men possess adequate knowledge, their likelihood of activating such knowledge is contingent upon their level of readiness, which is also impacted by unresearched psychosocial factors.

In an effort to minimize the burden placed on physicians to educate patients so that they are capable of making informed decisions, the idea of establishing coalitions with similar interests to assist in the process should be examined. According to Butterfoss, Goodman, and Wandersman, coalitions can enable organizations to become involved in new and broader issues without having the sole responsibility of managing or developing those issues (1993). Coalitions can demonstrate and develop widespread public support for issues, actions, or unmet needs. Coalitions can also maximize the power of individuals and groups through joint action and help avoid duplication of efforts. In regards to informed decision-making, coalitions should form among agencies with common interest in prostate cancer and the decision-making process, such as the ACS, prostate cancer centers, local support groups, and civic organizations. United, such coalitions will be able to disseminate information in a timely, conservative, and comprehensive method. They can also assist in the development of a strategy for assessing the cultural competency of the organization and assessing community residents' perceptions.

A third method of expanding the base of practice in educating men to make an informed decision is through formation of collaborations. Similar to coalitions, collaborations also are a vehicle that should be explored to assist in the task of educating men to a level at which they are comfortable to make informed decisions. Collaboration

usually takes place among businesses and organizations on the state and federal levels. Collaborative efforts among agencies with similar interests in prostate cancer education should be explored. An example is the Deep South Network for Cancer Control. The network consists of collaborative efforts from five universities located in Alabama and Mississippi. Such collaborative efforts must take place to ensure that the burden of the task is distributed equally. With regard to prostate cancer, collaborative efforts should include the National Medical Association, AUA, ACS and others with a vested interested in educating men to make informed decisions. Having multiple groups and agencies involved ensures proper dissemination of the relevant information. Collaborative efforts should not be confined to agencies, but also to medical schools. Keefe, Thompson, and Noel (2002) researched the effects of an educational module in the required family practice clerkship. The aims of the module were (a) to enhance medical student learning about common clinical preventive services and (b) to teach students how to inform and involve patients in shared decision-making about those services. The researchers concluded that the medical students were quite willing to accept that shared decision-making is a skill they should have in working with their patients. Our aim must be comprehensive in scope to ensure that the practice research base for informed decision-making is expanded.

In an effort to continue to expand the base of practice research, advocacy needs to take place on a national scale. Similar to breast cancer, prostate cancer needs a face, a spokesperson. Recently, notable individuals have been stricken with the disease and are very anxious to share their story, but have not been presented with such an avenue. A spokesperson for the disease should be considered, not only for educational purposes but

for legislative purposes, in order to draw funding from the federal level and to ensure that monies are allotted to instill educational mechanisms in communities assisting in the informed decision-making process.

The conclusions, limitations, implications, and recommendations were presented in this section. Making a decision to be screened for any disease is a challenge, in particular when uncertainty exists regarding a proper course of action if a test is positive. This study ascertained the role of knowledge in the relationship between sociodemographic factors and perceived readiness. Knowledge was found to mediate the relationship between age, education, income, marital status, and perceived readiness. The implications of these findings suggest that socioeconomic factors do not directly affect behavior, but are mediated by internal processes, such as knowledge. This study found knowledge to be important in readiness for screening. Future prostate cancer education outreach efforts should take these findings into account.

REFERENCES

Agho, A. O., & Lewis, M. A. (2001). Correlates of actual and perceived knowledge of prostate cancer among African Americans. *Cancer Nursing, 24*(3), 165-171.

Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior.* Englewood Cliffs, NJ: Prentice Hall.

American Cancer Society (ACS). (1999). *Cancer facts and figures - 1999.* Atlanta, GA: Author.

ACS. (2002). *Cancer Facts and Figures - 2002.* Atlanta, GA: Author.

Baldwin, D. (1996). A model for describing low-income African-American women's participation in breast and cervical cancer early detection and screening. *Advances in Nursing Science, 19,* 27-42.

Bandura, A. (1977). *Social learning theory.* Orrville, OH: Prentice Hall.

Baquet, C. R., Horm, J. W., Gibbs, T., & Greenwald, P. (1991). Socioeconomic factors and cancer incidence among Blacks and Whites. *Journal of the National Cancer Institute, 83,* 1231-1235.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*(6), 1173-1182.

Bartlett, D. (1999). The new health care consumer. *Journal of Health Care Finance, 25,* 44-51.

Bretton, P. R. (1994). Prostate-specific antigen and digital rectal examination in screening for prostate cancer: A community-based study. *Southern Medical Journal, 87,* 720-723.

Brown, D. (1997). Study explores African Americans and cancer [Electronic version]. *Wayne State University Newspaper.* Retrieved January 12, 2004, from http://www.media.wayne.edu/iws.back.issues/iws10_30_97/cancer.html

Burak, L. J., & Meyer, M. (1997). Using the health belief model to examine and predict college women's cervical cancer screening beliefs and behavior. *Health Care for Women International, 18*, 251-262.

Butterfoss, F. D., Goodman, R. M., & Wandersman, A. (1993). Community coalitions for prevention and health promotion. *Health Education Research, 8*(3), 315-330.

Carter, B. S., Bova, G. S., & Beaty, T. H. (1993). Hereditary prostate cancer: Epidemiologic and clinical features. *Journal of Urology, 150*(3), 797-802.

Cegala, D. J., McClure, L., Marinella, T. M., & Post, D. M. (2000). The effects of communication skills training on patients' participation during medical interviews. *Patient Education and Counseling, 41*, 209-222.

Center for Health Care Strategies, Inc. (CHCS). (1998). *Health literacy and understanding medical information.* Retrieved January 12, 2004, from http://www.chcs.org/resource/hl.html

Centers for Disease Control and Prevention (CDC). (1999). *National Center for Chronic Disease Prevention and Health Promotion.* Atlanta, GA: Department of Health and Human Services.

CDC. (2000). *Future directions for public health practice and research in prostate cancer.* Atlanta, GA: Department of Health and Human Services.

Charles, C., Gafni, A., & Whelan, T. (1997). Shared decision-making in the medical encounter: what does it mean? (or it takes at least two to tango). *Social Science and Medicine, 44,* 681-692.

Davison, B. J., Degner, L. F., & Morgan, T. R. (1995). Information and decision-making preferences of men with prostate cancer. *Oncology Nursing Forum, 25*(9), 1401-1408.

Dayal, H. H., & Chiu, C. (1982). Factors associated with racial differences in survival for prostatic carcinoma. *Journal of Chronic Diseases, 35*, 553-560.

Deber, R. B., Kretschemer, N., & Irvine, J. (1996). What role do patients wish to play in treatment decision making? *Archives of Internal Medicine, 156,* 1414-1420.

DiClemente, C. C., Prochaska, J. O., Fairhurst, S. K., Velicer, W. F., Velasquez, M. M., & Rossi, J. S. (1991). The process of smoking cessation: An analysis of precontemplation, contemplation, and preparation stages of change. *Journal of Consulting and Clinical Psychology, 59,* 295-304.

Diefenbach, P. N, Ganz, P. A, Pawlow, A. J., & Guthrie, D. (1996). Screening by the prostate-specific antigen test: What do the patients know? Department of Psychiatry, UCLA School of Medicine. *Journal of Cancer Education, 11*(1), 39-44.

Elit, L., Chares, C., Gold, I., Gafni, A., Farrell, S., Tedford, S., et al. (2003). Women's perceptions about treatment decision-making for ovarian cancer. *Gynecologic Oncology, 88,* 89-95.

Farkas, A., Schneider, D., Perrotti, M., Cummings, K. B., & Ward, W. S. (1998). National trends in the epidemiology of prostate cancer, 1973 to 1994: Evidence for the effectiveness of prostate-specific antigen screening. *Adult Urology, 52,* 444-449.

Finnegan, J. R., & Viswanath, K. (1989). Health and communication: Medical and public health influences on the research agenda. In E. Berlin-Ray & L. Donohew (Eds.), *Communication and Health: Systems and Applications* (pp. 9-24). Hillsdale, NJ: Erlbaum.

Finnegan, J. R., Viswanath, K., Kahn, E., & Hannan, P. (1993). Exposure to sources of heart disease prevention information: Community type and social group differences. *Journalism Quarterly, 70,* 569-584.

Fitzpatrick, P., Corcoran, N., & Fitzpatrick, J. M. (1998). Prostate cancer: How aware is the public? *British Journal of Urology, 82,* 43-48.

Giovannucci, E., Ascherio, A., Rimm, E. B., Colditz, G. A., Stampfer, M. J., & Willett, W. C. (1993). A prospective cohort study of vasectomy and prostate cancer in U. S. men. *JAMA 269*(7), 873-877.

Giovannucci, E., Rim, E. B., & Colditz, G. A. (1993). A prospective study of dietary fat and risk of prostate cancer. *Journal of the National Cancer Institute, 85,* 1571.

Giovannucci, E., Tosteson, T. D., Speizer, F. E., Ascherio, A., Vessey, M. P., & Colditz, G. A. (1993). A retrospective cohort study of vasectomy and prostate cancer in U. S. men. *JAMA 269*(7), 878-882.

Guidry, J. J., & Walker, V. D. (1999). Assessing cultural sensitivity in printed cancer materials. *Cancer Practice, 7*(6), 291-296.

Han, Y., Williams, R. D., & Harrison, R. A. (2000). Breast cancer screening knowledge, attitudes and practices among Korean American women. *Oncology Nursing Forum, 27*(10), 1585-1591.

Hankey, B. F., Feuer, E. J., Clegg, L. X., Hayes, R. B., Legler, J. M., Prorok, P. C., et al. (1999). Cancer surveillance series: Interpreting trends in prostate cancer - Part I: Evidence of the effects of screening in recent prostate cancer incidence, mortality, and survival rates. *Journal of the National Cancer Institute, 91,* 1017-1024.

Harewood, G. C., Wiersema, M. J., & Melton, L. J. (2002). A prospective, controlled assessment of factors influencing acceptance of screening colonoscopy. *The American Journal of Gastroenterology, 97*(12), 3186-3194.

Keefe, C. W., Thompson, M. E., & Noel, M. M. (2002). Medical students, clinical preventive services, and shared decision-making. *Academic Medicine, 77,* 1160-1161.

Kim, S. P., Knight, S. J, Tomori, C., Colella, K. M., Schoor, R. A., Shih, L., et al. (2001). Health literacy and shared decision-making for prostate cancer patients with low socioeconomic status. *Cancer Investigation, 19*(7), 684-691.

Kirby, R. S., Kirby, M. G., Fernely, M. R., McNicholas, T., McLean, A., & Webb, J. A. (1994). Screening for carcinoma of the prostate: A GP based study. *British Journal of Urology, 74,* 64-71.

Kramer, B. S., Brown, M. L., Prorok, P. C., Potusky, A. L., & Gohagan, J. K. (1993). Prostate cancer screening: What we know and what we need to know. *Annals of Internal Medicine, 119,* 914-923.

Maiman, L. A., & Becker, M. H. (1974). The health belief model: Origins and correlates in psychological theory. *Health Education Monographs, 2*(4), 336-353.

Mills, P. K., Beeson, W. L., Phillips, R. L., & Fraser, G. E. (1994). Cancer incidence among California Seventh-Day Adventists, 1976-1982. *American Journal of Clinical Nutrition, 59*(5), 1136S-1142S.

Myers, R. E., Chodak, G. W., Wolf, T. A., Burgh, D. Y., McGory, G. T., Marcus, S. M., et al. (1999). Adherence by African American men to prostate cancer education and early detection. *Cancer, 86,* 88-104.

Myers, R. E., Hyslop, T., Wolf, T. A., Burgh, D., Kunkel, E. J., Oyesanmi, O. A. et al. (2000). African-American men and intention to adhere to recommended follow-up for an abnormal prostate cancer early detection examination result. *Urology, 55,* 716-720.

Myers, R. E., Wolf, T. A., Balshem, A. M, Ross, E. A., & Chodak, G. W. (1994). Receptivity of African-American men to prostate cancer screening. *Urology, 43,* 480-497.

National Institutes of Health-National Cancer Institute. (1996). *What You Need to Know About Prostate Cancer, 1996.* Bethesda, MD: NIH publication no. 96-1576.

National Medical Association. (2003). *NMA Cultural Competence Primer.* Thorofare, NJ: Slack.

O'Connor, A. M., Tugwell, P., Wells, G. A., Elmslie, T., Jolly, E., Hollingworth, G., et al. (1998). A decision aid for women considering hormone therapy after menopause: Decision support framework and evaluation. *Patient Education and Counseling, 33,* 267-279.

O'Rourke, M. E., & Germino, B. B. (1998). Prostate cancer treatment decisions: A focus group exploration. *Cancer Nursing, 25*(1), 97-103.

Oesterling, J., Fuks, A., Lee, C. T., & Sacher, H. I. (1997). Section 4: Cancer of the prostate. In V. T. Evita, Jr., S. Hellman, & S. A. Rosenberg (Eds). *Cancer: Principles & Practices of Oncology* (Vol. 1, 5th ed., pp. 1418-1467). Philadelphia: Lippincott-Raven.

Onel, E., Hamond, C., Wason, J. H., Berlin, B. B., Ely, M. G., Laudone, V. P., et al. (1998). Assessment of the feasibility and impact of shared decision-making in prostate cancer. *Urology, 51,* 63-66.

Partnership for Clear Health Communication. (2003). What is health literacy? Retrieved January 12, 2004, from: http://www.askme3.org/PFCHC/what_is_health.asp

Pienta, K. J., & Esper, P. S. (1991). Risk factors for prostate cancer. *Annals of Internal Medicine, 118*(10), 793-803.

Post, D. M., Cegala, D. J., & Marinelli, T. M. (2001). Teaching patients to communicate with physicians: The impact of race. *Journal of the National Medical Association, 93,* 6-12.

Price, J. H., Colvin, T. L., & Smith, D. (1993). Prostate cancer: Perceptions of African American males. *Journal of the National Medical Association, 85,* 941-947.

Ragland, K. E., Selvin, S., & Merrill, D.W. (1991). Black-White differences in stage-specific cancer survival: analysis of seven selected sites. *American Journal of Epidemiology, 133,* 672-682.

Roter, D. L. (1987). Patient participation in clinical decision-making. *Patient Education and Counseling, 9,* 25-31.

Sakr, W. A., Grignon, D. J., & Crissman, J. D. (1994). High grade prostatic intraepithelial neoplasia (HGIN) and prostatic adenocarcinoma between the ages of 20-69: An autopsy study of 249 cases. *In Vivo, 8,* 439.

Schapira, M. M., Meade, C., & Nattinger, A. B. (1997). Enhanced decision-making: The use of a videotape decision-aid for patients with prostate cancer. *Patient Education and Counseling, 30,* 119-127.

Schapira, M. M., & VanRuiswyk, J. (2000). The effect of an illustrated pamphlet decision-aid on the use of prostate cancer screening tests. *The Journal of Family Practice, 49*(5), 418-424.

Shavers, V. L., & Brown, M. L. (2002). Racial and ethnic disparities in the receipt of cancer treatment. *Journal of the National Cancer Institute, 94*(5), 334-357.

Shelton, P., Weinrich, S., & Reynolds, W. A. (1999). Barriers to prostate cancer screening in African American men. *Journal of the National Black Nurses Association, 10*(2), 14-28.

Smedley, B. D., Stith, A. Y., & Nelson, A. R. (2002). Unequal Treatment: Confronting racial and ethnic disparities in healthcare. Institute of Medicine Report. Washington, DC: National Academy Press.

Smith, G. E., DeHaven, M. J., Grudnig, J. P., & Wilson, G. R. (1997). African-American males and prostate cancer: assessing knowledge levels in the community. *Journal of the National Medical Association, 89,* 387-391.

Spitz, M. R., Currier, R. D., Fueger, J. J., Babaian, R. J., & Newell, G. R. (1991). Familial patterns of prostate cancer: A case-control analysis. *Journal of Urology, 146*(5), 1305-1307.

Steele, C. B., Miller, D. S., Maylahn, C., Uhler, R. J., & Baker, C. T. (2000). Knowledge, attitudes, and screening practices among older men regarding prostate cancer. *American Journal of Public Health, 90,* 1595-1600.

Strull, W. M., Lo, B., & Charles, G. (1984). Do patients want to participate in medical decision making? *JAMA, 252*(21), 2990-2994.

Targonski, P. V., Guinan, P., & Phillips, C. W. (1991). Prostate cancer: The stage disadvantage in the black male. *Journal of the National Medical Association, 83,* 1094-1096.

Viswanath, K. (1993). Motivation and the "knowledge gap": Effects of a campaign to reduce diet-related cancer risk. *Communication Research, 20,* 546-563.

Volk, R. J., Cass, A. R., & Spann, S. J. (1999). A randomized controlled trial of shared decision-making for prostate cancer screening. *Archives of Family Medicine, 8,* 333-340.

Weinrich, S. (2001). The debate about prostate cancer screening: What nurses need to know. *Seminars in Oncology Nursing, 17*(2), 78-84.

Weinrich, S. P., Boyd, M. D., Weinrich, M., Greene, F., Reynolds, W. A. Jr., & Metlin, C. (1998). Increasing prostate cancer screening in African American men with peer-educator and client-navigator interventions. *Journal of Cancer Education, 13*(4), 213-219.

Weinrich, S. P., Weinrich, M. C., Boyd, M. D., & Atkinson, C. (1998). The impact of prostate cancer knowledge on cancer screening. *Oncology Nursing Forum, 25*(3), 527-534.

Wilkinson, S., List, M., Sinner, M., Dai, L., & Chodak, G. (2003). Educating African-American men about prostate cancer: Impact on awareness and knowledge. *Urology, 61,* 308-313.

Yarnall, K. S., Pollack, K. I., Ostbye, T., Krause, K. M., & Michener, J. L. (2003). Primary care: Is there enough time for prevention? *American Journal of Public Health, 93*(4), 635-641.

APPENDIX A

DECISIONAL CONFLICT SCALE

DECISIONAL CONFLICT SCALE

Now, thinking about the decision whether to get screened for prostate cancer, please look at the following comments some people make when deciding about screening.

- Please show how strongly you agree or disagree with these comments by CIRCLING THE NUMBER from 1 (strongly disagree) to 5 (strongly agree) that best shows how you feel about the prostate cancer screening decision.

		Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
1)	The decision whether or not to get screened for prostate cancer is easy to make.	1	2	3	4	5
2)	I am not sure whether I should get screened for prostate cancer.	1	2	3	4	5
3)	It's clear what choice is best.	1	2	3	4	5
4)	I am aware of the prostate cancer screening options available.	1	2	3	4	5
5)	I feel I know the benefits of prostate cancer screening.	1	2	3	4	5
6)	I feel I know the risks and limitations of prostate cancer screening.	1	2	3	4	5
7)	I am clear about how important the benefits of prostate cancer screening are in this decision.	1	2	3	4	5
8)	I need more advice about the options (getting screened, or not getting screened).	1	2	3	4	5
9)	I am clear about how important the disadvantages (the risks, limitations, and side effects) of prostate cancer screening are in this decision.	1	2	3	4	5
10)	I am clear about which is more important (the benefits or the disadvantages).	1	2	3	4	5
11)	I am making this decision without any pressure from others.	1	2	3	4	5
12)	I have the right amount of support from others in making this choice.	1	2	3	4	5
13)	I feel I have the information I need to make a choice about getting screened for prostate cancer.	1	2	3	4	5
14)	I am confident that the choice I would make would show what is most important.	1	2	3	4	5
15)	I would stick with my decision about screening.	1	2	3	4	5
16)	I will be satisfied with my decision about screening.	1	2	3	4	5

APPENDIX B

KNOWLEDGE QUESTIONS ABOUT PROSTATE CANCER

QUESTIONS ABOUT PROSTATE CANCER

THE FOLLOWING QUESTIONS ASK ABOUT YOUR KNOWLEDGE OF PROSTATE CANCER. PLEASE CHOOSE THE BEST ANSWER.

1) Which of these cancers is the most common cause of cancer death in men in the United States?

___a) Bladder cancer
___b) Lung cancer
___c) Prostate cancer
___d) I don't know enough to guess

2) Compared to younger men, older men are:

___a) More likely to have prostate cancer
___b) About equally likely to have prostate cancer
___c) Less likely to have prostate cancer
___d) I don't know enough to guess

3) Which one of the following statements is a possible advantage of screening for prostate cancer?

___a) Feeling some reassurance that you do not have cancer if the screen is normal
___b) Identifying which patients will die of prostate cancer
___c) Identifying men with a high chance of developing prostate cancer cells in the future
___ f) Alerting doctor to check further for signs of prostate cancer
___e) I don't know enough to guess

4) Men have a prostate gland. Can you tell me what the function of the prostate gland is? That is, what does it do for your body?

_a) Produce fluid to help urinate
_b) Produce fluid to help sexual function
_c) Produce fluid and smooth muscles that contract during sex
_d) Produces fluid in ejaculate that helps sperm to move
_e) DK/NS
_ f) REF

5) Where is the prostate gland located?

_a) Between the bladder and the stomach
_b) Between the bladder and the rectum
_c) Between the bladder and the intestines
_d) DK/NS
_e) REF

6) I am going to read you a series of statements about prostate cancer. Please tell me whether you think each statement is true or **false**.

	TRUE	FALSE	DK/NS	REF
a. A man can have prostate cancer without having any pain or other symptoms.	1	2	8	9
b. If a man has stopped having sex, he doesn't need to be tested for prostate cancer anymore.	1	2	8	9
c. After a couple of tests that show everything is ok, it is no longer necessary to be tested for prostate cancer.	1	2	8	9
d. Older men are more likely to get prostate cancer than young men.	1	2	8	9
e. Black men are more likely to get prostate cancer.	1	2	8	9
f. Prostate cancer can be cured if caught early enough.	1	2	8	9
g. A man always becomes impotent (can't get an erection) after he is treated for prostate cancer.	1	2	8	9
h. Men who smoke are more likely to get prostate cancer.	1	2	8	9
I. Prostate cancer runs in families.	1	2	8	9

APPENDIX C

REPRESENTATIVE KNOWLEDGE DOMAINS

Health Belief Model Constructs	Representative Knowledge Domains	Survey Question
Perceived Severity	**Disease**	-The most common cause of cancer death in men in the United States? -A man always becomes impotent (can't get an erection) after he is treated for prostate cancer.
Perceived Susceptibility	**Risk**	-Compared to younger men, older men are: -Older men are more likely to get prostate -Black men are more likely to get prostate cancer. -Men who smoke are more likely to get prostate cancer. -Prostate cancer runs in families.
Perceived Barriers	**Lack of Knowledge**	-Men have a prostate gland. Can you tell me what the function of the prostate gland is? That is, what does it do for your body? -Where is the prostate gland located? -A man can have prostate cancer without having any pain or other symptoms -If a man has stopped having sex, he doesn't need to be tested for prostate cancer anymore. -After a couple of tests that show everything is ok, it is no longer necessary to be tested for prostate cancer.
Perceived Benefits	**Treatment of Outcomes**	-Which one of the following statements is a possible advantage of screening for prostate cancer? -Prostate cancer can be cured if caught early enough.

APPENDIX D

DEMOGRAPHIC QUESTIONS

DEMOGRAPHICS

1) What is your Marital Status?

___a) Married
___b) Divorced/separated
___c) Widowed
___d) never been married
___e) Member of an unmarried couple (living together or dating exclusively)

2) What is the highest grade or year of school completed? (Check category that includes it)

___a) Never attended school
___b) Grades 1 through 8 (elementary)
___c) Grades 9 through 11
___d) Grade 12 or GED (high school)
___e) Post secondary vocational school (college graduate)
___f) College 1 year to 3 years (some college or technical school)
___g) Received an Associate's degree
___h) College 4 years or more
___i) Masters degree
____j) Doctorate

3) Consider your total combined household income during the past 12 months. That is money from jobs, social security, retirement income, unemployment, public assistance and so forth. Of the following income groups which item best represents the total combined family income during the past 12 months?

___a) Less than $5,000
___b) $5,000 to $10,000
___c) $10,001 to $20,000
___d) $20,001 to $30,000
___e) $30,001 to $40,000
___f) $40,001 to $60,000
___g) $60,001 to $80,000
___h) More than $80,000

5) Which best describes your current employment?

___a) Work part time
___b) Work full time
___c) Student
___d) Homemaker
___e) Self employed
___f) Retired
___g) Unemployed
___h) Government Assistance (welfare or disability)

8) Have you ever gone to a doctor because you had prostate problems?

_a) Yes
_b) No
_c) DK/NS
_d) REF

2.C. What is your age please? _____

(Under age 40-Black/50-White, not eligible)-Skip to 2.G.

08 DK/NS---Skip to 2.G.
09 REF---Skip to 2.G.

2.D. What is your date of birth? ___/____/19__

08 DK/NS---Skip to 2.G.
09 REF---Skip to 2.G.

APPENDIX E

INSTITUTIONAL REVIEW BOARD APPROVAL FORM

12/8/'03

Project Revision/Amendment Form

(Rev. 7-15-02)

(PLEASE TYPE: In MS Word, highlight the shaded, underlined box and replace with your text; double-click checkboxes to check/uncheck.)

Link: Project Revision/Amendment Form

Federal regulations require IRB approval before implementing proposed changes.
Please complete this form and attach the changed research documents. Change means any change, in content or form, to the protocol, consent form, or any supportive materials (such as the Investigator's Brochure, questionnaires, surveys, advertisements, etc.)

Principal Investigator: *Dr. Max Michael* Date: *11-10-2003*
Contact: *Brian Rivers* *Phone* #: *205-975-5429*
Campus Address: 227 Ryals Public Health Building
Study/Protocol Title: Developing Tools and Methods to Study the Use, Impact and Cost Effectiveness of Prostate Cancer Screening
IRB Protocol #: X010207008

RECEIVED
DEC - 5 2003
OFFICE OF INSTITUTIONAL REVIEW BOARD

Current Status of Project: (check only one)

- ☒ Currently in Progress (# participants entered: *0*)
- ☐ Study has not yet begun (no participants entered)
- ☐ Closed to participant enrollment (remains active); # participants on therapy/intervention_____; # participants in long-term follow-up only_____

This submission changes the status of this study in the following manner: (check all that apply)

- ☒ Protocol Revision
- ☒ Protocol Amendment
- ☐ Study Closed to participant entry
- ☐ Study Terminated
- ☐ Revised Consent Form
- ☐ Addendum (new) consent form
- ☐ Enrollment temporarily suspended by sponsor
- ☐ Other, (specify) _____

Briefly describe, and explain the reason for, the revision or amendment. Include a copy of supportive documents with changes highlighted. Please highlight changes/revisions/additions to the consent form, protocol, research questionnaire, et

1. *In the original protocol, it was stated the subjects would be paid $10 after the completion of each interview. In addition, we would like to revise the protocol to include after the completion of the baseline survey, a copy of the book Sufficient Grace: Surviving Prostate Cancer, by L Rudy Broomes, MD, will also be disseminated to the men, free of charge, as an additional incentive. The books will be purchased through SIP-16 (IRB protocol X010207008) and will then be distributed to the men, based on the completion of the baseline survey. The books will only be distributed ONLY after the completion of the baseline survey.*
2. Does this revision/amendment revise or add a genetic or storage of samples component? ☐ Yes ☒ No
   If yes, please see the Guidebook to assist you in revising or preparing your submission documents or call the IRB office at 4-3789.
3. Does the change affect subject participation (e.g. procedures, risks, costs, etc.)? ☐ Yes ☒ No
4. Does the change affect the consent document? ☐ Yes ☒ No
   If yes, briefly discuss the changes. _____
   Include the revised consent form with the changes highlighted.
   Will any participants need to be reconsented as a result of the changes? ☐ Yes ☒ No
   If yes, when will participants be reconsented?_____

Signature of Principal Investigator _____ Date 12/7/03

APPROVED
FOR IRB USE ONLY 12/08/03
MARILYN DOSS, M.A.
Vice Chair – IRB

Rev DoA 6-5-03

GRADUATE SCHOOL
UNIVERSITY OF ALABAMA AT BIRMINGHAM
DISSERTATION APPROVAL FORM
DOCTOR OF PHILOSOPHY

Name of Candidate Brian Maurice Rivers

Graduate Program Health Education/Health Promotion

Title of Dissertation An Assessment of Knowledge Levels Regarding Informed Decision-Making of Older African-American and White Men Residing in Two Alabama Counties

I certify that I have read this document and examined the student regarding its content. In my opinion, this dissertation conforms to acceptable standards of scholarly presentation and is adequate in scope and quality, and the attainments of this student are such that he may be recommended for the degree of Doctor of Philosophy.

Dissertation Committee:

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Connie L. Kohler	**, Chair**	Connie Kohler
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Date 3/30/04