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Prostate Cancer Screening Patterns among African American Men in the Rural South

JoAnn Simon Oliver

ACCEPTANCE

This dissertation, PROSTATE CANCER SCREENING PATTERNS AMONG AFRICAN AMERICAN MEN IN THE RURAL SOUTH by JoAnn Simon Oliver was prepared under the direction of the candidate's dissertation committee. It is accepted by the committee members in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Nursing in the Byrdine F. Lewis School of Nursing in the College of Health and Human Sciences, Georgia State University.

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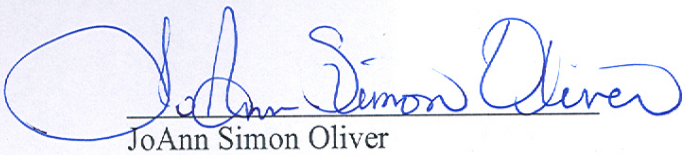

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ABSTRACT

PROSTATE CANCER SCREENING PATTERNS AMONG AFRICAN AMERICAN MEN IN THE RURAL SOUTH

by

JOANN SIMON OLIVER

Prostate cancer is the most commonly diagnosed cancer and the second leading cause of cancer death among men in the United States. In African American men, the disease is typically detected at a more advanced stage and mortality is twice the rate of Caucasian men. However, African American men are less likely to participate in prostate cancer screening. The purpose of this descriptive study was to assess the relationship between health beliefs, knowledge, and selected demographic variables (age, income and education) and a man's decision to participate in prostate cancer screening among African American men dwelling in rural communities. The conceptual framework for the study was the Health Belief Model.

Participants for the study were recruited through contacts within rural communities within west central Alabama. A convenience sample of 90 African American men between the ages of 40-82 years of age was recruited.

Analysis of the research data indicated that there was a statistically significant difference in motivation (health belief), knowledge, and age of men who participated in prostate cancer screening compared to those who did not participate in prostate cancer screening.

Forward logistic regression was used to determine which independent variables [health beliefs (benefits, barriers, motivation); knowledge; age; income; and education]

were predictors of prostate cancer screening. Results indicated the overall model of one predictor, motivation, was statistically reliable in predicting prostate cancer screening participation among the rural dwelling men surveyed. The model accounted for 15 to 20% of the variance. The sensitivity of the model in predicting those who would participate in prostate cancer screening was 85%. The odds of those who would participate in prostate cancer screening were 1.3 times greater for each one unit increase in motivation.

Results indicate a need for more educational and motivational interventions to promote informed decision making by African American men in regards to prostate screening activities. These interventions need to be culturally sensitive and geared toward African American men, specifically those living in rural areas.

PROSTATE CANCER SCREENING PATTERNS AMONG AFRICAN AMERICAN MEN IN THE RURAL SOUTH

by

JOANN SIMON OLIVER

A DISSERTATION

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LIST OF ABBREVIATIONS

PCS	Prostate Cancer Screening
PSA	Prostate Specific Antigen
DRE	Digital Rectal Examination
HBM	Health Belief Model
ACS	American Cancer Society
PLCO	Prostate, Lung, Colorectal, Ovarian
HBMS	Health Belief Model Scale
KPCS	Knowledge of Prostate Cancer Scale
SES	Socioeconomic Status

CHAPTER I

INTRODUCTION

The Research Problem

One in six American men will develop prostate cancer in the course of a lifetime. Prostate cancer is the most commonly diagnosed cancer, and the second leading cause of cancer death among men in the United States. Approximately 218,890 men will be diagnosed with prostate cancer and 27,050 men will die of the disease in 2007 (American Cancer Society [ACS], 2007).

When compared with males of Hispanic or Caucasian ethnicity, African American men are at greater risk for development of prostate cancer. This is further complicated by the fact that the disease is typically detected at a more advanced stage in these men. Men of African American ancestry are 56 percent more likely to develop prostate cancer than are Caucasian men, and mortality from prostate cancer is twice as likely in men of African American origin (Parchment, 2004, Weinrich, 2006). These findings suggest that a number of variables including education, economic status, tradition, cultural barriers and beliefs, social inequality, and access to insurance and health care may influence a person's risk of developing cancer, in part by creating barriers to cancer screening. According to the National Prostate Cancer Coalition (2006) "Only about half of all African American men 50 and older have ever been tested for prostate cancer (p. 1)." Even fewer participate in annual screening for prostate cancer, trending with clearly negative health implications. According to advocates of screening,

if prostate cancer is found prior to metastasis, a survival rate of 99.3 percent may be reported (National Prostate Cancer Coalition, 2006). Researchers have suggested that poor knowledge and awareness of prostate cancer, in addition to confusing messages in the media concerning screening and disease detection, may impact participation in prostate cancer screening among African Americans (Weinrich, Yoon, & Weinrich, 1998; Wilkinson, List, Sinner, Dai, & Chodak, 2003).

The literature also suggests there are differences in cancer staging among rural populations. In rural populations, cancers tend to be diagnosed at a more advanced stage (Gosschalk & Carozza, 2004). In a study by Higginbotham, Moulder, and Currier (2001) African Americans living in rural areas were particularly at risk of late stage cancer diagnosis. Casey, Thiede, and Klinger (2001) documented that rural dwellers are reported to have less access to and/or less utilization of early cancer detection programs.

Mueller, Ortega, Parker, Patil, and Askenazi (1999) identified a need for more research involving rural minorities. According to the researchers, the need for additional research may not simply be attributed to shortages of professionals and limitations caused by geography and distance, but also to factors that could result in even more health disparities, namely socioeconomic conditions and cultural barriers.

Few studies have addressed issues pertaining to prostate cancer screening, specifically benefits, barriers, and knowledge, nor have studies assessed the perceived value of preventive care among African American men (Forrester-Anderson, 2005; Plowden, 2006; Weinrich, Seger, Miller, et al. 2004; Woods, Montgomery, Belliard, Ramirez-Johnson, & Wilson, 2004). No studies identified explored the mentioned issues of concern, exclusively among rural African American men.

Significance of the Study

Increased risk for development of prostate cancer, further complicated by late stage diagnosis and undesirable outcomes, highlights the importance of prostate cancer education and screening as a research problem in the African American culture. Therefore, the purpose of this descriptive study was to assess the relationship between health beliefs, knowledge, and selected demographic variables (age, income and education) and a man's decision to participate in prostate cancer screening among African American men dwelling in rural communities. For the purpose of this study, the following research questions were examined:

1. Do health beliefs differ between men who participate in prostate cancer screening and those who do not participate in prostate cancer screening?
2. Is there a difference in knowledge about prostate cancer and screening of men who participate in prostate cancer screening compared to men who do not participate in prostate cancer screening?
3. Is there a difference in the age of men who participate in prostate cancer screening from those who do not participate in prostate cancer screening?
4. Is there a difference in income levels between men who participate in prostate cancer screening compared to men who do not participate in prostate cancer screening?
5. Is there a difference in educational levels between men who participate in prostate cancer screening compared to men who do not participate in prostate cancer screening?

6. What is the relationship of health beliefs (barriers, benefits, motivation), knowledge, and selected demographic variables (age, income, and education) to a man's decision to participate in prostate cancer screening?

Conceptual Framework

The conceptual framework utilized to guide this research was the Health Belief Model (HBM) (Janz & Becker, 1984; Janz, Champion, & Strecher, 2002; Sheeran & Abraham, 1995). The HBM was originally developed in the 1950's by a United States Public Health Service group of social psychologists to explain how health educators could encourage preventive behaviors and health screenings (Janz & Becker, 1984; Janz et al., 2002; Sheeran & Abraham, 1995). The HBM, according to Janz and Becker (1984) is a conceptual framework that attempts to explain and predict health behaviors by focusing on attitudes and beliefs of individuals. The model (see Figure 1) has had several components added to address existing health problems and therapeutic interventions. For example, *health motivation* was included in the 1970's and *self-efficacy* in the 1980's (Janz et al., 2002). According to the model, the likelihood that an individual will take an action depends on the person's perception of the potential illness, perception of illness consequences, and perceived benefits and barriers associated with participating in the behavior (Janz et al., 2002; Klier, 2004; Noar, 2005).

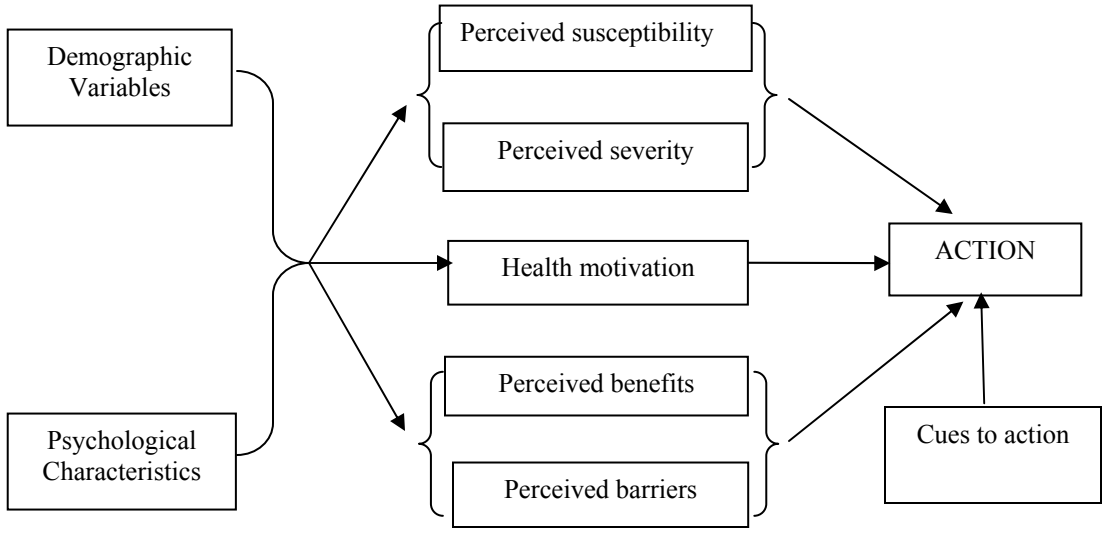

Figure 1: The Health Belief Model, Sheeran & Abraham, 1995

From "*The Health Belief Model, in Predicting Health Behavior*." Sheeran, P., & Abraham, C. (1995). Conner, M., & Norman, P. (Eds.). Buckingham: Open University Press.

Application of the Health Belief Model

Components of the HBM address individual perceptions of a particular health threat, benefits of avoiding the threat, and factors that influence the decision to act. The six main constructs identified, together with associated definitions are listed in Table 1. These constructs are thought to influence a person's decision regarding whether are not to take action (e.g., screen for prostate cancer). Two of the primary constructs are *perceived susceptibility*, which refers to an individual's belief that personal susceptibility to the condition exists (e.g., prostate cancer), and *perceived severity*, the belief that the condition has serious consequences (e.g., death). In addition to these, other constructs of the HBM are significant, including perceived *barriers* (costs, etc.), and *perceived benefits* (rewards, etc.), also described as the belief that adoption of a preventive health behavior

may reduce a person's susceptibility to the condition, as well as reduce the severity of the condition for that person. The HBM also includes an appreciation for the element of one's confidence, specifically, that an individual will be capable of performing the indicated the health behavior (e.g., prostate cancer screening), resulting in successful limitation of the threat of disease or negative outcome. This relates to the construct of *self-efficacy*. According to Prochaska and DiClemente (1984), self-efficacy links knowledge and action in behavioral change. Bandura (1986) describes self-efficacy as the belief in one's ability to accomplish a certain task. Lastly, the *cue to action* construct describes triggers that may prompt an individual to take preventive health action. In the example of prostate cancer screening, triggers may include the recent diagnosis of prostate cancer in a close friend or loved one, health promotion advertisement, or the influence of a health care provider (Janz et al., 2002). The application of the HBM in this research study is shown in Figure 2.

Table 1

Health Belief Model Concepts and Definitions, Janz, Champion, & Strecher, (2002)

Concept	Definitions
Perceived susceptibility	Beliefs about the chances of getting a condition
Perceived severity	Beliefs about the seriousness of a condition and its consequences
Perceived benefits	Beliefs about the effectiveness of taking action to reduce risk or seriousness
Perceived barriers	Beliefs about the material and psychological costs of taking action
Cues to action	Factors that activate "readiness to change"
Self-efficacy	Confidence in one's ability to take action; links knowledge and action

Note: From "The Health Belief Mode," by N. K. Janz, V.L. Champion and V. J. Strecher, 2002, (Glanz, K., Rimer, B. K., & Lewis, F. M., Eds. p. 49). San Francisco, CA: Jossey-Bass.

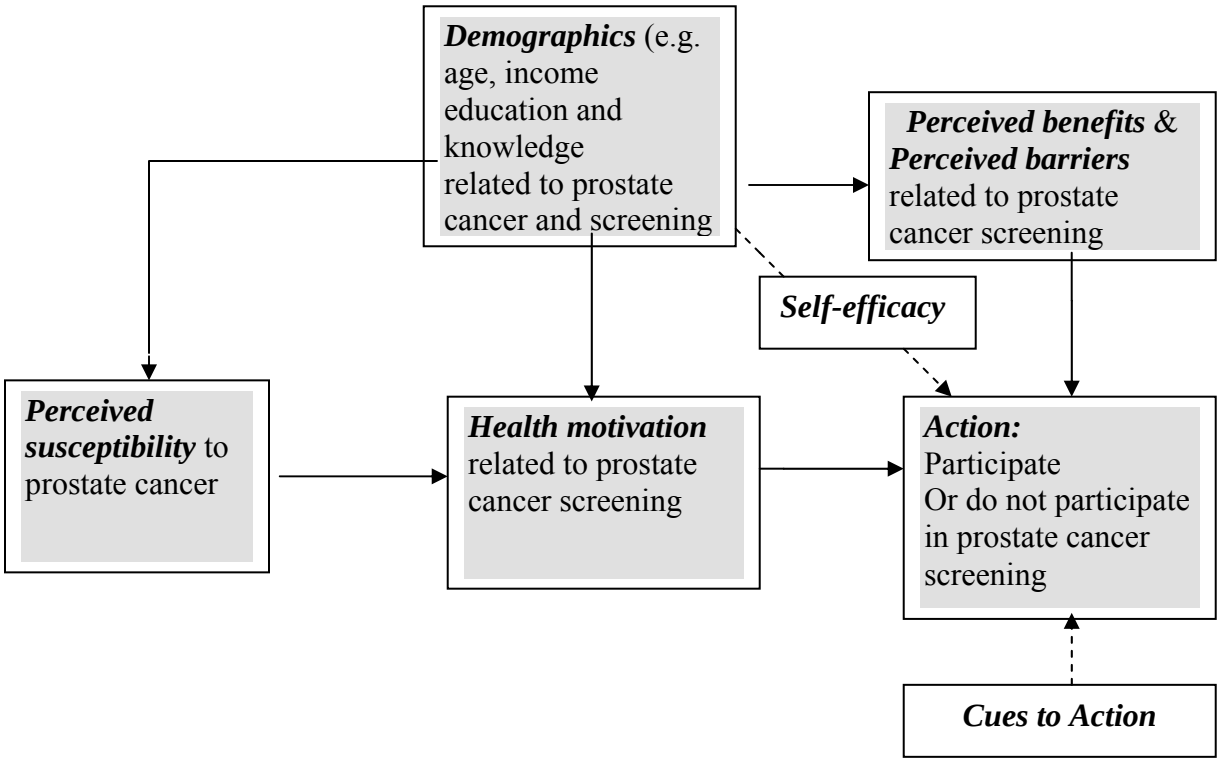

Figure 2: Health Belief Model and Prostate Cancer Screening, Oliver, 2007

Adapted and Modified from Janz, Champion, & Strecher, (2002).

According to the HBM application in this study, a potential modifying factor is the individual's perception of *perceived susceptibility* to developing prostate cancer. *Demographics* in this model (a man's age, income and educational levels, and knowledge of prostate cancer and screening) will have an impact on perceived *susceptibility* to prostate cancer. *Perceived benefits* and *barriers* will influence a man to act to participate or not participate, in prostate cancer screening. Further, health motivation, related to the state of general concern about health will impact the likelihood of whether or not a man will participate in prostate cancer screening. Though not actually measured in this study, *self-efficacy* or a man's belief in his ability to take action is an important concept. *Self-*

efficacy, as pictured in the model (Oliver, 2007), links knowledge and *action*. The concept *Cues to action,* the activation for readiness to change was measured. [Though *cues to action* data were collected in this study, the researcher did not identify this concept as a research question; thus, these data will not be presented]. Utilizing the HBM as a framework in this quantitative study provides insight and a better understanding about factors affecting a man's decision concerning participation in prostate cancer screening (Janz & Becker, 1984; Janz, Champion, & Strecher, 2002).

Definitions of Terms

For the purpose of this study, the following terms were defined operationally and theoretically:

African American – (Theoretical) The United States Census Bureau (2000) defines the African American as having origins in any of the Black racial groups of Africa.

Prostate Cancer Screening Participation – (Operational) defined as a participant having a prostate specific antigen (PSA) measurement or test and/or a digital rectal exam (DRE) at least once in the past two years.

Rural – (Theoretical) Lee (1991) defines rural as an area having a low population density and is diverse.

Health Beliefs – (Operational) measured total score on the health beliefs instrument, which includes subscales of benefits, barriers and motivation (Champion, 1993).

Benefits – (Operational) measured as a subscale of the health belief instrument in the form of a score and is defined as beliefs about the effectiveness of taking action to reduce risk or seriousness (Champion, 1993).

Barriers – (Operational) measured as a subscale of the health belief instrument in the form of a score and is defined as beliefs about the material and psychological costs of taking action (Champion, 1993).

Motivation – (Operational) measured as a subscale of health belief instrument in a form of a score and is defined as beliefs and behaviors related the state of general concern about health (Champion, 1993).

Knowledge – (Operational) measured score on knowledge instrument of prostate cancer and screening (Weinrich et al., 1998).

Assumptions

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

1. Participants have some knowledge of prostate cancer.
2. Cultural environment has some effect on health promotion practices.
3. Participants are honest when answering the questions on the instruments.

Summary

Prostate cancer incidence and mortality are affecting African American men at a greater rate than any other race of men in the United States. Prostate cancer is typically detected at a more advanced stage in African American men (Parchment, 2004; Plowden, 2007; Weinrich, 2006). The literature suggests that there are differences in cancer staging among rural populations. In rural populations, cancers tend to be diagnosed at a more advanced stage (Gosschalk & Carozza, 2004).

Participation in prostate cancer screening is lower in African American men compared to other races. While prostate cancer screening alone may not be the "cure all" to prevent deaths from prostate cancer, increasing prostate cancer screening participation among African American men may positively impact morbidity and mortality associated with this health disparity. Employing the Health Belief Model as a conceptual framework provides a means of assessing individual factors that may influence screening behaviors among rural African American men.

In this chapter, the statement of the research problem, conceptual framework, definition of terms, and assumptions were set forth with an explanation of the significance of this study.

CHAPTER II

REVIEW OF LITERATURE

A review of literature pertinent to this study is presented. The major topics to be reviewed are prostate cancer, prostate cancer screening, and health disparities.

Prostate Cancer

One in six American men will develop prostate cancer in the course of a lifetime. Prostate cancer is the most commonly diagnosed cancer, and the second leading cause of cancer death among men in the United States. The American Cancer Society [ACS] (2007) estimates that approximately 218,890 men will be diagnosed with prostate cancer and 27,050 men will die of the disease in 2007 (American Cancer Society [ACS], 2007). It is estimated that 3,010 men will be diagnosed with prostate cancer and 480 men will die of the disease in Alabama this year (National Prostate Cancer Coalition, 2007).

According to the American Cancer Society (2007[b]), overall cancer costs to the economy are estimated to be greater than $219 billion annually in 2007. About 41,000 American men die of prostate cancer each year at a national cost of at least one billion dollars (Gregg, 2002; National Prostate Cancer Coalition, 2005). The economic impact of prostate cancer is tremendous.

Prostate Cancer Screening

Nationally, a consensus of opinion in support of screening for prostate cancer is lacking, partly due to beliefs regarding the efficacy of screening in the United States ACS, 2006; (NCI, 2006; Weinrich, 2006). Preliminary results of the Prostate, Lung,

Colorectal and Ovarian (PLCO) cancer screening trials do not support the validity of prostate cancer screening, nor do the results prove otherwise concerning prostate cancer screening (NCI, 2005). It is believed that if cancer is diagnosed, many males may have a slow-growing or latent form of prostate cancer that may never cause any problems (Thompson, Resnick, & Klein, 2001). Some data suggests that men may be more likely to die of other causes. Consequently, the controversy regarding the necessity for screening for prostate cancer is also affected by the potential for over-screening. This "over screening" may result in over-diagnosis, over-treatment and potential harm to patients with the possible discovery of clinically insignificant tumors (Brawley & Kramer, 2005; Thompson, Resnick & Klein, 2001). The United States Preventive Services Task Force [USPSTF] (2002) concluded that due to mixed and inconclusive evidence, a recommendation for or against prostate cancer screening would not be given. According to the U.S. Department of Health and Human Services (2006), current recommendations for routine prostate cancer screening using PSA testing or the DRE have not changed from prior recommendations. Furthermore, the USPSTF documents risk factor information for prostate cancer as follows: "Men older than 45 who are at increased risk include African American men, and men with a family history of a first-degree relative with prostate cancer" (p. 1). These reports substantiate the controversy concerning prostate cancer screening.

According to a report issued by the National Prostate Cancer Coalition (2007) (www.fightprostatecancer.org) each of the 50 states and the District of Columbia receive a Prostate Cancer Report Card that is graded on the basis of critical areas including mortality/screening rates and accessibility of clinical trial sites. At present, 49 states

require that insurance companies provide coverage for breast cancer screening. In contrast, as of 2006 only 28 states had existing laws that required insurance companies to cover screening for prostate cancer. This study was conducted in Alabama. Alabama was not among these 28 states, although the death rate from prostate cancer in Alabama is the third highest in the nation. On June 13, 2007, the Governor of Alabama signed into law a bill mandating insurance coverage of physician-ordered prostate exams. By joining the original 28 states, Alabama has taken a definitive position in the fight against prostate cancer, and thus has made a profound statement regarding the significance of prostate cancer screening for men's health (National Prostate Cancer Coalition, 2007). Insurance coverage for prostate cancer screening is but one of many barriers to prostate cancer screening. Other barriers include cultural barriers, fear of screening, as well as fear of treatment for cancer, and loss of manhood. Early detection and recognition are critical to the outcome of prostate cancer management.

Screening Benefits

Large-scale clinical trials such as the Prostate, Lung, Colorectal and Ovarian Cancer Screening Trial (PLCO) are being conducted to determine whether completion of certain cancer screening tests cause a reduction in death from the disease. For prostate cancer, PLCO researchers are trying to determine whether or not the performance of a digital rectal exam (DRE), plus a blood test for prostate specific antigen (PSA), will result in decreased deaths due to prostate cancer (NCI, 2006).

Though the effectiveness of prostate cancer screening is unproven, there are screening guidelines that recommend communication of information regarding the limitations, as well as the benefits of prostate cancer screening (ACS, 2006; Weinrich,

2006; Weinrich et al., 2004). The prostate-specific antigen blood test (PSA) and the digital rectal exam (DRE) are procedures used for screening and early detection of prostate cancer (ACS, 2006; Brawley & Kramer, 2005; NCI, 2006).

Screening Barriers

A number of factors identified in the literature serve as barriers to screening. Some of these include: structural barriers, barriers surrounding education and resources, fears related to treatment outcomes for the patient, and lack of cultural sensitivity on the part of the healthcare professional (Parchment, 2004). Parchment surveyed a convenience sample, consisting of 100 African American and Caribbean men ages 37 to 89 years from three South Miami Dade county churches. Eighty percent of the men stated that a dislike of the digital rectal exam and perceived effects of prostate cancer (impotence and incontinence) prevented them from pursuing regular screenings (Parchment).

In contrast, Boyle, Moore, and Edwards (2003) also using a convenience sample, consisting of 234 participants, which included both African American and Caucasian men, studied knowledge of prostate cancer, perceived threats, benefits, barriers, and self-efficacy related to prostate cancer screening behaviors of male beneficiaries in the National Capital Area. This study also evaluated and described differences in prostate cancer screening practices that existed between racial groups in the study populations. The findings indicated that the participants in the study, had higher levels of self-efficacy, and perceived benefits to DRE and PSA screening. They also felt susceptible to the disease, but identified few perceived barriers to testing or screening. A significant

difference in prostate cancer screening practices between the African American and Caucasian men were found with African American men screening more frequently.

In 2004, Weinrich, Reynolds, Tingen, and Starr identified similar findings, which included: embarrassment, mistrust, concern about insufficient disease knowledge and abnormal test results, fear of post-operative sexual difficulty, frustrations regarding not having a regular doctor, and concern over financial limitations for adequate screening. Further, others barriers to prostate cancer screening were identified as lack of cultural sensitivity, and fatalism. Purposive sampling was used to recruit 1,432 men for the study from churches, meal sites, work sites, barbershops, car dealerships, civic organizations, and housing projects in central South Carolina.

Woods et al. (2004) used a mixed methods longitudinal cohort study (baseline and 6-month follow-up) to explore health behaviors concerning prostate cancer. Phase I consisted of formative qualitative data collection centered around beliefs about prostate cancer prevention issues. Interviews were conducted with "key informants" which consisted of 15 African American men, seven physicians, and two nurses. Two focus groups (n = 22) from the target community were assembled to validate the findings from the key informants. Phase II consisted of 277 participants who completed the questionnaire; the mean age of the sample was 53 years. Five themes emerged on how culture influences attitudes, beliefs and practices regarding decision making about prostate cancer prevention; lack of knowledge, ineffective communication, inadequate social support and quality of care, and sexuality issues. Results from these studies suggest that barriers to screening may be deeply embedded in the beliefs, experiences and customs of African American men.

Jernigan, Trauth, Neal-Ferguson, and Carter-Ulrich (2001) conducted focus groups with older African American men and women to examine the psychosocial factors that influence screening behaviors. A total of 26 males and 19 females participated in the focus groups. Findings indicated that participant perceptions of cancer screening were positive. Participants identified getting older as a motivating factor for receiving cancer-screening tests. Men tended to express distrust of the medical system, perceived cancer as a death sentence, and reported that presence of symptoms was often the initial reason for receiving a test for cancer. Men were less likely to initiate tests for cancer on their own and relied on close females for encouragement. Once again, research findings support the influence of beliefs and customs on decision-making of African American men.

In a qualitative study with nine rural African American men between the ages of 43 and 72 years, Oliver and Grindel (2006) reported similar findings. Results of the research suggested that the following factors have an impact on participation in prostate cancer screening: fear; mistrust in the healthcare system; threat to manhood; traditional practices and lack of perceived value for preventive care; feelings of disparity; and knowledge deficits.

Guerra, Jacobs, Holmes, and Shea (2007) identified both patient and physician barriers to prostate cancer screening in their study involving 18 purposively sampled primary care physicians. Utilizing the physician interviews and the patient's charts, major patient barriers identified were comorbidities (moving the visit from preventive to acute issues) and limited education/health literacy. However, forgetfulness and negative attitude concerning prostate cancer screening were identified as physician barriers.

In summary, potential barriers to prostate cancer screening have been delineated in the literature. Barriers included: client perception of physician insensitivity, embarrassment, fear, pain, cost, knowledge deficit, and sexuality concerns. Additional barriers were having no regular doctor and a decreased appreciation for the value of preventive care, secondary to tradition and culture (Jernigan et al., 2001; Oliver & Grindel, 2006; Woods et al., 2004). Recently documented in the literature are patient comorbidities, and limited education/health literacy. Further, patient barriers are complicated by the fact that physician barriers related to negative attitudes and forgetfulness affect screening for prostate cancer.

According to ACS (2006) recommendations, the PSA and the DRE should be offered annually beginning at age 50 to men who have a life expectancy of at least 10 years. Men at high risk, such as African-American men, and men with a strong family history of one or more first-degree relatives diagnosed with prostate cancer, should be provided with information concerning testing by age 45 (ACS). There is limited documentation in the literature that describes high-risk African American men and their participation in prostate cancer screening. Some authors have suggested that as few as two to ten percent of African American men in the United States participate in prostate cancer screening (Gwede & McDermott, 2006; Weinrich, Boyd, Weinrich et al., 1998; Weinrich, Greiner, Reis-Starr, Yoon, & Weinrich, 1998).

Prostate Cancer Beliefs and Knowledge

The study conducted by Wilkinson, List, Sinner, Dai, and Chodak (2003) and Weinrich, Yoon, & Weinrich (1998) suggested that both limited awareness and knowledge of prostate cancer impact male participation in prostate cancer screening. The

researchers further concluded that failure to participate in early detection and screening may be due to confusing messages in the media regarding the benefits of such screening.

Weinrich, Seger, Miller, Davis, Kim, and Wheeler et al. (2004) examined the knowledge level of 81 low-income men between the ages of 40 and 70 years. The mean income of the sample population ranged from $17,668 to $33,333. Findings of the research indicated that total knowledge scores did correlate with income and that men with lower income levels had significantly lower scores than those with higher incomes. Similar findings were reported by Wilkinson et al. (2003) who surveyed 900 African American men in the determination concerning whether an educational program on prostate cancer could improve awareness and knowledge. Lower scores consistently correlated with participants who had limited education and lower income levels. A significant correlation was found related to education, income, and participation in prostate cancer screening; the higher the level of education or income of participants, the more likely prior screening had occurred.

Steele, Miller, Maylahn, Uhler, and Baker (2000) assessed the knowledge levels, attitudes, and screening practices of older African American men (≥ 50 years) regarding prostate cancer. The following items were measured: self perceived risk of developing prostate cancer, knowledge of existing screening test for prostate cancer, whether participants had received a physician's recommendation to be screened, and current screening practices of the men. The survey consisted of a random-digit-dialed interview using a multistage cluster design. A total of 721 men completed the telephone interview. Two findings from the study were significant. First, 43% of the African American men identified themselves as having a "medium to low" risk, 16% as having "no" risk, and

34% of the men answered “don’t know or not sure”. Secondly, those men who indicated that they were “medium to low” risk reported having knowledge of the PSA test. These findings suggest that more work needs to be done to assure that African American males, specifically those with lower incomes, are better aware of their risk and the need for prostate cancer screening.

Guttman (2001) conducted a study of urban black males utilizing a random-digit dial community series of 310 men from a sample of 404 men who attended various private and public medical and urological clinics. Men who attended the clinic (42%) and men within the community (59%) responded correctly to three of the four questions that related to knowledge of prostate cancer risk. Although 42% of the participants admitted awareness, only 11% reported receiving PSA testing. These findings are significant, as men who are aware of the PSA test, and aware of the risk for developing prostate cancer, may still be less likely to participate in prostate cancer screening.

The impact of prostate cancer knowledge on cancer screening was the focus of research by Weinrich, Weinrich, Boyd, and Atkinson (1998). A correlational design was used for the study; 319 men without a history of previous prostate cancer screening between the ages of 40-70 years were included in the analysis. Degree of knowledge of prostate cancer was measured with a Prostate Cancer Knowledge Questionnaire prior to a community-based educational program. Men were referred to personal physicians for free prostate cancer screening. Men with more knowledge about prostate cancer were more likely to go for free prostate cancer screening than were men with less knowledge. Even with the offer of free screening, predictors of participation were ethnicity, education, income, urinary symptoms and educational intervention.

In a study that included 207 African American men and 348 Caucasian men who were recently diagnosed with prostate cancer, African American men identified obstacles such as personal failures that delayed diagnosis, greater physician mistrust, less continuity of care due to lack of access and worse socioeconomic position than the Caucasian participants (Talcott, Spain, Clark, Carpenter, Kyung, et al., 2007). The study concluded that African American men had knowledge of prostate cancer and were at no greater distance to medical care, but had less access, poorer medical insurance coverage and more use of public clinics and emergency rooms. The African American participates reported having to request prostate cancer screening.

Thus, the literature suggests that income, age, education, and marital status may significantly impact and individual's knowledge and perception related to prostate cancer screening (Weinrich et al., 1998; Wilkinson et al., 2003). Knowledge of prostate cancer and prostate cancer screening may also influence participation in screening practices, especially among African American men (Guttman, 2001; Weinrich, Seger, Miller, Davis, Kim, & Wheeler, et al., 2004). A more recent study identified access, economic barriers and physician trust as factors that may influence knowledge and behavior (Talcott et al., 2007).

Health Disparities

Though there are many theories concerning the cause of health disparities, what is evident is that health disparities are a major issue of concern in cancer, specifically prostate cancer in African American men. The incidence of prostate cancer among African American men is 60% higher than that of Caucasian men. The death rate is two times higher among African American men compared to any other racial or ethnic group

(Office of Minority Health, 2007). It is of the opinion of this researcher that disparities continue to flourish amount African American population related to the burden of prostate cancer illness and death.

U.S. Healthy People 2010 (2000) attributed some causes of health disparities to personal barriers such as cultural differences. According to Brawley (2000) cultural differences; socioeconomic barriers, lack of health insurance and access, all contribute to poor health outcomes of minorities. Language differences, environmental challenges or just not knowing what needs to be done also contribute to poor outcomes.

African American Men

According to the U.S. Department of Health and Human Services evidence report and evidence based recommendations (2006) "Black men have the highest relative risk of dying from cancer" (p. 1-3). The National Cancer Institute [NCI] (2006) Prostate Cancer Outcomes Study (PCOS) revealed that African American men were at higher risk for prostate cancer than Hispanics or Caucasian men. Prostate cancers in a more clinically advanced stage were detected more frequently in African American men versus Hispanic or Caucasian men. The African American Hereditary Prostate Cancer Study, sponsored by the National Institute of Health, examines the relationship of hereditary factors and prostate cancer in African American males (National Institute of Health, 2006), "Insufficient information may be an obstacle to obtaining screening among Black men" (p. 117). In their study involving more than 67,000 men age 65 years and older, Avorn, Kantoff, Wang, and Levin (2004) found that African Americans were 35% less likely than Caucasians to undergo prostate-specific antigen (PSA) testing.

According to the Behavioral Risk Factor Surveillance System Survey (a national survey of preventative and health risk behaviors) results summary of findings (Robert Wood Johnson Foundation, 2004), African American men have much higher prevalence rate compared to Whites or Latino Americans. Stage and grade of prostate cancer, along with socioeconomic status was identified influential on survival differences among those men diagnosed with prostate cancer. This study also found that health screening rates were lower for African American men; specifically these men were less likely to complete diagnostic processes. More than 20% of the adults in the state of Alabama that was 18 years or older, reported having fair to poor health. Specifically related to this study, according to the study results, 54.9 to 57.2 percent of the men in Alabama aged 40+ reported having a PSA test within the past two years.

Variables such as economic status, access to health care, insurance, education, social inequalities, cultural barriers, and cultural traditions may have an influence on a person's risk of developing cancer (NCI, 2006). According to NCI's (2006) Surveillance, Epidemiology, and End Results (SEER), African American men are 56% more likely to develop prostate cancer than are Caucasian men. Compared to Caucasian men, mortality from prostate cancer is twice as likely among African American men. National Cancer Institute (2006), and Nielsen et al. (2007) reported similar findings. Men of higher socioeconomic status (SES) have an elevated incidence of prostate cancer than men with lower SES; however, prostate cancer mortality is found in men of lower SES. The authors recommended the development of interventions to break down barriers for health care utilization, especially in lower SES populations without free access to medical care.

The incidence of prostate cancer in African American males' exceeds that of Caucasians. The risk of developing prostate cancer for a Caucasian male with no family history of the disease begins at age 50, while risk for African American men begins as early as age 40 (ACS, 2006). These findings are evidence of a continued trend of prostate cancer disparity related to African American men and prostate cancer. The fact that African American men delay or avoid screening has been identified as a possible reason for differences in prostate cancer diagnosis and mortality in African American men (Parchment, 2004).

Weinrich, Yoon, and Weinrich (1998) found that even when free prostate cancer screenings were offered, African American men were less likely then Caucasian men to be screened for prostate cancer. Industry work sites in 11 counties in central South Carolina were recruited. One hundred-seventy-nine men participated in the research. Sixty-four percent of the sample population was African American (n = 115). After completing a survey, a slide-tape show developed by the researchers was shown. The slide tape show presented a discussion of the prostate; the American Cancer Society screening guidelines for DRE and PSA; symptoms of prostate cancer; the importance of early detection, and a brief overview of treatment options including watchful waiting. Each participant received a voucher to take to his physician of choice for a free prostate cancer screening that included a DRE and PSA. The findings indicated that only 47% of the African American men availed themselves to the free screenings, compared to 71.9% of the white males (n = 179). These findings support Parchment's (2004) suggestion that African American men delay or avoid screenings. Combined with disparities in access to

health care, health screening delays could impact early diagnosis and mortality in African American men.

Culture Sensitivity

In a focus group study (n = 104) exploring the knowledge, attitudes, behavior and views about prostate cancer of African American men, participants revealed barriers related to screening for prostate cancer that included lack of knowledge, life style characteristics, cultural beliefs, fear, embarrassment, distrust in government, lack of access and availability of tests (Forrester-Anderson, 2005). Many of these barriers could be a result of cultural issues, such as African American's long history of racial inequalities (Baldwin, 2003; Parchment, 2004). Some studies identified the lack of cultural sensitivity on the part of healthcare providers as a concern when approaching issues such as prostate cancer with minorities (Baldwin, 2003; Parchment, 2004; Plowden, 2003).

The Literature suggests that there is a missing link in the community related to prostate cancer in minorities. There is an apparent need to assess for this "missing link". Research is needed to determine whether the link is related to education, knowledge, beliefs or a lack of awareness related to cultural differences.

Environment

Rural. Approximately 20% of Americans live in rural communities, with 31 states having at least 60% of their counties designated as rural (Bushy, 1998). No matter what indicator is used, residents in these rural areas usually have "less" than their metropolitan counterparts (e.g., per capita income, educational opportunities). In addition, access to health care is often limited by geographic, economic and cultural barriers prevalent in

rural areas (National Rural Health Association, 2006). The health of people living in rural areas is characterized by significant disparities compared to urban populations (Casey, Thiede, & Kinger, 2001). Health care resources have long been considered deficient in much of rural America (Moscovice & Rosenblatt, 2000).

The literature suggests that there are differences in cancer staging among rural populations. Rural populations' cancers tend to be diagnosed at a more advanced stage (Gosschalk & Carozza, 2004). In a study by Higginbotham et al. (2001) African Americans living in rural areas were particularly at risk of late stage cancer diagnosis. Casey, Thiede, and Kinger (2001) documented that rural dwellers are reported to have less access to and/or less utilization of early cancer detection programs. Mueller et al. (1999) identified the need for more research involving rural minorities not only due to factors such as shortages of professionals, geography and distance but also factors such as socioeconomic and cultural barriers that could consequently result in even more health disparities.

The final results concerning the efficacy of prostate cancer screening from the PLCO Screening Trial and the Prostate Cancer Intervention Versus Observation Trial will not be available until 2015 (NCI, 2006; Weinrich, 2006). The current health care policy issues and screening controversies could have a tremendous effect on prostate cancer and screening behaviors of men, especially within the rural health communities. According to Smedley, Stith, and Nelson (2003) "Health status disparities observed between many minorities and non-minority populations in the United States likely reflect a complex interplay of social, economic, biologic and environmental factors" (p. 241). Because poverty and health care are intertwined at the rural level, poverty is noted not to

be an individual problem but a regional problem. Community wide economic constraints lead to more limited access to health care, health care education and access to screenings. It is important that men in rural areas, especially African American men, are assessed for their awareness of health issues such as prostate cancer and prostate cancer screening.

As of this date, little research using the HBM as the conceptual framework has been done in a rural setting utilizing African American participants to evaluate the knowledge, beliefs, and attitudes of males regarding participation in prostate cancer screening.

Summary

In brief, socioeconomic barriers, access and lack of cultural sensitivity have been identified as potential contributors to health care disparities (Gosschalk & Carozza, 2004; Parchment, 2004; Plowden, 2003). The findings suggest that social, environmental and cultural factors, such as access to care, inadequate community exposure, fear, lack of knowledge, threat to manhood, monetary resources, and customary beliefs and traditions related to seeking health care may also affect the willingness and ability of African American men to participate in health promoting behaviors (Forrester-Anderson, 2005; Oliver, 2007; Oliver & Grindel, 2006; Plowden, 2006; Weinrich, 2006).

There were very few studies that specifically addressed African American men's prostate cancer health disparities (Myers, 2000; Parchment, 2004; Weinrich, 2006). Influences on decision making concerning whether to participate or not in prostate cancer screening have not been adequately addressed in the literature (Gwede & McDermott, 2006).

CHAPTER III

METHODOLOGY

This chapter describes the methods that were used in obtaining the data for the study. The setting and sample are discussed. Processes to protect the rights of human subjects are described, and procedures and instruments for data collection are presented. Finally, the statistical analyses used to analyze the data are summarized.

Study Design

A descriptive design was used for this study. The purpose of descriptive research is "to observe, describe, and document aspects of a situation as it naturally occurs and sometimes to serve as a starting point for hypothesis generation or theory development" (Polit & Hungler, 1999, pp. 195-196). This design facilitated the investigation of the relationships between selected variables and prostate cancer screening participation, as well as identifying differences in selected variables of those who participated in prostate cancer screening and those who did not. A convenience sample of 90 African American men living in rural west Alabama participated in the study by completing a questionnaire on health beliefs, knowledge of prostate cancer, current prostate cancer screening practices and demographic background information.

Setting

The study was conducted in select rural "Black Belt" counties of central Alabama. The literature has identified rural localities as having higher incidences of health

disparities (Casey, Theide, & Klingner, 2001; Ricketts, Johnson-Webb, & Randolph, 1999).

Alabama's Black Belt consists of a group of primarily agricultural counties having the richest soil and the poorest people. The area is also known for its insufficient health care and health disparities (University of Alabama, 2003). African Americans comprise 26% of the population of Alabama, while African Americans make up 56% of the Black Belt population. Alabama's population in poverty is 16.3% versus the Black Belt population of 27.3% (U.S. Census Report, 2000).

Sample

Criteria for inclusion for the study were African American men who: (a) were at least 40 years of age or older, (b) had no previous personal history of prostate cancer, (c) were English speaking and able to read and write in English, and (d) consented to take part in the study. Each participant willingly completed a questionnaire in writing.

Logistic regression was determined to be the most robust test used in the analysis of the research data. However, no power analysis calculation method was identified in the literature for this analysis method. Munro (2001) identified that computer software and books such as Cohen (1987) do not cover logistic regression. Sample size was determined by using the "number of observations vs. number of variables" rule of at least 10 participants per predictor, as found in the literature (Downs, 1999, p. 14; Munro, 2001, p. 247). Using this method of sample size determination, the independent variables health beliefs (benefits, barriers, and motivation), knowledge, age, income and education required at least 80 participants. The sample size was increased by 10% to account for any attrition that might occur, such as a participant failing to properly complete the

questionnaire or participant withdrawal from the study. Using this approach, a sample size of 90 African American men was required for the study. A sample of 91 African American men was obtained. One participant's questionnaire was discarded due to a history of prostate cancer.

The population for this study was accessed through contacts within churches, one industry located in the rural community, individual community leaders and other participants. Written permission and a letter of support for conduct of the study were obtained from each church authority and the industry's management prior to any participant communication or recruitment. Once permission was established, posters providing information about the study and information about how to contact the researcher were distributed by way of the church/industry contact. The posters were given to the pastor or his designee, the industry leader and community contacts for distribution. Snowball sampling was also utilized to elicit participation. According to Polit and Hungler (1997) snowball sampling or network sampling is used when sample members who are participating identify or refer other people who meet the eligibility criteria. The disadvantage to this type of sampling is that the sample population is not random, which has implications related to the potential to introduce bias and to alter generalizability. The advantage of this sampling procedure is that participants who may not be reachable via recruitment practices may be accessible.

Protection of Human Subjects

The proposal was submitted to the Georgia State University Institutional Review Board (IRB) for approval. Upon institutional review board approval (see Appendix A), participant contact was made. Upon making contact with the participants, the individual

was advised orally and given written material on the study's purpose, criteria for inclusion and informed of the request to complete a survey. The participants were informed that participation was voluntary and that they had a right to refuse to participate or to withdraw at any time. All risk and benefits were explained. Participants expressed verbally or in writing their understanding of the study's description and purpose prior to inclusion in the study. The participants received a copy of the IRB approved consent form explaining the study (see Appendix A). All of the participants were advised that their names would not be identified in any manner when presenting or disseminating the findings of the study. They were assured that all results would be reported as group data with no identifying individual information included.

Instruments

Three instruments were used in the research study: Champion's (1993) revised Health Belief Model Scale (HBMS), and the Knowledge of Prostate Cancer Screening (KPCS) Scale (Weinrich et al., 2004), and a demographic/medical background survey which provided information on the person's demographic background and prostate cancer screening patterns (see Appendix B). The Flesch-Kincaid is a common readability formula that measures various grammatical components such as sentence length, the number of syllables and word familiarity (Frank-Stromborg & Olsen, 2004). The Flesch-Kincaid Model was used to measure for readability level of all three instruments, which was identified as a 7th grade level.

Health Belief Model Scale (see Appendix B). The HBMS consists of three sub-scales to measure health belief concepts as adapted with permission (see Appendix E) to prostate cancer screening. Each sub-scale measures a distinct concept. The subscales

measure barriers, benefits and health motivation concepts. Both the perceived barrier subscale and the perceived benefits subscale consist of five questions and the health motivation subscale has a total of seven questions. Unidimensionality of all of the scales was supported by both factor analysis and confirmatory factor analysis. Items for each sub-scale are arranged on a 5-point Likert-type scale with "1" indicating strongly disagree and "5" indicating strongly agree. Internal consistency reliability ranged from .62 to .93 for the sub-scales (Champion, 1993; Champion, 1999). In the current study, the Cronbach's alpha coefficient for the subscales was .79 for the benefit scale, .81 for the barrier subscale and .82 for the motivation subscale.

Knowledge of Prostate Cancer Screening Scale (see Appendix C). This scale contains 12 items, and is written on a sixth grade reading level. The content measured includes knowledge of symptoms, risk factors, side-effects from treatment, age guidelines for screening, and the potential for false positive and false negative results. Responses are scored as "true (Yes)", "false (No)", and "don't know". The "don't know" responses are coded as incorrect. True is the correct response for eight of the questions (questions 1, 2, 4, 5, 6, 7, 11, and 12). The correct answer for the other four questions is false (3, 8, 9, and 10) (Weinrich et al., 2004).

According to Weinrich et al. (2004) the Knowledge of PCS Scale has a Cronbach alpha of 0.76. The 12 items clustered on one factor, indicating a one-dimensional scale. Six prostate cancer research experts participated in a content validity index and confirmed validity (Weinrich). In the current study, the Cronbach's alpha coefficient was .80 for this scale.

Demographic/Medical Background Form (see Appendix D). This form was designed to gather prostate cancer screening history, such as whether or not a man participates in screening, the type of screenings, the length of time since the participant's last prostate cancer screening, whether the participate was medically insured, and whether their medical insurance covers prostate cancer screenings. Questions concerning the participants' marital status, age, income, and educational level were also included. The form was pilot tested for clarity and readability.

Using the health belief model as a conceptual guide, modifying factors (health beliefs, knowledge and selected demographic variables) were measured. The individual's perceptions concerning benefits, barriers, and motivation related to prostate cancer screening was measured.

Pilot Study

A pilot study was conducted to establish reliability of the instruments. A group of twenty African American men ranging in age from 40-62 were asked to complete the questionnaires. Cronbach's alpha was determined for the total health belief scale, health belief subscales and knowledge scale. Cronbach alpha was 0.69 for the total Health Belief Scale, 0.69 for the benefits subscale, 0.84 for the barrier subscale, and 0.62 for the motivation subscale. The Cronbach's alpha for the Knowledge Scale was 0.80. Satisfactory reliability on the instruments was established. The men were also asked to identify which type of income question they preferred to respond to. They were given a choice between a categorical or continuous data question. The majority of the men indicated a preference of reporting categorical income data.

Data Analysis

Procedure for Data Collection

Prior to applying for IRB, the researcher obtained letters of support from one rural community church and one industry located in a rural community in West Central Alabama (see Appendix F). Once IRB approval was obtained, data were collected from May 11, 2007, to July 11, 2007. Fliers were posted by the community contacts and individual men who were interested in participating in the study contacted the researcher. The researcher also established a contact in one rural community, in which the owner of a local rural store/eatery allowed the researcher to provide information about the study to men who gathered at the store. The owner of the business also provided a private area for those men who agreed to participate in the study to complete the questionnaire. Once participant contact was established, the study was explained, the process for participation was described to the participant, and the researcher obtained consent. The researcher provided the questionnaire and instructions for the completion to the participant. The participant was provided privacy while completing the questionnaire, though the researcher was available in a nearby area for any participant questions or concerns. The completion of the questionnaire varied from 15 to 30 minutes per participant. No individual identifying information was noted on the surveys. After completion of the survey the participant placed the survey in a large brown envelope, thereby assuring participant anonymity. Each study participant was then offered the most recent educational materials from the National Institutes of Health (see Appendix H) concerning prostate cancer and screening. Participants were also given the opportunity to ask questions of the researcher. Each participant was provided the researcher's contact

information for future use concerning questions about prostate cancer or prostate cancer screening. Once a large number of surveys were obtained, the questionnaires were assigned a study identification number as data were entered into the computer system.

Data Storage

The collection of personal information was limited to information which was essential for the research study. All questionnaires were stored in a locked file in the researcher's office when not being transferred or analyzed. Only the researcher and researcher's advisor had access to the participant's data. The data will be kept for five years after the study and/or publishing of the results; they will then be destroyed.

Analysis

The data were analyzed using the Statistical Packages for Social Sciences (SPSS) 14.0 computer program. Independent variables in the study included health beliefs (benefits, barriers and health motivation), knowledge of prostate cancer, and selected demographic variables (age, income, and education). The outcome variable in the research study was a dichotomous measurement concerning a man's decision to participate in prostate cancer screening. "Yes" indicated a man's participation and a "No" indicated that he did not participate in prostate cancer screening. For this study, participation in prostate cancer screening was defined as the participant having a prostate specific antigen (PSA) and/or digital rectal exam at least once in the past two years.

Data was analyzed using descriptive statistics (e.g., mean, range and standard deviation) (Downs, 1999; Munro, 2005). Mann-Whitney U test, a nonparametric test used with categorical data, was used to examine the differences between groups (Munro, 2005). Independent sample *t* tests, also used to examine differences between groups,

Independent sample *t* test is appropriate when the independent variable have these assumptions: 1) mutually exclusive groups; 2) normally distributed dependent variable; and, 3) from a single population (Munro, 2005). Logistic regression also used to analyze the results, according to Munro (2005) logistic regression is appropriately used when there are at least two or more dependent variables. Logistic regression is used to "determine which variables affect the probability of a particular outcome" (Munro, p. 306).

CHAPTER IV

RESULTS

The focus of this chapter is to present the results of the data analysis. First, the demographic characteristics of the subjects are described. Second, the findings related to the six research questions are presented.

Characteristics of the Sample

Convenience sampling was utilized to collect data from African American men dwelling in rural communities in West Alabama. The actual sample size consisted of 91African American men. One subject was eliminated from the sample due to a history of prostate cancer leaving a total of 90 men who participated in the study. The age of the men ranged from 40 to 82 years of age. The mean age was 54.1 years (SD = 9.8).

Demographic data were collected from all participants regarding age, race, income and prior participation in prostate cancer screening. Sixty percent (n = 54) reported a history of prostate cancer screening while 40% (n = 36) denied prior screening. Thirty-nine (43.3%) men reported a household income of over $50,000 dollars. Thirty-three (36.7%) men reported having a high-school education, while 38 (42.2%) men reported their highest attained education included some college up to post graduate work/degree. Demographic data are presented in Table 4-1.

Table 4-1

Demographic Characteristics of the Sample

Variables	*n*		%
Average Household Income Per Year			
$10,000 – 19,999	11		(12.2)
$20,0000 – 29,999	12		(13.3)
$30,000 – 39,999	9		(10.0)
$40,000 – 49,999	14		(15.6)
$ > $50,000	39		(43.3)
Missing	5		(5.6)
Education Level			
8th grade or less	4		(4.4)
Some high school	4		(4.4)
High school graduate	33		(36.7)
Technical school	11		(12.2)
Some college	17		(18.9)
College graduate	12		(13.3)
Post graduate work/degree	9		(10.0)
Prior Prostate Cancer Screening			
Yes	54		(60)
No	36		(40)
Age	Mean	SD	Range
	54.14	9.82	40-82

Research Questions

Data obtained from 90 rural dwelling African American men were analyzed as group data.

Research Question 1: "Do health beliefs differ between men who participate in prostate cancer screening (PCS) and those who do not participate in PCS?"

The total health beliefs scores of the men who participated in prostate cancer screening was significantly higher than the score of men (p = .05) who did not participate in prostate cancer screening (see Table 4-2). Further evaluation of the health beliefs was conducted using the subcategories (benefit, barrier, and motivation). The two groups of men differed significantly on the motivation subscale. The men who participated in prostate cancer screening were found to be significantly more motivated than those who did not participate in PCS (p =.01). The groups did not differ on the benefit (p =.18) or barrier (p =.48) subscales.

Research Question 2: "Is there a difference in knowledge about prostate cancer and screening of men who participate in prostate cancer screening compared to men who do not participate in prostate cancer screening?"

There was a statistically significant difference in knowledge about prostate cancer between the two groups of men. Those men who participated in prostate cancer screening had higher prostate cancer knowledge scores than those men who did not participate in prostate cancer screening (see Table 4-2). The scores on the knowledge scale ranged from 0-12 with twelve being the highest possible score. Of the men surveyed, scores ranged from 0-11.

Table 4-2

Differences on health beliefs, knowledge, and age of men who did and did not participate in prostate cancer screening

Variable	n	Mean	SD	*t*(df)
Health Belief (Total)				
PCS	51	72.86	8.06	-8.85(78), p - .05
No PCS	29	68.38	11.52	
Benefit				
PCS	54	20.72	3.79	-1.35(84), p = .18
No PCS	32	19.44	4.95	
Barrier				
PCS	51	21.06	3.83	-0.71(81), p = .48
No PCS	32	20.38	4.93	
Motivation				
PCS	54	31.04	3.83	-2.61(86), p = .01
No PCS	34	28.18	5.63	
Knowledge				
PCS	49	6.16	2.82	-2.10(81), p = .04
No PCS	34	4.91	2.44	
Age				
PCS	52	56.04	9.91	-2.34(81), p = .02
No PCS	31	50.97	8.93	

Research Question 3: "Is there a difference in the age of men who participate in prostate cancer screening from those who do not participate in prostate cancer screening?"

A significant difference in the age of men who participated in prostate cancer screening versus those men who did not participate in prostate cancer screening was found. Men who participated in prostate cancer were significantly older than the men who did not participate in prostate cancer screening (see Table 4-2).

Research Question 4: "Is there a difference in the income levels between men who participate in prostate cancer screening compared to men who do not participate in prostate cancer screening?"

No assumption about the distribution of the income variable was made. Therefore, the Mann-Whitney U nonparametric test was used appropriately to test the differences between groups (Munro, 2005). No significant difference in income was observed between the men who participated in prostate cancer screening and the men who did not participate in prostate cancer screening (see Table 4-3).

Table 4-3

Mann-WhitneyResults of Education and Income Differences

Variable	Mann-Whitney U	Z	*p*
Educational Level	846,000	-1.071	.284
Income Level	788.000	-.844	.376

$p<.05$ two-tailed test

Research Question 5: "Is there a difference in the educational levels of men who participate in prostate cancer screening compared to men who do not participate in prostate cancer screening?"

The Mann-Whitney U test was used to determine the differences in educational levels between the two groups. No significant difference in educational levels was found between the men who participated in prostate cancer screening and those who did not participate in prostate cancer screening (see Table 4-3).

Research Question 6: "What is the relationship of health beliefs, knowledge, and selected demographic variables (age, income, and education) to a man's decision to participate in prostate cancer screening?"

Forward logistic regression was used to determine which independent variables (total health beliefs (benefits, barriers, and motivation); knowledge, age, income, and education) were predictors of prostate cancer screening. Bivariate correlations between the dependent variable and the independent variables were examined (see Table 4-4). Data screening led to the elimination of three variables. Regression results indicated the overall model of one predictor, motivation was statistically reliable in predicting prostate cancer screening participation among the rural dwelling men surveyed. The total model was significant (p = .002), and accounted for 15 to 20% of the variance (see Table 4.43). The model was a good fit (Hosmer and Lemeshow, χ^2=1.71, df =6, p = .945). The sensitivity of the model in predicting those who would participate in prostate cancer screening was 85%. The odds of those who would participate in prostate cancer screening were 1.3 times greater for each one unit increase in motivation. Men who were more motivated were more likely to participate in screening (Munro, 2005).

Table 4-4

Bivariate Correlation Results

	Variables					
	Screen Status	Age	Knowledge	Benefit	Barrier	Motivation
Age	.266*					
Knowledge	.226*	.143				
Benefit	.111	.169	.208			
Barrier	.040	.224*	.096	.233*		
Motivation	.280**	.248*	.166	.403**	.250*	
Health Belief (Total)	.225*	.268*	.229*	.783**	.570**	.811**

Sperman Rho results; *p < .05. **p < 0.01.

Table 4-5

Logistic Regression of Model Variable on Prostate Cancer Screening

Variable	*B*	*SE B*	Likelihood Ratio Statistic	*p*	Odds Ratio	C1
Motivation	.243	.80	.80	.002	1.28	.18-.14

Significant p < .05

Summary of Findings

A sample of 90 African American men dwelling in rural south Alabama participated in the study by completing the research questionnaire. The men were between the ages of 40-82 years of age. The mean age was 54.1 years (SD = 9.8). Sixty percent of the men (n = 54) reported participating in prostate cancer screening.

Analysis of the research data indicated that there was a statistically significant difference in health beliefs, knowledge, and age of men who participated in prostate cancer screening compared to those who did not participate in prostate cancer screening. No significant differences in income and education were found between the men participating in prostate cancer screening and those who did not participate in screening.

The results of the forward logistical regression analysis revealed that among the variables health belief (benefit, barrier, and motivation), knowledge of prostate, age, education and income, only one variable significantly contributed to a man's decision to participate in prostate cancer screening. Motivation was found to have a statistically significant relationship to those men who made reported participating in prostate cancer screening.

CHAPTER V

DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

A descriptive study was conducted among rural dwelling African American men. The sample consisted of 90 African American men who ranged in age from 40 to 82 and who resided in rural communities of west central Alabama. The rural counties of this region are considered part of the rural black belt communities.

Discussion

Independent sample t-test revealed that health belief scores of men who participated in prostate cancer was significantly higher than the score of men (p =. 05) who did not participate in prostate cancer screening. Utilizing the subcategories of the total health belief instrument (benefit, barrier, and motivation), the men who participated in prostate cancer screening were found to be significantly more motivated than those who did not participate in prostate cancer screening. No difference was noted between the groups concerning benefit or barriers subscales. There were no quantitative studies found that parallel the exact findings of the current study. However, Plowden (2006) in a qualitative study involving 36 participants, identified factors influencing the decision to participate in prostate cancer screening among urban African American men. Three critical factors identified were: importance of significant others, receiving knowledge of the disease, and screening recommendations. In this study, knowledge was identified as "…an essential motivator for African American men" (p. 480).

In this study, those men who participated in prostate cancer screening had higher knowledge scores than those men who did not participate in prostate cancer. Wilkinson, List, Sinner, Dai, and Chodak (2003) examined the association of knowledge and income, noting that men with lower levels of income had significantly lower knowledge scores than those with higher incomes. On the average, men in the current study had relatively high income levels. They also suggested that limited awareness had an impact on male prostate cancer participation in early detection and screening. Steele, Miller, et al., (2000) in their assessment of attitudes and screening practices, found that 43% of the African American men identified themselves as having a "medium to low" risk, 16% reported having "no" risk, and 34% answered "don't know or not sure". Many of these African American men reported having prostate cancer screening knowledge of the PSA test, regardless of perceived risk.

According to the ACS (2006) the risk of developing prostate cancer for Caucasian males with no family history of the disease begins at age 50, while the risk for African American men begins as early as age 40. Avorn et al. (2004) in a study involving 67,000 men age 65 years or older, found that African Americans were 35% less likely than Caucasians to undergo prostate-specific antigen (PSA) testing. In the current study, older African American men were more likely to participate in prostate cancer.

In the current study no statistically significant differences in income or educational levels were found between men who participated in prostate cancer screening and those who did not. Though the men were within the age range of screening for prostate cancer, greater than 75% had at least a high school education (42.2% reported some college or more) and had on average higher incomes, 36% of the men denied

participating in prostate cancer screening. Wilkinson et al. (2003) reported different results noting, that the higher the level of education and income of participants, the more likely they were to have participated in prostate cancer screening or prior screening had occurred. These findings point out the need to disseminate prostate cancer screening information across all income and educational levels of African American men.

Previous research findings identified the influence of beliefs, barriers, knowledge, customs or traditional practices on decision-making concerning prostate cancer screening among African American men. Woods et al. (2004) and Oliver and Grindel (2006) provided evidence of the influence of attitudes, beliefs and knowledge regarding prostate cancer screening decision-making. Weinrich, Weinrich, Boyd, and Atkinson (1998) in their study concluded that men with more knowledge about prostate cancer were more likely to go for free prostate cancer screening than were men with less knowledge. Plowden (2006) in a qualitative study exploring social factors influencing a decision to participate in prostate cancer screening among urban African-American men age 40 and over, identified knowledge as an essential motivator. In this study, analysis revealed motivation was statistically reliable in predicting prostate cancer screening participation among the rural dwelling men surveyed. The model accounted for 15 to 20% of the variance. The sensitivity of the model in predicting those who would participate in prostate cancer screening was 85%. The odds of those who would participate in prostate cancer screening were 1.3 times greater for each one unit increase in motivation. Regardless of the perspective motivation is examined, it is clear that interventions that motivate a man to participate in prostate cancer screening should be identified and tested.

The current study which consisted of only African American men, 60% of the men reported prostate cancer screening participation. In comparison, the National 2002 Behavioral Risk Factor Surveillance System survey results for the state of Alabama indicated that 54.9 to 57.2 of men 40 years or older reported having a PSA test within two years of the survey (Robert Wood Johnson Foundation, 2004). These findings, though inclusive of all men, provide some validation of the current researchers study results.

The present study applied the Health Belief Model as a framework to examine the relationship between health beliefs, knowledge, and selected demographic variables (age, income and education) and a man's decision to participate in screening practices for prostate cancer. Theory is tested through research. Through use of the Health Belief Model as a conceptual framework for this study, the constructs of the model used are strengthened and validated. The action of participating in prostate cancer screening or not, initially involves the individual perceived susceptibility to prostate cancer or the belief that this disease may affect them. Individual demographics, such as age, socioeconomic status, education and knowledge effect the individual's health motivation. The individual's health motivation has a direct effect on the individual taking action (e.g. prostate cancer screening). In addition, individual perception of the benefits and barriers concerning the action also directly impacts whether the individual takes the action (screen for prostate cancer). According to Janz et al. (2002) the model, with the inclusion of self efficacy and health motivation, indicate an individual's likelihood to take action e.g., participate in a behavior, depends on the person's perception of the potential illness, perception of illness consequences, and perceived benefits and barriers associated with

health behavior. The Health Belief Model served as an appropriate conceptual framework for assessing a man's participation in prostate cancer screening for this study. The model provided a framework for assessing the men's beliefs and perceptions, knowledge, and demographic variables. The dichotomous outcome of screening was appropriately identified as the action component of the model.

Limitations

The design of this study imposed certain constraints upon generalization of the findings. A convenience sample was used, thus, the results may not be representative of all African American men dwelling in rural areas. The sample size was relatively small. The study geography was confined, as the participants were African American men from a single region of Alabama, therefore, limiting the generalizability of the study findings to other populations, as well as other African American men. Though it is the researcher's hope that all participants answered the self reported measure of prostate cancer screening as honestly as possible, no verification of the reported data were possible. In addition, it is possible that participants may not have accurately recalled screening participation or were not aware that they were being screened, for example, with blood testing for the PSA.

Conclusions

Motivation [Health Beliefs] was identified as being statistically significant among men who participated in prostate cancer. Motivation scores were significantly different between groups of men who participated in prostate cancer screening and those men who do not participate in screening. Interventions that include a motivational component should be developed and tested. Regardless of the perspective, clearly motivation should

be included, identified, and tested in interventions promoting African American's men decisions concerning screening for prostate cancer. In this study, the men who reported participation in prostate cancer screening were significantly older and had significantly higher knowledge scores. This finding could be an indication that younger African American men could benefit from education on prostate cancer screening concerning prostate cancer disease risk, benefits and recommendations. Thus, men could make an informed decision as to whether or not to participate in prostate screenings. Though this study did not identify a statistically significant difference among the men, the men in the study on average reported higher income levels. This finding could be due factors such as the small sample size and limited geographical area. In conclusion of this finding, a study with a larger sample that included other regions would be indicated. This study demonstrates the need for more educational interventions related to prostate cancer awareness for men, particularly of African American heritage. The literature supports conclusions related the importance of health care providers taking an active role in educating not only individuals, but also communities regarding motivation strategies for African American men and health promotional education into outreach activities.

Implications

A number of implications emerged from this study. The implications related to theory, practice, research, and education; each of these areas are discussed.

Implications for Theory

A theoretical framework is an important consideration when researching minorities, such as the African American population in the current study. The framework must make a careful reflection on how culturally based values may facilitate or impede

efforts of the population being studied. In this study, the Health Belief Model provided an opportunity of the participant's perceptions to be identified and the effects of these perceptions on their actions (e.g., prostate cancer screening participation) to be explained. Ultimately, theory is a framework used as a base to guide research; the Health Belief Model was useful in this goal.

Implications for Practice

Health care providers should acknowledge the important role of motivation among individuals when providing health care. Adequate knowledge related to health promotion is important, however, individual motivation is a critical component of action being taken as indicated in the model (Oliver, 2007). Though addressing prostate cancer screening can be time consuming and complex, it is important that men are appropriately informed and exposed to guidelines, benefits and barriers of screening. Thereby, this education gives an opportunity to men to make an informed decision concerning whether to participate in prostate cancer screening. Allen, Kennedy, Wilson-Glover, and Gilligan (2007) in a qualitative study exploring African-American men's perceptions about prostate cancer, appropriately summarized that for a man to participate in shared decision-making about screening, they need to be knowledgeable about prostate cancer, risk factors, and the risk, benefits and limitations of screening methods. Although healthcare providers and researchers must carefully approach prostate cancer screening to ensure that a balanced view is presented, it is tremendously important that men receive the information in a manner in which they can conceptually understand and make informed decisions.

This study demonstrates the need for interventions related to prostate cancer awareness for men, particularly of African American heritage. Educational and motivational interventions, through churches and other community outlets should be directed at younger men as well as older men. Health care providers should play an active role in educating individuals and communities regarding prostate cancer screening. Outreach activities to promote a healthy lifestyle should be conducted. These outreach activities would also be a good forum for enhancing education and motivation for informed screening decisions.

Implications for Education Inventions

The study has concluded that individuals should be provided the recommended education concerning prostate cancer risk, screening risk and benefits. However, insufficient data exists to determine if this education is being provided, most importantly in a manner that is understood and is culturally sensitive, especially among African American men. One should never assume that a patient already possesses knowledge about their health (e.g., what lab work is being done, etc.) Health care professionals, such as nurses, educators, and other health care providers, are a vital link in supplying information to individuals concerning prostate cancer screening. This education will assist individuals in making informed decisions concerning prostate cancer health promotion and decision making.

Implications for Research

The finding of this study indicated that age, education, and health motivation were associated with participation in prostate cancer screening. The current study findings indicated that the odds of those who would participate in prostate cancer screening were

1.3 times greater for each one unit increase in motivation. However, motivation, accounted for 15-20% of the total variance for prostate cancer participation among the rural dwelling African American participants, which suggest that other factors may influence the screening participation. Research to explore other factors that significantly contribute to prostate cancer screening will strengthen interventions that are designed to increase screening participation.

A moderate amount of research has been conducted regarding prostate cancer and prostate cancer screening. Current literature findings have failed to demonstrate a consistent relationship between prostate cancer screening and health motivation. Those studies that have addressed health motivation did not primarily involve African American men, specifically those dwelling in rural communities. The study findings should be replicated with a larger sample size that includes not only African American men but other ethnic groups such as Caucasians and Hispanics.

Future research should focus on the inclusion of this population and more descriptive studies concerning African American men making informed decisions concerning participation in screening for prostate cancer. Further studies, including African American men focusing on developing interventions concerning prostate cancer screening decisions should be developed and tested with a motivational component included.

Further research is also warranted in the use of all constructs of the Health Belief Model. A better understanding of African American men, their cultural environment, and the influence of others (e.g., health care providers, family, friends, etc.) on their decision

to participate in prostate cancer screening is invaluable in designing interventions to promote health promotion.

Recommendations

Based upon the finding of this study, several recommendations are suggested:

- Replicate the study with a larger and more geographically diverse population.
- Test educational interventions with a motivational component included.
- Implement a research study similar to this one that will include all of the components of the Health Belief Model.
- Promote education and communication concerning prostate cancer, incorporating risks and benefits of screening.
- Develop culturally sensitive educational interventions
- Implement educational interventions that include younger African American men (e.g., 40-50 years old).
- Develop and implement interventions with a consideration of culture and literacy.

Study Summary

In this chapter, a discussion of the findings, the conclusions and implications for practice, education, and research were addressed. Finally, recommendations that evolve from the research findings were made.

References

Allen, J. D., Kennedy, M., Wilson-Glover, A., & Gilligan, T. D. (2007). African American men's perceptions about prostate cancer: Implications for designing educational interventions. *Social Science and Medicine, 64*(11), 2189-2200.

American Cancer Society. (2006, February 12). *Cancer facts and figures for African Americans, 2006*. Available from the American Cancer Society Web site: http://cancer.org

American Cancer Society. (2006). *Detailed guide: Can prostate cancer be found early?* Retrieved March 3, 2006, from the American Cancer Society Web site: http://www.cancer.org/docroot/CRI/content/CRI_2_4_3X_Can_prostate_cancer_be_found_early_36.asp

American Cancer Society. (2007). *Detailed guide: Prostate cancer what are the key statistics about prostate cancer?* Retrieved July 26, 2007, from the American Cancer Society Web site: http://www.cancer.org/docroot/CRI/content/CRI_2_4_1X_Can_prostate_cancer_be_found_early_36.asp

American Cancer Society. (2007[b]). *Cancer Facts & Figures 2007*. Atlanta, GA.

American Nurses Association. (1996). *Rural/frontier nursing*: The challenge to grow. Washington, DC: Author.

Avorn, J., Kantoff, P., Wang, P., & Levin, R. (2004). Black men significantly less likely to undergo prostate cancer screening. *Archives of Intern Medicine*, *164*, 1858-1864.

Baldwin, D. M. (2003, January). Disparities in health and health care: Focusing efforts to eliminate unequal burdens. *Online Journal of Issues in Nursing*. Retrieved March 4, 2003, from http://www.nursingworld.org/ojin/topic20/tpc20_1htm

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory.* Englewood Cliffs, NJ: Prentice-Hall.

Boyles, G., Moore, A. D., & Edwards, Q. T. (2003) Health practices of male department of defense health care beneficiaries: A follow-up on prostate cancer screening in the national capital area. *Military Medicine*, *168*(12), 992-996.

Brawley, O. W. (2000). The unequal burden of cancer. *Minority Health*. Retrieved April 7, 2004, from http://www.findarticles.com/cf_dls/m0HKU/5_1/66918343/ print.jhtml

Brawley, O. W., & Kramer, B. S. (2005, January 10). Cancer screening in theory and practice. *Journal of Clincial Oncology*, *23*(2), 293-300.

Bushy, A. (1998). International perspective. Rural nursing in the United States: Where do we stand as we enter the new millennium. *Australian Journal of Rural Health, 6*(2), 65-71.

Bushy, A. (2000). Nursing and rural health care delivery. In A. Bushy (Ed.), *Orientation to nursing in the rural community*. Thousand Oaks, CA: Sage Publishing.

Casey, M. M., Call, T., & Klingner, J. M. (2001). Are rural residents less likely to obtain recommended preventive healthcare services? *American Journal of Preventive Medicine, 21*(3), 182-187.

Champion, V. L. (1993). Instrument refinement for breast cancer screening behaviors. *Nursing Research*, *42*, 139-143.

Champion, V. L. (1999). Revised susceptibility, benefits, and barriers scale for mammography screening. *Research in Nursing & Health*, *22*, 341-348.

Cherubini, P., Rumiati, R., Rossi, D., Nigro, F., & Calabrò, A. (2005). Improving attitudes toward prostate examinations by loss-framed appeals. *Journal of Applied Social Psychology, 35*(4), 732-744.

Cohen, J. (1988). *Statistical power analysis for behavior science* (2nd ed.). New Jersey: Lawrence Erlbaum Associates.

Downs, F. (1999). *Reading in research methodology* (2nd ed.). Philadelphia: Lippincott.

Forrester-Anderson, I. T. (2005) Prostate cancer screening perceptions, knowledge and behaviors among African American men: Focus group findings. *Journal of Health Care for the Poor and Underserved*, *16*, 22-30.

Frank-Stromborg, M., & Olsen, S. J. (2004). *Instruments for clinical-care research (3rd ed.).* Boston: Jones and Bartlett.

Glanz, K., & Rimer, B. K. (2005). *Theory at a glance: A guide for health promotion practice* (2nd ed.). National Cancer Institute, National Institutes of Health, United States Department of Health and Human Services. Washington DC: National Institute of Health.

Glanz, K., Rimer, B. K., & Lewis, F. M. (Eds.). (2002). *Health behavior and health education theory research and practice* (pp. 45-66). San Francisco, CA: Jossey-Bass.

Gosschalk, A., & Carozza, S. (2003). Cancer in rural areas: A literature review. *Rural Healthy People 2010*, 49-56.

Guerra, C. E., Jacobs, S. E., Holmes, J. H., & Shea, J. A. (2007). Are physicians discussing prostate cancer screening with their patients and why or why not? A pilot study. *Journal General Internal Medicine*, *22,* 901-907.

Gwede, C. K., & McDermott, R. J. (2006). Prostate cancer screening decision making under controversy: Implication for health promotion practice. *Health Promotion Practice, 7*(1), 134-146.

Guttman, C. (2001). Awareness of PC a risk among low income urban blacks. *Urology Times*, *29*(3), 28-36.

Higginbotham, J. C., Moulder, J., & Currier, M. (2001). Rural v. urban aspects of cancer: First-year data from the Mississippi Central Cancer Registry. *Community Health*, *24*(2), 1- 9.

Jernigan, J. C., Trauth, J. M., Neal-Ferguson, D., & Carter-Ulrich, C. (2001). Factors that influence cancer screening in older African American men and women: Focus group findings. *Family & Community Health, 24*(3), 27-33.

Janz, N. K., & Becker, M. H. (1984). The Health Belief Model: A decade later. *Health Education Quarterly*, *11*(1), 1-47.

Janz, N. K., Champion, V. L., & Strecher, V. J. (2002). The Health Belief Model. In Glanz, K., Rimer, B. K., & Lewis, F. M. (Eds.), *Health behavior and health education theory research and practice* (pp. 45-66). San Francisco, CA: Jossey-Bass.

Klier, J. (2004). Using the Health Belief Model to reveal the perceptions of Jamaican and Haitian men regarding prostate cancer. *Journal of Multicultural Nursing and Health, 10*(3), 41-48.

Lee, H. J. (1991). Definitions of rural: A review of literature. In A. Bushy (Ed.). *Rural Nursing*, *Vol. 1,* 7-20. California: Sage.

Moscovice I., & Rosenblatt, R. (2000). Quality of care challenges for rural health. *The Journal of Rural Health, 16*(20), 168-176.

Mueller, M. K., Ortega, S. T., Parker, K., Patil, K., & Askenazi, A. (1999). Health stats and access to care among rural minorities: What do we know? *Journal of Health Care for the Poor and Underserved*, *10*, 230-249.

Munro, B. H. (2001). *Statistical methods for health care research* (4th ed.). New York: Lippincott.

Munro, B. H. (2005). *Statistical methods for health care research* (5th ed.). New York: Lippincott.

Myers, R. E. (2000). African American men, prostate cancer early detection examination use, and informed decision-making. *Seminars in Oncology*, *26*, 375-381.

National Cancer Institute. *Surveillance, Epidemiology, and End Results (SEER) program*. (n.d.). Retrieved October 1, 2006, from http://seer.cancer.gov

National Cancer Institute. (2005). *The Prostate Cancer Outcomes Study: Fact Sheet*. Retrieved October 13, 2006, from http://www.cancer.gov/newscenter/pcos

National Institute of Health. *National Cooperative Study of Hereditary Prostate Cancer in African Americans*. (n.d.). Retrieved October 13, 2006, from http://www.genome.gov/10002040

National Prostate Cancer Coalition. (2006). *African American men 2.5 times likely to die from prostate cancer.* Retrieved July 21, 2006, from Prostate Cancer Coalition Web site: http://www.fightprostatecancer.org/site/News2?news_iv_ctrl 1&page=NewsArticle&id=5316

National Prostate Cancer Coalition. (2005). *10 things African Americans should know about prostate cancer*. Retrieved March 12, 2005, from http://www.pcacoalition.org/pdf/african_americans_and_pca.pdf

National Prostate Cancer Coalition. (2007). The prostate cancer state by state statistics. Retrieved September 15, 2007, from www.fightprostatecancer.org

National Rural Health Association. (2006). *Health disparities in rural populations: An introduction. National Rural Health Policy Brief*. Kansas City, MO.

Neilson, N. R., Kristensen, T. S., Zhang, Z. F., Strandberg-Larsen, K., Schnohr, P., & Bronbaek, M. (2007). Sociodemographic status, stress, and risk of prostate cancer. A prospective cohort study. AEP Vol. *17* (7), 498-502.

Noar, S. M. (2005). A health educators guide to theories of health behavior. *International Quarterly of Community Health Education*, *24*(1), 75-92.

Office of Minority Health. (2007). HHS fact sheet minority health disparities at a glance. Retrieved August 27, 2007, from http://www.omhrc.gov/templates/content.aspx? ID=2139

Oliver, J., & Grindel, C. (2006). Beliefs and attitudes about prostate cancer and prostate cancer screening practices among rural African American men. *Oncology Nursing Forum, 33*(2), 454, Abstract No. 209.

Oliver, J. S. (2007). *Prostate cancer screening patterns among African American men in the rural south.* Unpublished doctoral dissertation, Georgia State University, Atlanta, GA.

Parchment, Y. D. (2004, November/December). Prostate cancer screening in African American and Caribbean males: Detriment in delay. *ABNF Journal*, 116-120.

Plowden, K. O. (2003). A theoretical approach to understanding black men's health-seeking behavior. *The Journal of Theory Construction and Testing, 7*(1), 27- 31.

Plowden, K. O. (2006). To screen or not to screen: Factors influencing the decision to participate in prostate cancer screening among urban African American men. *Urologic Nursing*, *26*(3), 477-482.

Pierce, R., Chadiha, L.A., Vargas, A., & Mosley, M. (2003). Prostate cancer and psychosocial concerns in African American men: Literature synthesis and recommendations. *Health & Social Work, 28*(4), 302-11.

Polit, D. F., & Hungler, B. P. (1997). *Essentials of nursing research methods, appraisal, and utilization* (4th ed.). New York: Lippincott.

Polit, D. F., & Hungler, B. P. (1999). *Nursing research principles and methods (6th ed.).* New York: Lippincott.

Prochaska, J. O., & DiClemente, C. C. (1984). *The transtheoretical approach: Crossing traditional boundaries of therapy*. Homewood, IL: Dow Jones-Irwin.

Prostate Cancer Foundation. (2004). *Prostate Cancer Facts.* Retrieved November 9, 2004, from http://www.prostatecancerfoundation.org

Ricketts, T., Johnson-Webb, K., & Randolph, R. (1999). Populations and places in rural America. In Ricketts, T. (Ed.), *Rural Health in the United States* (pp. 7-21). New York: Oxford University Press.

Ries, L. A., Eisner, A. G., Kosary, M. P., Hankey, C. L., Miller, B. F., Clegg, B. A., et al. (2000). *SEER Cancer Statistics Review*, 1973-1997. Bethesda, MD: National Cancer Institute.

Robert Woods Foundation. (2004). *Characteristics of the uninsured: A view from the states*. State Health Access Data Assistance Center: University of Minnesota.

Sheeran, P., & Abraham, C. (1995). *The Health Belief Model, in Predicting Health Behavior* (M. Conner & P. Norman, Eds.). Buckingham: Open University Press.

Smedley, B. D., Stith, A. Y., & Nelson, A. R. (2003). *Unequal treatment confronting racial and ethnic disparities in healthcare.* Washington, DC: National Academies Press.

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*(10), 1595-1600.

Talcott, J. A., Spain, P., Clark, J. A., Carpenter, W. R., Do, Y. K., Hamilton, R.J., et al. (2007). Hidden barriers between knowledge and behavior: The North Carolina prostate cancer screening and treatment experience. *Cancer, 109*(8), 1599-1606.

Thompson, I. M., Resnick, M. I., & Klein, E. A. (Eds.). (2001). *Prostate cancer screening*. Totowa New Jersey: Humana Press.

Tingen, M. S., Weinrich, S. P., Heydt, D. D, Boyd, R., & Weinrich, M. C. (1998). Perceived benefits: A predictor of participation in prostate cancer screening. *Cancer Nursing*, *21*(5), 349-357.

University of Alabama. (2003, July). *A crisis of care: Alabama's black belt faces health care and education challenges*. Retrieved July 23, 2006, from the University of Alabama Web site: http://www.research.ua.edu/archive2003/care1.html

U.S. Census Bureau. (2000). *State and county quick facts*. Retrieved October 16, 2007, from http://quickfacts.census.gov/qfd/meta/long_68176.htm

U.S. Census Report. (2000). *Black population in the United States*. Retrieved October 16, 2007, from http://www.census.gov/population/www/socdemo/race/ppl-186.html

U. S. Department of Health and Human Services. (2000, November). *Healthy People 2010: Understanding and improving health* (2nd ed.). Washington, DC: U.S. Government Printing Office.

U. S. Department of Health and Human Services. (2006). *Agency for healthcare research and quality: Recommendation for prostate cancer.* Retrieved September 15, 2006, from http://epss.ahrq.gov/ePSS/results/recomdetails.jsp?gid=39&sid=81&tab=0#

U. S. Preventive Services Task Force. (2002, October 28). *Screening for Prostate Cancer: Recommendations and Rationale (1-16)*. Washington, DC: Office of Disease Prevention and Health Promotion.

Weinrich, S. P. (2006, January 12). Prostate cancer screening in high-risk men. *Cancer*. Retrieved January 24, 2006, from http://www3.interscience.wiley.com/egi-bin/fulltext/112229850/main.html,ftx_abs

Weinrich, S. P., Reynolds, W. A., Tingen, M. S., & Starr, C. R. (2004). Barriers to prostate cancer screening. *Cancer Nursing*, *23*(2), 117- 121.

Weinrich, S. P., Seger, R., Miller, B. L., Davis, C., Kim, S., Wheeler, C., et al. (2004). Knowledge of the limitations associated with prostate cancer screening among low-income men. *Cancer Nursing, 27*(6), 442-450.

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.

Weinrich, S. P., Yoon, S., & Weinrich, M. (1998). Predictors of participation in prostate cancer screening at worksites. *Journal of Community Health Nursing*, *15*(2), 113-129.

Weinrich, S. P., Seger, R., Rao, G., Chan, E. C., Hamm, R.M., Godley, P. A., et al. (in press). A decision aid for teaching limitation of prostate cancer screening. *UroOncology.*

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.

Woods, V. D., Montgomery, S. B., Billiard, J. C., Ramirez-Johnson J., & Wilson, C. M. (2004, November/December). Culture, Black men, and prostate cancer: What is reality? *Cancer Control, 11*(6), 388-396.

Appendix A

Institutional Review Board Approvals

INSTITUTIONAL REVIEW BOARD

Mail: P.O. Box 3999
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In Person: Alumni Hall
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Phone: 404/463-0674
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May 8, 2007

Principal Investigator: Grindel, Cecelia Marie

Student PI: Joann Oliver

Principal Investigator Department: B.F. Lewis School of Nursing

Protocol Title: Prostate Cancer Screening Patterns Among Men In The Rural South.

Submission Type: Protocol H07452

Review Type: Exempt Review

Approval Date: May 5, 2007

The Georgia State University Institutional Review Board (IRB) reviewed and approved your IRB protocol entitled Prostate Cancer Screening Patterns Among Men In The Rural South.. The approval date is listed above.

Exempt protocols do not require yearly renewal. However, if any changes occur in the protocol that would change the category of review, you must re-submit the protocol for IRB review. When the protocol is complete, a Study Closure Form must be submitted to the IRB.

Any adverse reactions or problems resulting from this investigation must be reported immediately to the University Institutional Review Board. For more information, please visit our website at www.gsu.edu/irb.

Sincerely,

Ann C. Kruger, IRB Chair

Federal Wide Assurance Number: 00000129

Appendix B

Health Belief Model Instrument

Health Belief Model Scales for Measuring Beliefs Related to Prostate Cancer

(V.C. Champion, 1993 adapted with permission)

Using the scale below, please indicate your beliefs related to the following:

Please Circle Your Response	1	2	3	4	5
	strongly disagree	moderately disagree	neutral	moderately agree	strongly agree
BENEFITS					
1. When I participate in prostate cancer screening I feel good about myself.	1	2	3	4	5
2. When I participate in prostate cancer screening I don't worry much about prostate cancer.	1	2	3	4	5
3. Participating in prostate cancer screening will allow me to detect prostate cancer early.	1	2	3	4	5
4. If I participate in prostate cancer yearly it will decrease my chance of dying from prostate cancer.	1	2	3	4	5
5. If I find a cancer through participating in prostate cancer, my treatment may not be so bad.	1	2	3	4	5
BARRIERS					
6. I am afraid to have a prostate cancer screening because I might find out something is wrong.	1	2	3	4	5
7. I am afraid to have a prostate cancer screening because I don't understand what will be done.	1	2	3	4	5
8. Participating in prostate cancer screening will be embarrassing to me.	1	2	3	4	5
9. Participating in prostate cancer screening will take too much time.	1	2	3	4	5
10. Participating in prostate cancer screening will be too painful.	1	2	3	4	5
HEALTH MOTIVATION					
11. I want to discover health problems early.	1	2	3	4	5
12. Maintaining good health is extremely important to me.	1	2	3	4	5
13. I search for new information to improve my health.	1	2	3	4	5
14. I feel it is important to carry out activities which will improve my health.	1	2	3	4	5
15. I eat well balanced meals	1	2	3	4	5
16. I exercise at least 3 times a week	1	2	3	4	5
17. I have regular health check-ups even when I am not sick.	1	2	3	4	5

Appendix C

Knowledge of Prostate Cancer Screening Instrument

Knowledge of Prostate Cancer Screening Instrument

(Weinrich, 2004)

Please answer each of the following sentences with "True (YES)," "False (NO)" or "Don't Know." Put a check "√" in the box of your answer.

	True (YES)	False (NO)	Don't know
1. Men who have several family members (blood relatives) with prostate cancer are more likely to get prostate cancer.			
2. A man can have prostate cancer and have no problems or symptoms.			
3. Younger men are more likely to get prostate cancer than older men.			
4. Frequent pain often in your lower back could be a sign of prostate cancer.			
5. Most 80 year old men do not need a prostate cancer screening			
6. Some treatments for prostate cancer can make it harder for men to control their urine.			
7. Some treatments for prostate cancer can cause problems with a man's ability to have sex.			
8. Some treatments for prostate cancer can stop a man from ever driving a car again.			
9. Doctors can tell which men may die from prostate cancer and which men will not be harmed by prostate cancer.			
10. An abnormal Prostate Specific Antigen (PSA) blood test means I have cancer for sure.			
11. I can have cancer and have a normal PSA blood test.			
12. Prostate cancer may grow slowly in some men.			

Appendix D

Demographics/Medical Background Instrument

Demographic/ Medical Background Instrument

Put a check "√" in the box of your answer or fill in the information as indicated.

1. How many YEARS OF EDUCATION have you completed? _____

2. What is the highest level of education you have completed?
   - 8th grade or less ___
   - Some high school ___
   - High school graduate ___
   - Technical school ___
   - Some college ____
   - College graduate ___
   - Post graduate work/degree ___

3. What is your race?
   - White ___
   - Black/African American ___
   - Spanish/Hispanic ___
   - Oriental/Asian ___
   - Other: _____

4. What is your marital status?
   - Married ___
   - Widowed ___
   - Divorced ___
   - Single ___
   - Other: _____

5. What is your age? _____ years

6. What is your household income level PER YEAR?
   - Less than 9,999 ___
   - 10,000 to 19,999 ___
   - 20,000 to 29,999 ___
   - 30,000 to 39,999 ___
   - 40,000 to 49,999 ___
   - > 50,000 ___

7. What is your approximate household income PER YEAR? _____

8. Do you have access to the Internet via computer? _____Yes _____No

9. How old were you when you had your 1st prostate cancer screening? ____ years old
   ____ never had one

If you have had prostate cancer screening, please go to question # 10.
If not go to question # 13.

10. Have you ever had a Digital Rectal Exam? ___ Yes ___ No

If yes, how long ago?
Within the last year___
1-2 years ago ___
2-3 years ago ___
3-4 years ago ___
4-5 years ago ___
More than 5 years ago ___
Don't remember ___

11. Have you ever had a Prostate Specific Antigen Blood Test (PSA) test? ___ Yes ___ No

If yes, how long ago?
Within the last year ___
1-2 years ago ___
2-3 years ago ___
Over 3 years ago ___
Don't remember ___

12. How often do you have prostate cancer screening? _____

13. How often does your doctor recommend prostate cancer screening? _____

	1	2	3	4	5
14. Rate the influence of others on your decision regarding participation in prostate cancer screening. **Place a "√" in the box of your answer choice.**	No Influence	little Influence	Some Influence	More Influence	Lots of Influence
Rate the influence of family (spouse, child, sibling)					
Friends					
Health Care Providers					
TV, radio (or other media sources)					
Brochures or other written material					
Other, please describe:					

15. Do you have health insurance? ___ Yes ___ No

16. If yes, does your insurance cover prostate cancer screening? ___ Yes ___ No

Thank you for your participation.

Appendix E

Permission to use Questionnaire

INDIANA UNIVERSITY

SCHOOL OF NURSING

February 27, 2006

Ms. JoAnn Oliver
1604 Carriage Lane East
Tuscaloosa, AL 35404

Dear Ms. Oliver,

Thank you for your interest in my work. Enclosed is the instrumen you requested. You have permission to revise the tool for your use as long as you cite my work and send me an abstract of your completed project.

Sincerely,

Victoria Champion

Victoria Champion, DNS, RN, FAAN
Associate Dean for Research
Mary Margaret Walther/
Distinguished Professor of Nursing

VC:dg

Enclosure

CENTER FOR NURSING RESEARCH

1111 Middle Drive
Indianapolis, Indiana
46202-5107

317-278-2036
Fax: 317-278-2021

Located on the campus of
Indiana University
Purdue University

Appendix F

Letters of Support

April 4, 2007

Mrs. JoAnn Oliver, MSN, RN
1604 Carriage Lane East
Tuscaloosa, AL 35404

Dear Mrs. Oliver:

Mannington Mill Inc. is a hardwood flooring Manufacture located in Sumter County, Alabama. We employ150 associates and are very interested in the health of our employees and their families.

We are happy to support you by providing information to our employees regarding your prostate cancer research project. We realize prostate cancer can be a tremendous health problem and sometimes even fatal. Our facility is pleased to participate in communicating your information to our employees.

Again we are always interested in promoting wellness among our employees and we look forward to assisting you as you explore reasons rural males do or do not participate in prostate cancer screening.

Sincerely,

Raz Carter
Director of Manufacturing Epes Facility

February 15, 2007

Mrs. JoAnn Oliver, MSN, RN
1604 Carriage Lane East
Tuscaloosa, AL 35404

Dear Mrs. Oliver:

Hopewell Primitive Baptist Church is happy to allow you to contact the male members of our church regarding your prostate cancer research. I realize prostate cancer can be a tremendous health problem, and, sometimes even fatal, particularly among our African American population. Our church is pleased to participate in this important study, and I will be happy to announce the information you provided to our congregation.

As you know, the Church is always interested in promoting wellness among our members, and we look forward to assisting you as you explore reasons African American males do or do not participate in prostate cancer screening.

Sincerely,

Elder Roger Smith Jr.

Appendix G

Study Advertisement

Georgia State University

Prostate Cancer Research

Would you like to participate in an effort to win the race against Prostate Cancer?

For more information, contact:

JoAnn Oliver, MSN, RN, PH.D. Student
Home: 205-554-0306
Cell: 205-242-9145

JoAnn Oliver
Home (205) 554-0306
Cell 242-9145
Prostate Cancer
Research

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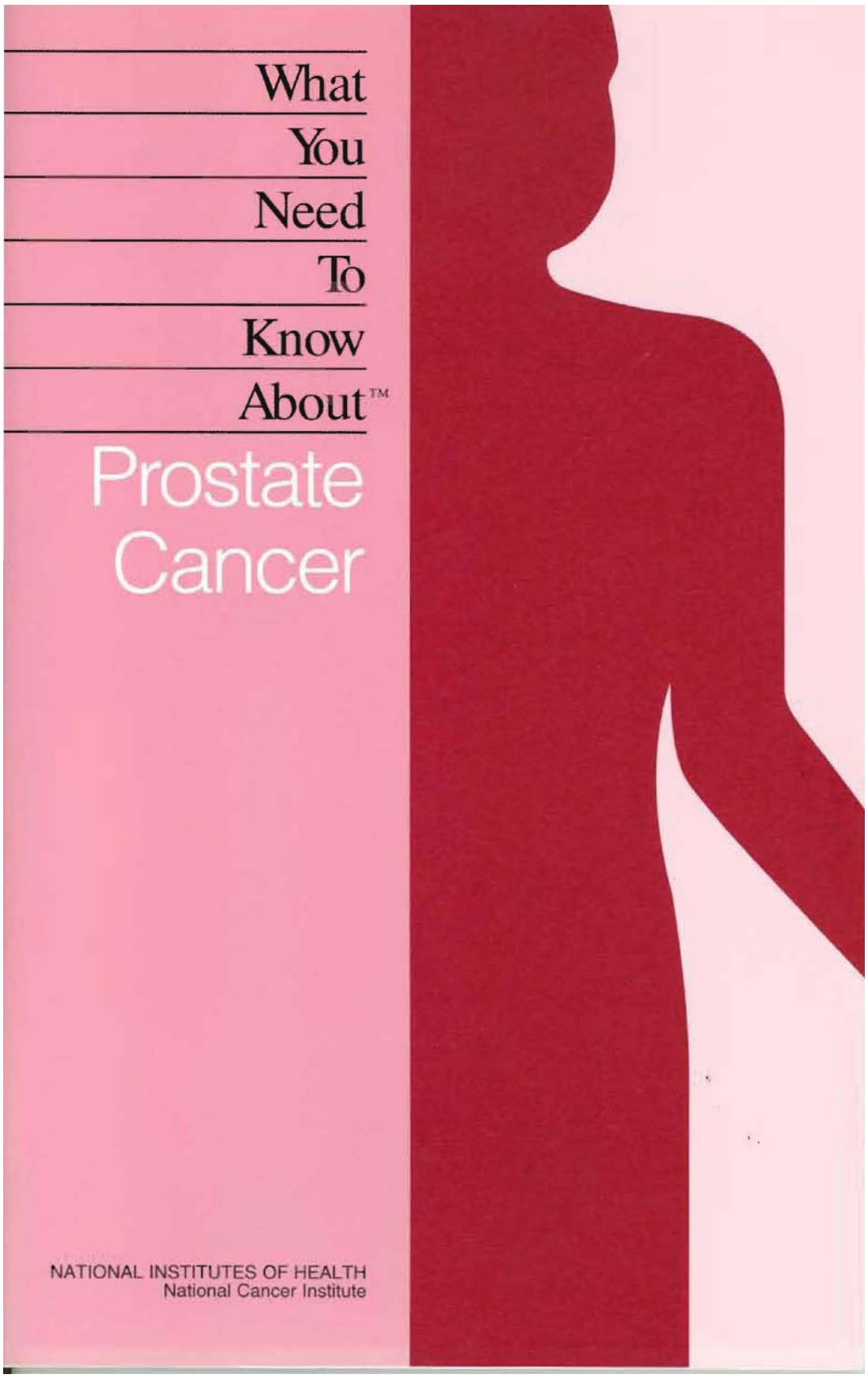
Prostate Cancer
Research

Appendix H

Educational Pamphlet


What
You
Need
To
Know
About™
Prostate
Cancer
NATIONAL INSTITUTES OF HEALTH
National Cancer Institute

Contents

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HUMAN SERVICES
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National Institutes of Health