The Influence of Contextual Characteristics, Individual Characteristics, and Health Behaviors on Patient Satisfaction for African American Men Treated for Prostate Cancer in North Carolina

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ABSTRACT

ANGELO MOORE: The Influence of Contextual Characteristics, Individual Characteristics, and Health Behaviors on Patient Satisfaction for African American Men Treated for Prostate Cancer in North Carolina

Patient satisfaction is an outcome of health services utilization; however, health services utilization can be predicated by contextual characteristics, individual characteristics, and health behaviors (Andersen, 2008). Since prostate cancer is one of the medical conditions that disproportionately affects the mortality of African American men (AAM) in North Carolina, it is imperative to evaluate the factors or combination of factors that influence patient satisfaction for AAM diagnosed and treated for prostate cancer.

A modified version of Andersen's Behavioral Model for Health Services Use was used to guide this study (Andersen, 2008). The model has four broad domains: contextual characteristics, individual characteristics, health behaviors, and health outcomes.

The purpose of this study was to determine the strength of particular or combinations of contextual characteristics, individual characteristics, and health behaviors to predict patient satisfaction in AAM from North Carolina treated for prostate cancer.

This descriptive, correlational study was a secondary data analysis of cross-sectional data of approximately 505 African American men from North Carolina treated for prostate cancer. Data in this study were obtained from Project 1 (Racial differences in prostate cancer

screening and care-seeking behaviors: P.I. Paul Godley) and Project 2 (Cultural and demographic predictors of interaction with the health care system and prostate cancer aggressiveness: P.I. Merle Mishel) of The North Carolina-Louisiana Prostate Cancer Project (PCaP) supported by Department of Defense Grant DAMD 17-03-2-0052: P.I. James Mohler. The data were collected from September 2004 to November 2007.

A model was proposed and tested to determine statistically significant relationships among the three domains of health care service utilization (contextual characteristics, individual characteristics, and health behaviors) and patient satisfaction. Analyses consisted of univariate statistics, bivariate analysis, and multiple regression using forward selection, backward elimination, and stepwise procedures. Finally, hierarchical regression was used to assess and analyze nested data.

The variables selected for the final model were: less than a high school degree, participation in religious activities, mistrust, racism, perceived access to care, patient-providers communication, interpersonal treatment, and communications. Together, these variables accounted for 51% ($p = <.0001$) of the variability in patient satisfaction. This study identified that interpersonal treatment and mistrust were the two most important predictors of patient satisfaction for men in this study.

While contextual characteristics ($p = .003$, $F = 13.36$) accounted for only 2% of the variability, individual characteristics ($p = <.001$, $F = 32.63$) added 27% more, and health behaviors ($p = <.001$, $F = 51.6$) added an additional 22%. Patient-control variables (individual characteristics) and health care provider-controlled variables (health behaviors) are similar in the amount of explained variability in patient satisfaction. This study also provided evidence for the need to look at cultural factors of mistrust and racism when

considering individual characteristics. Patient satisfaction can inform us of future health care

utilization.

ACKNOWLEDGEMENTS

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ABBREVIATIONS

AAM   African American Men

ACS   American Cancer Society

AIC   Akaike Information Criterion

BIC   Bayesian Information Criterion

CAM   Complimentary and Alternative Medicine

DOD   Department of Defense

HIPPA   Health Information Portability and Accountability Act

HSA   Health Service Area

IRB   Institutional Review Board

JCAHO   The Joint Commission on Accreditation of Healthcare Organizations

MHLC   Multidimensional Health Locus of Control Scale

NCCCR   North Carolina Central Cancer Registry

PC   Primary Care

PCA   Prostate Cancer

PCaP   Prostate Cancer Project

PCAS   Primary Care Assessment Survey

PIATR   Peabody Individual Achievement Test-Revised

PRESS   Predicted Sums of Squares

REALM   Rapid Estimate of Adult Literacy in Medicine

SORT-R   Slosson Oral Reading Test-Revised

VA   Veteran Association

VIF   Variance Inflation Factor

WRAT-R   Wide Range Achievement Test-Revised

Chapter 1

Introduction

Under-utilization of health care services is a major problem for African American

men (AAM) (Forrester-Anderson, 2005; D. M. Griffith et al., 2007), and reasons for this

under-utilization are multi-factorial (Byrne, 2008) with long-term health consequences

(Kreuter, Lukwago, Bucholtz, Clark, & Sanders-Thompson, 2002). The experiences of

African American men's interactions with the health care system may explain the quality of

care and some of the health disparities seen in African American cancer patients (ACS,

2009a; American Cancer Society, 2009). Examining patient satisfaction is an approach for

investigating factors influencing health care services utilization and quality of care

(Andersen, 2008).

Patient satisfaction is an outcome of health care services utilization; however, health

services utilization is predicated on characteristics and health behaviors (Andersen, 2008). In

this study patient satisfaction is defined as a patient's personal perception and evaluation of

care (Hekkert, Cihangir, Kleefstra, Berg, & Kool, 2009). Patient satisfaction includes time

spent with health care providers, cost of services, waiting and times, information received,

and quality of care (Mishel, 2003). Patient satisfaction has also been defined as an attitude in

which patient values and beliefs are expressed that reflect care given during a specific

presentation or visit at a health care facility (Mangelsdorff & Finstuen, 2003).

Although patient satisfaction has received more attention recently, less interest has

focused on patient satisfaction with the health care system for African American men

receiving treatment for prostate cancer. Changes in health care policies have now forced

health care facilities to associate patient satisfaction with financial incentives (Kutney-Lee et

al., 2009). Patient satisfaction has implications for health care facility accreditation,

reputation, and financial viability. The Joint Commission on Accreditation of Healthcare

Organizations (JCAHO) tracks and publicly reports patient satisfaction scores to assist

individuals in determining if health care facilities provide quality care. Prostate cancer is just

one of the medical conditions that disproportionately affect African American men in North

Carolina, however, with the under-utilization of health care services and increased burden of

prostate cancer mortality in AAM, it is imperative to evaluate which factors or combination

of factors influence patient satisfaction.

Conceptual Framework

To guide this study, a modified form of Andersen's Behavioral Model for Health

Services Use (see Figure 1) was used. This model has four broad domains: contextual

characteristics, individual characteristics, health behaviors, and health outcomes (Andersen,

2008).
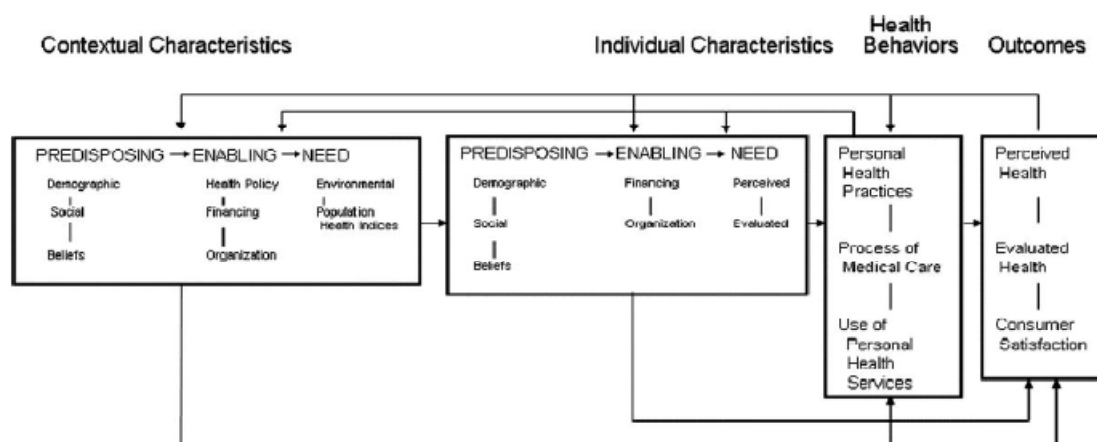
Figure 1. Anderson Behavioral Model of Health Services Use (Phase 5). Source: Medical
Care, 46 (7), 647-653.

Andersen's model has evolved over time in response to changes in health policy, health service delivery, colleague input, developments in health service research, medical sociology, and critiques of earlier versions (Andersen, 2008). Although the model underwent five revisions since the initial development, the fundamental components and their relationships did not change (Andersen, 2008). Outcomes can affect future contextual and/or individual predisposing factors, enabling resources, needs for care, and health behaviors or health services utilization (Andersen, 2008), but those links (represented by feedback loops) was not tested in this study. The conceptual model used in this study is based on Phase 5 which is the latest version of the model (see Figure 2). Because all of the men in this study have been diagnosed for prostate cancer, the need for care subdomains in Andersen's model was not used in this study.
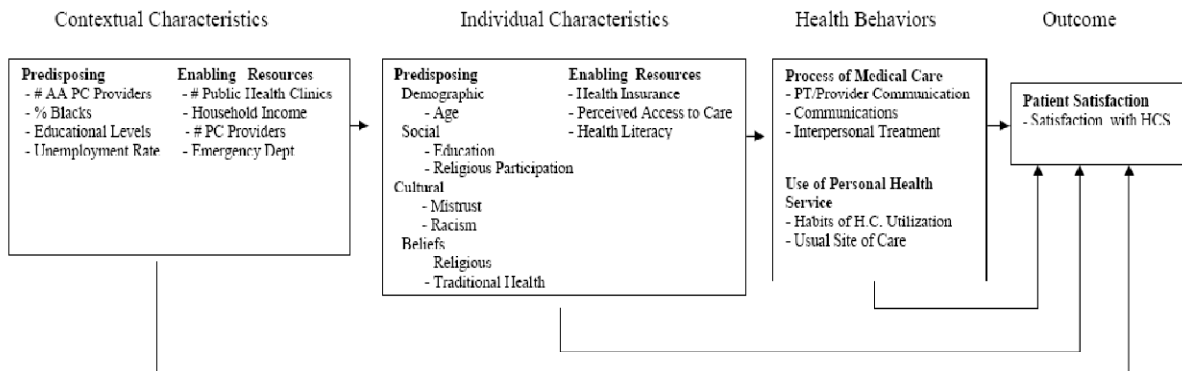
Figure 2. Modified behavioral model of health service use for African American Men treated with prostate cancer (PCA).

Study Model Overview

In this study contextual characteristics are defined as aggregate measures within certain environments in which individuals live, work, and socialize that can affect health outcomes (Hillemeier, Lynch, Harper, & Casper, 2003). The number of African American

Primary Care Providers per Health Service Area (HSA) and county, number of public health clinics per HSA and county, household income per HSA and county, and number of Primary Care Providers per HSA and county variables were developed to represent contextual characteristics for this study.

Variables for individual characteristics, health behaviors, and the outcome were taken from Projects 1and 2 of the North Carolina-Louisiana Prostate Cancer Project (PCaP) with the majority coming from Project 2. Individual characteristics are defined as attributes of the individual that influence whether a person will seek care (E. R. Brown et al., 2004). Age, education, religious participation, mistrust, racism, religious beliefs, traditional health beliefs, health insurance, perceived access to care, and health literacy variables were utilized to represent individual characteristics in this study. Health behaviors are defined as actions taken by an individual to maintain, achieve, or regain good health and prevent illness. Patient-provider communications, interpersonal treatment, communications, habits of health care utilization, and usual site of care variables were utilized to represent health behaviors in this study. Health outcomes are the result of health care services utilization such as consumer satisfaction (Andersen, 2008). Patient satisfaction with the health care system variable was utilized to measure the health outcome in this study.

Contextual Characteristics

Contextual characteristics include health organizations, provider-related factors, community and geographical characteristics (Andersen, 2008). Contextual characteristics are not measured at the individual level but at the level of available services. Contextual characteristics have two subdomains that are functions of one's use of health services: predisposing factors (exist before a patient's illness) and enabling resources (resources that

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facilitate or hinder health care utilization) (Andersen, 1995, 2008). These characteristics assist in defining and measuring multiple dimensions of access to care and health care utilization (Andersen, 2008).

Predisposing Factors

Contextual predisposing factors can be community age and racial structure (Andersen, 2008). In this study, the number of African American primary care providers within a specific geographical area (HSA and county) was used as a contextual predisposing variable. The racial structure of health care providers in a particular geographical area was expected to be diverse. Diversity fosters an inclusive environment conducive to serving and understanding multiple cultures. Racial concordance among African Americans has been reported as having a positive influence on the use of health care services and patient satisfaction (Benkert, Peters, Clark, & Keves-Foster, 2006; Dovidio et al., 2008).

Enabling Resources

Contextual enabling resources are characteristics that must be present in a community or geographical area for use of health care services to take place (Andersen, 2008). In this study, the number of public health clinics, the number of primary care providers, and the household income for a specific geographical area (Health Service Area and county) was used as contextual enabling resources. Resources consist of the volume and distribution of resources available to the population within a prescribed geographical area (Andersen & Newman, 1973). The more resources available to choose from, the more flexibility and options there are to access them. In contrast, the lack of resources limits choice and increases time to necessary health services.

Individual Characteristics

This domain measures characteristics at the individual level, unlike nested information aggregated at the contextual level. Individual characteristics have two sub-domains: predisposing factors and enabling resources. Predisposing factors are further categorized as demographic, social structure, cultural, and beliefs.

According to Andersen's original model, individual predisposing characteristics had three components: demographic factors, social structure, and beliefs (Andersen, 1995). In this study, this model was expanded by adding a fourth component named cultural factors, because some populations are exposed to particular experiences that are not associated or common to other groups of people (Ricketts & Goldsmith, 2005). African Americans have experienced a long history of social injustices, racism, segregation, and discrimination. These experiences are unique to the African American culture and prevalent in the health care system (Dovidio, et al., 2008; IOM, 2002; Washington, 2006).

Predisposing Factors

Individual demographic factors represent important biological identifiers suggesting the likelihood that particular individuals will need to seek health services (Andersen, 1995). In this study, age will be used as an individual predisposing variable.

Social Structure

Social structure is a measure that determines the status of a person in the community, ability to cope with presenting problems and resources to deal with problems, and how healthy or unhealthy the physical environment is likely to be such as education, occupation, and ethnicity (Andersen, 1995). In this study, education and religious participation will be used as individual social structure variables. Education is defined as the level of schooling

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completed. Education is key in social advancement and leads to increased income allowing more available options for health care services (Isaacs & Schroeder, 2004). In African American communities, the church represents a trusted place for support and additional sources to health care services (Blocker et al., 2006; Levin, Chatters, & Taylor, 2005). In this study religious participation is defined as frequency of participation in a variety of religious activities (Mishel, 2003).

Cultural Factors

Cultural factors are a set of beliefs, patterns, or attitudes learned from previous generations or personal experiences that are specific to a particular ethnic group (Schensul, 2009). Mistrust and perceived racism were used as individual cultural factor variables. In this study, racism was defined as the patient's perceived difference in treatment by health care providers by race, and mistrust was defined as the lack of integrity, competence, trust, and role as the patient's agent (Mishel, 2003). Cultural factors may not begin from personal experiences; however, the knowledge of these beliefs, patterns, or attitudes, once confirmed, form a personal experience. Some cultures may have different beliefs and attitudes about diseases and treatments that do not conform or agree with the medical professional's attitudes and beliefs. This lack of congruency can set the stage for unrealistic expectations and hinder positive health outcomes.

It is well-known that African Americans have experienced racism in the health care system. Subsequently, racism has led to African Americans being treated differently from other ethnic groups by health care providers (Institute of Medicince, 2002). This is evident in how some ethnic minority groups believe they will receive inferior health care (Gordon, Street, Sharf, & Souchek, 2006; Ravenell, Jr., & Whitaker, 2006). When one knows that

they will receive inferior care, it becomes increasingly difficult to trust health care providers. Mistrust has been reported to negatively affect the desire of African Americans to seek health care services even when needed (Byrne, 2008; Casagrande, Gary, LaVeist, Gaskin, & Cooper, 2006; Hausmann, Jeong, Bost, & Ibrahim, 2008).

Belief Factors

Beliefs are attitudes, values, and knowledge people have about something that is believed to be true. Beliefs are used here in the context of health, and the beliefs that people have about health and health services influence their future use and perception of health care services (Andersen, 1995). In this study, religious and traditional health beliefs were used as individual belief variables. Religious belief was defined as the belief in God's role of taking control of one's health (Mishel, 2003). Traditional health beliefs were defined as folk beliefs, attitudes, and knowledge about cancer (Mishel et al., 2003).

When studying health beliefs, Andersen (1995) recommends evaluating health beliefs in the context to a particular disease rather than overall general health. Health beliefs influence when, why, and where one seeks health care. Health beliefs also provide the framework for how one interacts with the health care system (Blocker, et al., 2006; Lannin, Matthews, Mitchell, & Swanson, 2002; Matsuyama, Grange, Lyckholm, Utsey, & Smith, 2007).

Enabling Resources

Individual enabling resources are conditions or factors that enable or impede use and need for health care services (Andersen, 2008). It also includes the means and know-how to get to health services when needed and use them (Andersen, 1995). The availability of health insurance, perceived access to care, and health literacy will be used as individual

enabling resource variables in this study. Unlike contextual enabling resources, individual

enabling resources are somewhat in the control of the individual. In this study, access to care

was defined as the ability to access medical care that addresses cost, convenience, and

feasibility (Facione, 1999). Resources enable a person to utilize health care services when

needed; however, those with little resources have decreased opportunities to get health care

when needed. Health literacy was defined as the ability to read and understand common and

lay medical terms (Davis, Michielutte, Askov, Williams, & Weiss, 1998; Mishel, 2003).

Health Behaviors

Health behaviors are the actual use of health care services, and this domain has two

subdomains: process of medical care and use of personal health services (Andersen, 2008).

The actual interaction that occurs between patients and individuals within health care

facilities will have bearings on how patients perceive and evaluate care given. Health

behaviors are quite different from health beliefs. Health beliefs are internal attitudes or

intentions for health care; however, health behaviors are external actions in receiving health

care. Beliefs do not necessarily produce an action.

Process of Medical Care

Process of medical care was defined as the behavior of providers as they interact with

patients in the delivery of medical care (Andersen, 2008). In this study, the evaluation of

patient-provider communications, interpersonal treatment, and communication variables was

used as process of medical care variables. Patient-provider communications was defined as

the degree to which the patient communicates with his health care provider (Mishel et al.,

2002). Communications differs from patient-provider communications in that it focuses on

the health care provider's behavior in communicating with the patient, and interpersonal

treatment relates to the patient's perception of the health care provider's patience, friendliness, caring, respect, and time spent with the patient during interactions (Safran et al., 1998). The focus was on the quality of the communications and interpersonal treatment that occurs in the interaction.

Use of Personal Health Services

Use of personal health services is the other health behavior subdomain which is defined as the type, site, purpose, and coordination of health services received in an illness episode (Andersen, 1995). In this study, habits of health care utilization and usual site of care was used as measures of personal health service variables. Health care utilization was defined as the likelihood of using health care services (Facione, 1999). Knowing when and how a person chooses to seek heath care provides pertinent information about the value placed on health. The type of health care facility used for services will likely affect the experience and ultimately patient satisfaction (Plomondon et al., 2007; L. Ross, Kohler, Grimley, Green, & Anderson-Lewis, 2007).

<center>**Health Outcome**</center>

Consumer satisfaction is an outcome directly related from health care services utilization (Andersen, 2008). In this study, "patient satisfaction with the health care system" was the outcome variable used to measure consumer satisfaction.

Contextual characteristics, individual characteristics, and health behaviors can directly or indirectly affect patient outcomes. In this model, each domain (contextual characteristics, individual characteristics, and health behaviors) were used to make an independent or collective contribution to predict patient satisfaction. According to Andersen's model, the model suggests an explanatory process or causal ordering (Andersen,

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2008).   An individual can have predisposing factors and enabling resources; however, the individual must have a need for care in order for health care services utilization to actually take place(Andersen, 1995).

Statement of the Problem

Under-utilization of health care services is a major problem for African American men (Forrester-Anderson, 2005; D. M. Griffith, et al., 2007), and reasons for this under-utilization are multi-factorial (Byrne, 2008) with long-term health consequences (Kreuter, et al., 2002). Late-stage prostate cancer diagnosis and treatment along with the high mortality rate for AAM may be attributed to patient satisfaction experienced from previous interactions with the health care system. Many have suggested that the lack of prostate cancer screening is a major contributor to late-stage diagnosis and treatment (ACS, 2007, 2009a; American Cancer Society, 2007, 2009); however, the recent Prostate, Lung, Colorectal, and Ovarian Screening (PLCO) Trial concluded that PSA screening did not make a significant difference in mortality (Andriole, Crawford, III, et al., 2009). If this is true, other sources for the increased mortality rate in AAM must be explored. Patient satisfaction is one way to investigate underlying aspects of health care services utilization (Andersen, 2008) and quality of care (Kutney-Lee, et al., 2009). Contextual characteristics, individual characteristics, and health behaviors influence patient satisfaction; therefore, it is important to explore how these factors relate to one another, specifically for AAM. With the increased burden of prostate cancer mortality, it is imperative to evaluate which factors or combination of factors influence patient satisfaction for AAM.

Purpose of the Study

The purpose of this study was to explore whether a particular combination of contextual characteristics, individual characteristics, and health behaviors influence patient satisfaction among a sample of AAM in North Carolina treated for prostate cancer who participated in the North Carolina-Louisiana Prostate Cancer Project (PCaP). A model was proposed and tested to determine individual and collective statistically significant relationships among the three domains of health care service utilization (contextual characteristics, individual characteristics, and health behaviors) and patient satisfaction.

Chapter 2

Review of Literature

This chapter will briefly discuss the magnitude of prostate cancer in the African

American male population followed by a review of literature that will discuss some of the

major issues African American men face surrounding their belief systems, resources, access

to care, and interactions with health care providers. Although testing the proposed model

requires locating topics according to categories in the model, in this review of literature, the

content will be integrated as many of these issues are interrelated with one another. This

chapter will conclude with some problems identified in prostate cancer studies with aims and

research questions proposed to provide new knowledge for these areas by conducting this

study.

Background/Significance

Prostate cancer, the second leading cause of mortality in all men with one death every

18 minutes (ACS, 2007), is the most diagnosed cancer in African American men. It is

estimated to account for approximately 34% of newly diagnosed cancers expected in 2009

 (American Cancer Society, 2009). African American men and Jamaican men of African

descent have the highest prostate cancer incidence rates in the world (American Cancer

Society, 2009). Over the past 25 years, the 5-year survival rate for prostate cancer has

increased from 69% to approximately 99% for both African American men and Caucasian

men when diagnosed and treated in the early stages (American Cancer Society, 2009). This improved survival rate has been attributed to earlier diagnosis and improved treatments however, more AAM are diagnosed in late-stages where treatment options are less available and outcomes are poorer.

In 2004, the prostate mortality rate for AAM in North Carolina decreased some from the 1999-2003 period; however, the mortality rate continued to be more than twice the rate as the Caucasian men in the state. In 2004, the prostate cancer mortality rate for AAM was 61.4 per 100,000 population verses 23.6 per 100,000 population for Caucasians (North Carolina State Center for Health Statistics, 2006). In 2007, the prostate cancer mortality rate for AAM was 52.4 per 100,000 population compared to 21.0 per 100,000 population for whites (North Carolina State Center for Health Statistics, 2006). While mortality rates for AAM have improved over the years, the prostate cancer burden and disparity gap for AAM in North Carolina has made very little progress. Differences in rates of early screening have been identified as one of the causes of health disparity in prostate cancer (Dovidio, et al., 2008; Kudadjie-Gyamfi, Consedine, Ungar, & Magai, 2008; Toles, 2008).

Belief Systems

In order to receive early screening, diagnosis, and treatment, AAM must utilize health care services needed to accomplish this. A significant number of AAM avoid the health care system and delay seeking care, thus contributing to lower rates of early screening, higher rates of late-stage diagnosis, and fewer treatment options (Byrne, 2008). How AAM define health or what they believe is healthy may differ from Caucasian men's definition of health.

Some older AAM define healthy as physical well-being with the absence of physical ailments, mental and emotional well-being, economic stability, a sense of spirituality, and

being able to take care of one's own need without assistance and physical dependence (Ravenell, et al., 2006). In other studies, being healthy also meant being able to fulfill social roles, such as maintaining a job, providing for his family, protecting and teaching their children, and belonging to a network (D. M. Griffith, et al., 2007). Others report that AAM define health as participating in health promotion and prevention activities and visiting a health care provider regularly (Forrester-Anderson, 2005; McFall, Hamm, & Volk, 2006; L. Ross, et al., 2007).

Given these definitions, a large percentage of African American men may not see the value or benefit of seeking health care services on a regular basis. It has been noted that some AAM express the importance and pride of having the ability to maintain their health without the assistance of physicians (Allen, Kennedy, Wilson-Glover, & Gilligan, 2007). African American men tend not to seek health services unless there are symptoms that something is wrong, they are in pain, no self-treatments have worked, and symptoms prevent continuation of social roles and responsibilities (D. M. Griffith, et al., 2007; Ravenell, et al., 2006; Richardson, Webster, & Fields, 2004).

African American men's frame of reference for health was learned from their fathers or grandfathers (who rarely sought help from health professionals) that men's health was secondary to their primary social and family roles (D. M. Griffith, et al., 2007). Some older African Americans viewed hospitals as a place where sick people go and die (D. M. Griffith, et al., 2007). Furthermore, some African American men do not seek care stemming from prior personal, familiar, social, and negative experiences (Ravenell, et al., 2006; Washington, 2006).

For many African Americans, interconnectedness is valued over individualism (Marion & Schover, 2006), and healthcare decisions are usually a family affair (Cort, 2004). African Americans normally first consult their family circle in making decisions about when and where to seek help and reluctantly go outside of the family circle for assistance with medical care-giving (Cort, 2004; Kreuter, et al., 2002). Some African Americans depend more on family members, friends, and the community for health information including cancer-related health (Matsuyama, et al., 2007; Mishel, 2003).

Social roles are important in that men are responsible to provide financially for the family, and the women are responsible for organizing health care within the family (Blocker, et al., 2006; McFall, et al., 2006). Knowing AAM beliefs and reluctance associated with the health care system, women provide support for them during medical appointments. Attending medical appointments serve several purposes: encourage attendance, provide support during the visit with the health care provider, protect the health of their significant other by advocating for them when needed, and protecting the family by keeping the financial provider healthy (McFall, et al., 2006; Plowden, 2006).

Religious beliefs and participating in religious activities are a major part of the African American culture and have been associated with improved health outcomes and greater patient satisfaction (Krause, 2002; Levin, et al., 2005). Religious belief is defined as the belief in God's role of taking control in one's health (Mishel, 2003). Religious beliefs can promote health by applying the belief that the body is God's temple, and one should take care of the body (Blocker, et al., 2006). These individuals are proactive and participate in health promotion and prevention, view health care providers as tools or instruments used by God, demonstrate a positive view of life, and have confidence that God is in control and will

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heal them (Figueroa, Davis, Baker, & Bunch, 2006; R. Johnson, 2005; Levin, et al., 2005; Underwood & Powell, 2006). This belief provides support, comfort, guidance, and coping which is associated with high levels of patient satisfaction and better health outcomes (Figueroa, et al., 2006; Levin, et al., 2005).

In contrast, others maintain the belief that having cancer is God's desire for them and possibly punishment for some sin (Blocker, et al., 2006; Chin, Polonsky, Thomas, & Nerney, 2000). This belief perpetuates fatalistic attitudes that leads to some African American men being hesitant to discuss or participate in cancer screening (Powe, Daniels, & Finnie, 2005) or omit to participate in treatment (Lannin, et al., 2002).

Religious participation is protective for African Americans, and those with high levels of active church involvement have been found to have greater patient satisfaction (Krause, 2002; Levin, et al., 2005). Religious participation differs from religious belief in that it pertains to the frequency of participation in a variety of religious activities (Mishel, 2003). Religious participation has been used in the literature interchangeably with church involvement or religious practices such as frequency in which one participates in prayer, listens to religious programs on the radio or television, reads religious literature, and participates in other religious events (Underwood & Powell, 2006).

To some African American men, these traditional health and religious beliefs, coupled with limited experiences with the health care system, can be harmful to one's health by acting as a barrier to health care utilization leading to poor health outcomes (D. M. Griffith, et al., 2007; Lannin, et al., 2002; Matthews, Sellergren, Manfredi, & Williams, 2002).   In early stages of prostate cancer, men have no recognizable signs or symptoms of the disease that would prompt them to seek medical care (ACS, 2009b). Their beliefs,

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attitudes, and knowledge about cancer may be contradictory to evidence-based clinical practice causing conflict. With the practice of waiting until self-treatment is ineffective or pain is too severe to seek care, AAM develop the potential for them to become subjected to stigma once they do seek care.

Resources

African American men with lower levels of education tend to be less satisfied with patient care (Jayadevappa, Schwartz, Chhatre, Wein, & Malkowicz, 2009b; R. L. Street, Gordon, Ward, Krupat, & Kravitz, 2005; Williems, Maesschalck, Deveugele, Derese, & Maeseneer, 2004). A large percentage of older AAM have lower levels of education due to a history of segregated educational systems concentrated in high poverty neighborhoods with limited educational support and opportunities (Williams & Collins, 2001). Compared to schools in middle-class neighborhoods, the schools in poor neighborhoods often had lower test scores, limited curricula, fewer students in advanced courses, less qualified teachers, less emphasis placed on college, fewer connections with universities, and housed in deteriorating buildings (Williams & Collins, 2001). Some AAM were raised during a time when formal education was limited and not given priority within the African American community.

Educational level affects one's ability to understand complex medical information such as cancer screening, diagnosis, treatment, and symptom management. Low levels of education affect general literacy as well as the health literacy levels needed to read instructions, follow medical recommendations, communicate effectively with health care providers, and navigate through the health care system. African American men are often ashamed and embarrassed about their literacy levels, so they tend to avoid situations that make them exposed such as reading, accessing medical services, and asking questions to

avoid being stigmatized (Davis, et al., 1998; Daniela B. Friedman, Sara J. Corwin, Gregory M. Dominick, & India D. Rose, 2009; Kripalani et al., 2007). African American men with less than a high school education ranked highest among men most likely to delay or avoid testing and screening for prostate cancer (Pierce, Chadiha, Vargas, & Mosley, 2003).

Lower levels of health literacy skills have been associated with low levels of patient satisfaction, and low levels of satisfaction leads to decreased compliance in treatment regimens and trust in the health care system (Daniela B. Friedman, et al., 2009; Mancuso & Rincon, 2006). African American men with lower levels of education have been found to be passive and tended to view health care providers as an authority which impedes their ability to express or articulate their own agenda for the visit by asking questions, voicing concerns, or asserting themselves (Allen, et al., 2007; Gordon, et al., 2006). The communication dynamics of lower educated AAM result in them receiving less overall information from their health care providers, and being less actively involved in the decision-making process (Gordon, et al., 2006). This communication style is embedded within the African American culture from many years of oppression, discrimination, mistreatment, and inequality. Such communication methods are of concern, because older AAM with lower levels of education are at the greatest risk for prostate cancer, have worse health outcomes, and have lower patient satisfaction (R. L. Street, et al., 2005).

In contrast, AAM with higher levels of education have been associated with more active participation in patient-provider communications (Thomas A. LaVeist, 2003; R. L. Street, O'Malley, Cooper, & Haidet, 2008), better communications and interactions (Thomas A. LaVeist, 2003; R. L. Street, et al., 2008), better health outcomes, and greater patient satisfaction (R. L. Street, et al., 2005; R. L. Street, et al., 2008). African American men have

expressed displeasure in health care providers when these providers assume the AAM were not educated and avert responding to inquires about prostate cancer issues (Allen, et al., 2007; Woods, Montgomery, Belliard, Ramirez-Johnson, & Wilson, 2004).

Education is considered the key to economic and social advancement. Less education is associated with poverty (Gerend & Pai, 2008; Parrish & Kent, 2008). Poverty is associated with poorer cancer outcomes and patient satisfaction in all Americans regardless of race; however, since a larger percentage of African Americans live in poverty, African Americans are affected more by poverty (Gerend & Pai, 2008; Parrish & Kent, 2008). Mortality rates from most major cancers are higher for persons in lower social classes (Plumb & Brawer, 2006).

More education leads to increased income resulting in improved choices to obtain better medical care leading to good health outcomes (Isaacs & Schroeder, 2004) and providing greater opportunities to obtain resources. The lack of education limits the types of jobs and occupations one can have. Many AAM work low-paying, labor-intensive jobs that put more stress on the body. These jobs are demanding and provide few opportunities for adequate time off to attend to medical appointments (Talcott et al., 2007).

Household income has been known to negatively affect patient satisfaction by limiting opportunities for health insurance and access to quality health care (Gerend & Pai, 2008; Parrish & Kent, 2008). Poverty acts as a barrier to access to care, because it inhibits one's ability to pay for health services or afford adequate health insurance (Parrish & Kent, 2008). Lower levels of education affect AAM's ability to obtain jobs that provide affordable health insurance.

Health Insurance has been positively associated with higher quality of care (Allen, et al., 2007; D. M. Griffith, et al., 2007), improved health outcomes (Matthews, et al., 2002), and greater patient satisfaction (Bade, Evertsen, Smiley, & Banerjee, 2008; T A LaVeist, Nuru-Jeter, & Jones, 2002). Unfortunately, the type and amount of health insurance represents the most common vehicle for accessing, utilizing, and controlling the quality and quantity of health care services (Allen, et al., 2007; D. M. Griffith, et al., 2007; Plomondon, et al., 2007). Lack of cost-effective health insurance plans has been identified as a deterrent to health seeking, specifically for prostate cancer (D. M. Griffith, et al., 2007).

Lack of health insurance has been associated with later stages of disease at the time of diagnosis (Brawley & Wallington, 2009). It is well-known that African Americans represent a large percentage of uninsured Americans (Hoffman & Paradise, 2008). Unemployment and resulting lack of insurance and inability to afford quality medical care has been linked to poor quality health (Ravenell, et al., 2006). Since the majority (62%) of individuals have employer-sponsored health insurance (ACS, 2008), many African American men work for employers that do not offer this benefit (Hoffman & Paradise, 2008).

Health insurance companies that allow choice of providers have been strongly associated with higher levels of patient satisfaction (Benkert, et al., 2006; T A LaVeist, et al., 2002). Those with health insurance or adequate income can afford to be seen in a private physician office or group practice. However, a large number of African American men have limited resources. Health insurance allows for regular and consistent access into the health care system; however, those without adequate health insurance are forced to use emergency departments and public health clinics (Matthews, et al., 2002)

Access to Health Care Services

Lack of access to timely care has been associated with low levels of patient satisfaction (Plomondon, et al., 2007; Sirois & Purc-Stephenson, 2008). Whether access to care is viewed as actual or perceived, the recipient (AAM) determines or defines the meaning. Having adequate access to care (D. M. Griffith, et al., 2007; Plowden, 2006), a trusted and regular health care provider (Allen, et al., 2007; Forrester-Anderson, 2005), and being able to use health care services when needed (L. Ross, et al., 2007) are key elements to maintaining good health.

However the complexity of the health care system can be very intimidating leading to additional delay in care (Byrne, 2008). Even for highly educated individuals with adequate health care benefits, the health care system is difficult to navigate and may create a sense of powerlessness for those needing to seek healthcare (Gold et al., 2009). A study of 541 women needing radiotherapy for treatment of breast cancer found that 14% ($n = 76$) had at least an 8-week delay in treatment regardless on health insurance (Gold, et al., 2009). The delay in treatment was related to the complexity of gaining access to care. Gaining access to the appropriate medical care in a reasonable time-frame is important to prostate cancer screening and treatment outcomes (Bartsch et al., 2008; Ricketts & Goldsmith, 2005; Talcott, et al., 2007).

The availability of and access to health care resources in a community or geographical area can facilitate or hinder the use of health care services (Andersen, 2008). The supply of health care providers, number and types of health care facilities, location and access to these facilities, and the structure of the health care system are all important resources that can affect patient satisfaction (Andersen, 2008). The more resources available

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to choose from result in more flexibility and options to access them. In contrast, the lack of resources limits choice and increases time to gain necessary health care services.

Location can influence access to and available options for healthcare services compared to those living in urban areas. Extreme distances from healthcare facilities can create isolation from the medical system, further preventing AAM from accessing prostate cancer screening information (Allen, et al., 2007). African American men have reported that the inconvenience of time spent to see a healthcare provider negatively impacts obtaining prostate cancer information (L. Ross, et al., 2007). African American men in eastern North Carolina reported having to utilize emergency rooms and health departments in part because accessing other providers required traveling over mountainous terrain (Newell-Withrow, 2000). African American men, located in other rural districts, perceived that they had to take time away from work while receiving no pay to waste time waiting to be seen by a physician just to hear what they already knew (L. Ross, et al., 2007). Location and distances from major treatment centers cause AAM to use health care facilities such as public health care clinics and emergency departments.

Public health clinics and emergency departments are safety-net health facilities that are available to the indigent and uninsured populations. Safety-net health care services and facilities are public clinics and hospitals that are financially supported by public policies to provide services to Medicaid eligible, low income, and uninsured populations (E. R. Brown, et al., 2004; Davidson, Andersen, Wyn, & Brown, 2004).

Public health clinics and emergency departments have been associated with lower levels of trust and patient satisfaction (Fowler-Brown, Ashkin, Corbie-Smith, Thaker, & Pathman, 2006; Freeman & Chu, 2005). Emergency departments and public health clinics

are not conducive to building trusting relationships (Forrester-Anderson, 2005; D M Griffith, Childs, Eng, & Jeffries, 2007; Talcott, et al., 2007). High rates of physician turnover and insufficient supply of physicians (especially in rural areas) reduce availability of appointments, increase wait times, prevent establishment of relationships, hinder patient-provider communications, and lower patient satisfaction (Plomondon, et al., 2007). Often these health care facilities located in low socioeconomic areas have a significant number of uncertified foreign-born health care providers with language barriers, overburdened staff, and longer waits (Freeman & Chu, 2005; Gerend & Pai, 2008; L. Ross, et al., 2007; Wolff et al., 2003). This milieu is poor for establishing trust between the health care provider and patient needed to build a trusting relationship.

Although these facilities provide some degree of access to health care services, they do not provide coordination and continuity of care. Emergency departments focus on acute care rather than preventive health care needed for prostate cancer early detection and treatment. By only focusing on acute care, emergency departments do not have the environment that is oriented towards teaching and increasing African American men's knowledge about their health. Due to the health care facility lack of resources and acute-perspective, patients do not receive necessary follow-up care. This lack of continuity of care is detrimental to maintaining good health. While emergency departments focus on acute care, local public health departments concentrate on preventive care. However, AAM expressed disappointment in the public health clinics due to their lack of services available for men's health. Many men verbalized that most public health clinic programs focused on women and children (L. Ross, et al., 2007).

With a history of limited access to health care, the church has played a role in support for AAM. African American men that participate in church-related activities have been associated with greater patient satisfaction (Krause, 2002; Levin, et al., 2005). The black church is considered a cornerstone in the African American community providing platforms for politics, social activities, social support, health education, and community cohesion (Blocker, et al., 2006; Chin, et al., 2000; Krause, 2002). The black church is the most trusted institution in the African American community, and it functions as a bridge to less trusted institutions such as the health care system (Wolff, et al., 2003). When the pastor shows support for health-related activities such as screening referrals and free clinics, the members are more likely to participate and become personally engaged (Blocker, et al., 2006; Levin, et al., 2005).

Currently, black churches have members who are health care professionals and also voluntary staff medical ministries that provide free health education for conditions and diseases common among African Americans. The presence of these medical ministries may partially explain the unexpected results in a study where participants with high levels of religious participation did not benefit from a prostate cancer educational intervention. Because of these medical ministries, the participants with high levels of religious participation probably sought assistance from a more trusted entity (the church) than health care providers (Mishel, et al., 2003).

Having a consistent health care provider and participating in routine health checks have been associated with better communications and relationships with health care providers, continuity of care, reduced emergency department visits, and higher levels of patient satisfaction (Gerend & Pai, 2008; Napoles, Gregorich, Santoyo-Olsson, O'Brien, &

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Stewart, 2009; Paez, Allen, Beach, Carson, & Cooper, 2009). Even though some AAM may

have adequate health insurance, some frequently use emergency departments due to their

habits of health care utilization rather than their availability of health insurance. When these

AAM finally enter into the health care system, they present with multiple chronic conditions,

and health care providers have the tendency to focus on the chronic health problems instead

of the original purpose for seeking care (Woods, et al., 2004).

As a result of poor patterns or habits of health services use, AAM become stigmatized

by health care providers, and they receive inferior medical care which negatively affect

patient satisfaction (Byrne, 2008; Dovidio, et al., 2008; Klassen, Smith, Shariff-Marco, &

Juon, 2008; Simmonds, 2008). Stigma is defined as a phenomenon whereby an individual

with an attribute is deeply discredited by his/her society and rejected as a result of the

attribute (Goffman, 1963).

Stigmatized individuals minimize harm by distancing themselves from situations that

are the source of the stigma; however, this source is the health care system for many AAM.

While avoiding the health care system, chronic conditions worsen. After exhausting self-care

and treatments, they enter into the health care system again, get stigmatized, continue to get

inferior care, have poor patient satisfaction, avoid the health care system as long as possible,

and the cycle continues. Unfortunately, the cycle of events lead to continued poor patient

satisfaction and shapes future health seeking behaviors and interactions with health care

providers (Cort, 2004). These experiences with the health care system and its employees

make it difficult for AAM to establish trusting relationships that has the potential to improve

their health.

Interaction with Health Care Providers

Mistrust and racism in the health care system negatively influence patient satisfaction (Benkert, et al., 2006; Hausmann, et al., 2008; T A LaVeist, et al., 2002; LeVeist, Nickerson, & Bowie, 2000; Mandelblatt et al., 2003; R. L. Street, Richardson, Cox, & Suarez-Almazor, 2009). Mistrust is the result of previous and current racism experienced in general society and the health care system (Washington, 2006). Mistrust has been used in the past by African Americans to protect them from medical exploitation in the health care system; however, this mistrust is now hurting the health of African Americans (T.A. LaVeist, personal communication, September 26, 2008).

Racism has been identified as a source of stress and a real obstacle in receiving adequate health care for AAM (Ravenell, et al., 2006). The United States has a long documented history of mistreating African Americans. Beginning with slavery early in U.S. history, African Americans, especially those in the south, have been treated inhumanely and exploited by the medical profession (Allen, et al., 2007; Cort, 2004; Washington, 2006).

Open segregation and discrimination within the health care system affected African American patients as well as African American health care providers. After slavery ended, African American physicians provided care for the majority of African American patients (Washington, 2006). Racism affected the medical education of African American physicians and ultimately affected the health care given to African American patients. Racism prevented African American physicians from obtaining residency programs after graduation from medical school, becoming members of the American Medical Association, being eligible for board-certifications, and admitting privileges to non-African American hospitals

(Aluko, 2008). Subtle racism of the health system was evident in several hospitals located in Charlotte, North Carolina until the early 1990's (Aluko, 2008).

Discrimination has been negatively associated with health care utilization, such as higher delays in seeking medical care and non-adherence to recommendations regardless of race and controlling for mistrust (Casagrande, et al., 2006; Hausmann, et al., 2008). This indicates that no one, regardless of race or trusting, desires to be treated differently, and one will avoid or delay subjecting themselves to being treated in that manner. However, discriminating according to race can be magnified in African Americans. One study reported that African Americans perceived and reported racial discrimination in the health care system three times more often than Caucasians (Hausmann, et al., 2008). African American men have also been known to receive inferior care (Little-Blanton, Brodie, Rowland, Altman, & McIntosh, 2000; Plumb & Brawer, 2006), and knowing this negatively affects how they communicate with health care providers (Ravenell, et al., 2006). Receiving substandard or inferior care increases mistrust in health care providers (Cobie-Smith, Thomas, & George, 2002; Cort, 2004; Dovidio, et al., 2008; Klassen, et al., 2008).

Racism has been long associated with low patient satisfaction and poor health outcomes (Benkert, et al., 2006; Hausmann, et al., 2008; Thomas A. LaVeist, Nickerson, & Bowie, 2000). In 2002, the Institute of Medicine (IOM) formally and publicly recognized that African American men have been subjected to varying degrees of racism from within the health care system evidenced by receiving inferior care (IOM, 2002).

Even though evidence of mistrust can be found across many ethnic or racial groups, African Americans' source of mistrust is profound and deeply rooted in their culture unlike any other ethnic groups in the U.S. (Allen, et al., 2007). One must understand the origin of

mistrust in the culture to appreciate and understand the magnitude of its impact on thought

processes in some AAM.

When comparing African American men to Caucasian men, African American men

have higher levels of mistrust in the health care system, and race has been reported to be a

significant predictor of medical care mistrust ($p<.05$) even after controlling for income and

insurance status (Allen, et al., 2007; Gordon, et al., 2006; L. Ross, et al., 2007; Talcott, et al.,

2007). This mistrust of the health care system by AAM reduces their desire to seek health

care services even when needed by delaying or avoiding the health care system (Byrne,

2008). Consequently, mistrust leads to late diagnosis and treatment for many diseases and

illnesses (Gordon, et al., 2006; L. Ross, et al., 2007).

It is difficult to develop a relationship where there is a lack of trust (Lewis, DeVellis,

& Sleath, 2002). African American men, who are not trusting of health care providers, find it

increasingly difficult to communicate (Allen, et al., 2007; Gordon, et al., 2006), are less

active participants (Gordon, et al., 2006), and find it challenging to follow recommended

treatments (Forrester-Anderson, 2005). Health care providers have been known to provide

AAM with less information during interactions (D. M. Griffith, et al., 2007). Lack of

information interferes with AAM's ability to make informed decisions (McFall, et al., 2006)

and satisfaction with care (Thomas A. LaVeist, et al., 2000).

When considering patient-provider interactions, some AAM felt that behaviors of

health care providers and their staff discouraged them from asking or raising questions when

instructions and information were not clear (Thomas, Saleem, & Abraham, 2005). Health

care providers who are skilled in informing, show sensitivity to patients needs, display a

reassuring style, demonstrate respect, and support patient involvement have been found to

transcend issues of race and gender. They are able to establish a connection with the patient that contributes to greater patient satisfaction, trust, and commitment to treatment (Beach et al., 2005; R. L. Street, et al., 2008).

In Department of Defense (DOD) health care systems where everyone have equal access to care, AAM report high levels of trust in primary health care providers (Boyles, Moore, & Edwards, 2003; Fiscella et al., 2004; Joseph, 2006; Rawaf & Kressin, 2007; L. E. Ross, Taylor, Richardson, & Howard, 2009). Trust is generated and maintained through repeated interactions in a continuing relationship and is a central component of patient-provider communications (Cobie-Smith, et al., 2002; Jones, Steeves, & Williams, 2009; McKinstry, Ashcroft, Car, Freeman, & Sheikh, 2006; Pearson & Raeke, 2000).

The quality of the patient-provider interaction is one of the most important factors in determining patient satisfaction (Gordon, et al., 2006; Jackson, 2005; Saha, Arbelaez, & Cooper, 2003; R. L. Street, et al., 2008). Patients report the highest satisfaction when health care providers treat them with respect and dignity (Napoles, et al., 2009; Saha, et al., 2003). Through their upbringing and life experiences, some older AAM have a different value system which affects their communication styles, intent to actually seek health care services, overall communication with health care providers, and their perception or evaluation of care received. Historically, AAM have had little interaction with health care providers and the health care system; therefore, cultural differences may lead to dissimilar expectations regarding patient and provider roles (Allen, et al., 2007).

Relationships characterized by mutual trust, respect, and shared power and decision-making are most effective in changing health behaviors (Lewis, et al., 2002). Communication is a dyadic relationship, because one person's behavior influences the other

person's behavior. This point is made to illuminate that certain conditions must be met in order for prostate detection and treatment to occur. When they depend on each other, interdependence is created (Lewis, et al., 2002).

Several studies have reported the negative impact of communication exchanges between AAM and the health care system, and how these exchanges lead to poor health-related outcomes (Gordon, et al., 2006; Napoles, et al., 2009; Plumb & Brawer, 2006). Some AAM have reported that health care providers did not genuinely demonstrate concern for their health and welfare and were unwilling to provide the information necessary for informed decision-making (McFall, et al., 2006; L. Ross, et al., 2007; Woods, et al., 2004).

A study of African American men (*n* = 277) exploring behaviors associated with cultural factors, knowledge, health beliefs, barriers, and relationships with primary health care providers reported that health care providers showed little interest in their concerns and fears of prostate cancer screening and treatment (Woods, et al., 2004). Those health care providers lack of cultural competence was thought to have negatively affected their desire to participate in prevention health for these African American men. Other studies of AAM have reported that health care providers did not display concern for their health and welfare (L. Ross, et al., 2007), were unwilling to explain information to them (McFall, et al., 2006), were insensitive to their health concerns and methods of communication, and did not acknowledge the need to involve significant others in decision-making (Allen, et al., 2007).

Patient satisfaction can be linked to efforts put forth by health care providers that allow patients to feel comfortable, respected, and meaningful. Verbal and nonverbal (e.g. body language, posture, and facial expressions) methods of communication are important in patient-provider interactions. Some AAM report that nonverbal communication behaviors

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(e.g. little eye contact, gestures, body language, and facial expressions) from health care providers discourage any desire to ask questions or raise queries about the instructions given (Gordon, et al., 2006). This behavior not only referred to health care providers, but the same attitudinal problems and poor communication skills extended to other hospital and clinic staff such as the unit receptionist (Thomas, et al., 2005).

Health care provider's conscious and/or unconscious beliefs or stereotypes about specific patients or a particular group of people can influence the health care provider's interpretation of problems or symptoms (Plumb & Brawer, 2006). Such beliefs and stereotypes subsequently affect the patient's attitudes, self-efficacy, trust, and behavioral intentions that influence health decisions, health behaviors, and patient satisfaction (Plumb & Brawer, 2006). Negative perceptions by health care providers can translate into lower levels of patient satisfaction (Freeman & Chu, 2005).

It is imperative that effective communications take place between African American men and health care providers. A study investigating factors that influence physician communication and perceptions reported that the patient's communication style was the strongest predictor of health care provider's communication style ($p = .001$) (R. L. J. Street, Gordon, & Haidet, 2007). Allen and colleagues (2007) conducted a study consisting of healthy AAM ($n = 37$) and African American prostate cancer survivors ($n = 14$) which focused on perceptions about prostate cancer screening, interventions, and informed decision-making. The African American prostate cancer survivors expressed the need for AAM to advocate for themselves and be responsible for their own care, because they reported more positive interactions with health care providers after they "took control" (Allen, et al., 2007). In a study with a convenience sample ($n = 1,867$) consisting of 72%

African American and 28% Caucasian men at risk for prostate cancer, it was reported that many healthy-focused or younger AAM expressed frustration concerning the difficulty in obtaining prostate cancer information from their health care providers (Nivens, Herman, Weinrich, & Weinrich, 2001).

The ability of the health care provider to elicit and respond to patient concerns are consistently and strongly related to patient satisfaction (Napoles, et al., 2009). It takes good communication skills of the provider to bring out necessary information from the patient in order to provide quality care. Health care providers who display patient-centered communication styles (informative, supportive, respectful, partnership-building, empathic and positive affect) elicit more active patient participation (asking more questions), more information (for the provider and patient), trust, shared-decision making, stronger intentions to adhere to recommendations, compliance, patient satisfaction, and better health outcomes (R. L. Johnson, Roter, Powe, & Cooper, 2004; Royak-Schaler et al., 2008; R. L. Street, et al., 2008). Conversely, physician-centered communication styles breed passiveness, less information sharing, more mistrust, noncompliance, avoidance, negative effects, and poorer patient satisfaction and health outcomes (Arora, 2003; Siminoff, Graham, & Gordon, 2006; Williems, et al., 2004).

Times allotted during appointments for health care providers offer challenges to engage in relationship-building. Some AAM reported that health care providers do not allow enough time to discuss issues that are important to them. African American men often perceive that the health care providers are too busy, and the sessions are too short to listen to their concerns which makes decision-making more difficult (McFall, et al., 2006).

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Some African American men report greater patient satisfaction when receiving care from African American physicians and less patient satisfaction while receiving care from Caucasian physicians (T A LaVeist, et al., 2002). Studies have reported that when AAM are with racial concordant health care providers, they have longer visits, lower levels of mistrust, less delay or postponement of appointments, better follow-up, better adherence to medical and treatment regimens, more control in the decision-making process, better open communications, healthier outcomes, better patient satisfaction, and a more positive medical experience than with Caucasian health care providers (Benkert, et al., 2006; Dovidio, et al., 2008; Gordon, et al., 2006; Peters, Aroian, & Flack, 2006).

African American providers can better identify and understand cultural aspects of African American men than Caucasian providers, because most African American providers are members of the same culture. Being able to incorporate health care services within the value system of African American men is extremely important. Without knowledge of the African American culture, Caucasian providers may inadvertently speak, gesture, suggest, and recommend inappropriately.

Racial concordance may directly affect patient satisfaction; however, it also may indirectly affect patient satisfaction through cultural factors such as trust, improved patient-provider communication, better interpersonal treatment and communication from providers (Dovidio, et al., 2008; T A LaVeist, et al., 2002). Unfortunately, the probability of AAM participating in a racial-concordant health care interaction is low, because African Americans represent only about 3.5% of physicians (AMA, 2006). With more available and accessible African American providers, the likelihood that an African American man can have a racial

concordant interaction is increased. Having the ability to choose an African American health care provider can be important to African American men.

The experiences of patients are useful in informing us about past interactions with health care systems (Andersen, 2008). Those experiences may also enlighten us as to their desire or intent to return for health care services in the future (Hekkert, et al., 2009). In this study patient satisfaction is defined as a patient's personal perception and evaluation of care (Hekkert, et al., 2009). Patient satisfaction includes time spent with health care providers, cost of services, waiting times, information received, and quality of care (Mishel, 2003). Patient satisfaction has also been defined as an attitude in which patient values are expressed that reflect a relatively enduring organization of specific beliefs about the care given or visit at a health care facility (Mangelsdorff & Finstuen, 2003). Patients that are satisfied with their health care experiences are more likely to comply with recommended treatment regimens, return for future appointments, and recommend health care services to others.

Patient satisfaction within the health care system has not been well studied in African American prostate cancer patients (Jayadevappa, Chhatre, Wein, & Malkowicz, 2009). Prostate cancer studies have focused more on outcomes associated with treatment, decision-making, quality of life, or survivorship outcomes; however, research focusing on patient satisfaction as the outcome of health care services use is limited. A study ($n = 1826$) looked at factors associated with treatment, quality of life, and their influence on patient satisfaction for men treated for prostate cancer (Sanda et al., 2008). This study reported that African American men (9% of sample) and their spouses (7% of partners) had lower satisfaction which was also significantly associated with quality of life factors (Sanda, et al., 2008).

Another study ($n = 590$) looked at the association between patient satisfaction, processes of care, and health-related quality of life for newly diagnosed prostate cancer patients (Jayadevappa, Schwartz, Chhatre, Wein, & Malkowicz, 2009a). Process of care and health-related quality of life was significantly associated with patient satisfaction ($p = .04$). In addition, higher patient satisfaction was associated with radical prostatectomy than with external beam radiation therapy (EBRT). This study consisted of 68% Caucasian men and 32% African American men.

Based upon the significance and major issues facing AAM discussed in this chapter, these issues will be analyzed in terms of specific variables in the conceptual model. This study will have an adequate sample size of African American men to assess cultural factors, availability of resources, access to care, and interactions with health care providers.

While most patient satisfaction studies focus on treatment outcomes, this study will assess patient satisfaction in terms of their personal experiences and interactions with the health care system while receiving treatment for prostate cancer. This study will expand current knowledge to better understand some of the complexities of factors associated with patient satisfaction particularly in African American men.

Research Questions and Aims:

Aim 1: Determine to what extent do contextual characteristics, individual characteristics, and health behaviors individually predict patient satisfaction among the sample of African American men who have been treated for prostate cancer in North Carolina.

Research Question One. Is patient satisfaction significantly explained by contextual characteristics (number of African American physicians, number of public health clinics, household income, number of primary care physicians) within designated county and Health Services Areas (HSAs) in North Carolina?

Research Question Two. Is patient satisfaction explained by individual characteristics (age, education, religious participation, mistrust, racism, religious beliefs, traditional health beliefs, health insurance, perceived access to care, and health literacy)?

Research Question Three. Is patient satisfaction explained by health behaviors (patient – provider communications, communications, interpersonal treatment, habits of health care utilization, and usual site of care)?

Aim 2: Is patient satisfaction explained by a combination of contextual characteristics, individual characteristics, and health behaviors among African American men who have been treated for prostate cancer in North Carolina.

Research Question Four: Do individual characteristics increase or decrease the variation of contextual characteristics regressed on patient satisfaction?

Research Question Five: Do health behaviors increase or decrease the variation of contextual characteristics and individual characteristics regressed on patient satisfaction?

Chapter 3

Methods

Design

In this study a descriptive, correlational design was used to explore whether contextual characteristics, individual characteristics, and health behaviors predict the degree of patient satisfaction in African American men in North Carolina treated for prostate cancer. This study was a secondary data analysis of cross-sectional data obtained from a subset of approximately 505 African American men in North Carolina treated for prostate cancer. The data in this study were obtained from the North Carolina-Louisiana Prostate Cancer Project (PCaP) supported by Department of Defense Grant DAMD 17-03-2-0052: P.I. James Mohler.

The North Carolina-Louisiana PCaP was a multidisciplinary population-based case-only study designed to address racial differences in prostate cancer survival through a comprehensive evaluation of social, individual, and tumor level influences on prostate cancer aggressiveness (Schroeder et al., 2006). The overall goal of the PCaP study was to determine the most effective focus of public health efforts to reduce racial disparities and improve prostate cancer survival (Schroeder, et al., 2006). The PCaP study consisted of 9 projects; however, this study only used African American men located in North Carolina data collected from Project 1 and Project 2 with the majority of variables taken from Project 2. Project 1 is titled "Racial differences in prostate cancer screening and

care-seeking behaviors" (Core Director and P.I. Paul Godley, Co-Investigators James Talcott, and Jack Clark) and Project 2 is titled "Cultural and demographic predictors of interaction with the health care system and prostate cancer aggressiveness" (Core Director and P.I. Merle Mishel). These data were collected from September 2004 to November 2007.

Sample

    Sample criteria, recruitment, and data collection methods have been documented elsewhere (Schroeder, et al., 2006); however, a brief explanation will be provided. Participants in this study are 505 AAM age 40-79 years old living within 41 counties in North Carolina who have been diagnosed with localized and advanced prostate cancer after 1 July 2004 and ending in November 2007. All eligible participants included were able to complete the study interview in English, did not live in an institution, had no cognitive impairment or psychosis, and were not under the influence of alcohol or severely medicated.

Recruitment

    Under the original study, the Rapid Case Ascertainment Core Facility identified eligible participants, which was a collaborative effort of the UNC-Lineberger Comprehensive Cancer Center and the North Carolina Central Cancer Registry (NCCCR). North Carolina requires reporting of all newly diagnosed cancers, and NCCCR was authorized to release contact and eligibility information to the North Carolina-Louisiana Prostate Cancer Project (PCaP). A request was mailed to all diagnosing health care providers to notify PCaP if a patient should not be contacted due to ineligibility. Participants were sent an introductory letter and brochure describing

PCaP. One week later, an enrollment specialist called to confirm eligibility, explain the study, answer questions, solicit participation, and scheduled a home visit. If a potential participant could not be contacted, their provider gave them the introductory letter at their next appointment (Schroeder, et al., 2006).

The average time from diagnosis to study visit was 169.2 days with the median time of 138 days and ranged from 48 to 831 days (Project, 2009). The response rate for eligible cases was 35.4%. The cooperation rate, defined as the number of eligible cases enrolled divided by the number enrolled plus the number that refused participation, was 62% (Project, 2009).

Participants were visited in their homes by a Registered Nurse who explained the study, obtained HIPAA authorization and written consent to conduct the questionnaire, collect anthropometric measurements (height, weight, and waist circumference), and collect samples needed for the other PCaP Consortium projects. Study visits took approximately four hours to complete, and participants received up to $75 for completing the study (Schroeder, et al., 2006).   Recruitment ended November 2007.

Power Analysis

Power analysis is important in determining the probability that the effects that actually exist will produce significance during data analysis (Kleinbaum, Kupper, Miller, & Nizam, 1998; Tabachnick & Fidell, 2001; Wood & Ross-Kerr, 2006). Statistical power is a function of three parameters: (1) significance level or alpha, (2) sample size, and (3) effect size (f^2) (Cohen, Cohen, West, & Aiken, 2003; Polit & Sherman, 1990). It is generally accepted that significance level (alpha) be set at .05 and the effect size(f^2) be set at .15 for a medium effect (or equivalent R^2 of about 13%) (D. Soper, 2009).

For research question one in Aim one, the multiple regression analysis consisting of 4 contextual characteristic variables with a significance level (alpha) .05, medium effect size .15, and power .80, a sample size of 84 or 108 if powered at .90 was needed (D. Soper, 2009).

For research question two in Aim one, the multiple regression analysis consisting of 10 individual characteristic variables with a significance level (alpha) .05, medium effect size .15, and power .80, a sample size of 118 or 147 if powered at .90 was needed (D. Soper, 2009).

For research question three in Aim one, the multiple regression analysis consisting of 5 health behavior variables with a significance level (alpha) .05, medium effect size .15, and power .80, a sample size of 91 or 116 if powered at .90 was needed (D. Soper, 2009).

Aim two involves three hierarchical regression analyses. The effect size (f^2) in these cases is a function of the number of variables in each model plus the change in R^2 generated by inclusion of the second set of variables. For research question four in Aim two, the multiple regression analysis consisting of 4 contextual characteristics variables (Group A) plus 10 individual characteristic variables (Group B) with a significance level (alpha) .05, medium effect size .15, and power .80, a sample size of 122 or 130 if powered at .90 was needed for step 2 (D. S. Soper, 2009).

For research question five in Aim two, the multiple regression analysis consisting of 14 characteristic variables (Group A) plus (5) health behaviors variables (Group B) with a significance level (alpha) .05, medium effect size .15, and power .80, a sample size of 105 or 130 if powered at .90 was needed for step 3 (D. Soper, 2009). This study had 505 participants which was an adequate sample size for all of the regression models and

methods proposed. Actual sample sizes for analyses were somewhat smaller due to

missing data, but still large enough to provide adequate power. All power analysis

calculations were done using A-priori Sample Size Calculator for Multiple Regression

and Hierarchical Multiple Regression (D. S. Soper, 2009).

Independent Variables

Contextual Characteristics

Predisposing Factors

Number of African American Primary Care Physicians were the number of African American primary care physicians in 2004 from each county in North Carolina that had study participants. A new variable was created that assigned each participant the number of African American primary care physicians from the county in which they resided.

The HSA data were calculated per 10,000 population located in each Health Service Area (HSA) during 2004. Although North Carolina is divided into six HSAs, only four HSAs (III, IV, V, and VI) were used in this study. HSA I is in the far western part of the state, and no participants in the study were from that area. Health Service Area (HSA) II was combined into HSA III due to location, proximity, and population of Mecklenburg County to represent a more comparative population to the other HSAs and to address the small population in HSA II.

HSA III included the following counties: Alamance, Caswell, Rockingham, and Mecklenburg, HSA IV included the following counties: Chatham, Durham, Franklin, Granville, Johnston, Lee, Orange, Person, Vance, Wake, and Warren, HSA V included the following counties: Cumberland, Harnett, Hoke, Montgomery, Moore, and Sampson, and HSA VI included the following counties: Beaufort, Bertie, Chowan, Craven, Duplin, Edgecombe, Gates, Halifax, Hertford, Jones, Lenoir, Martin, Nash, Northampton, Onslow, Pasquotank, Perquimans, Pitt, Wayne, and Wilson. These counties were

selected based on locations where data were collected for the PCaP Project (Schroeder, et al., 2006).
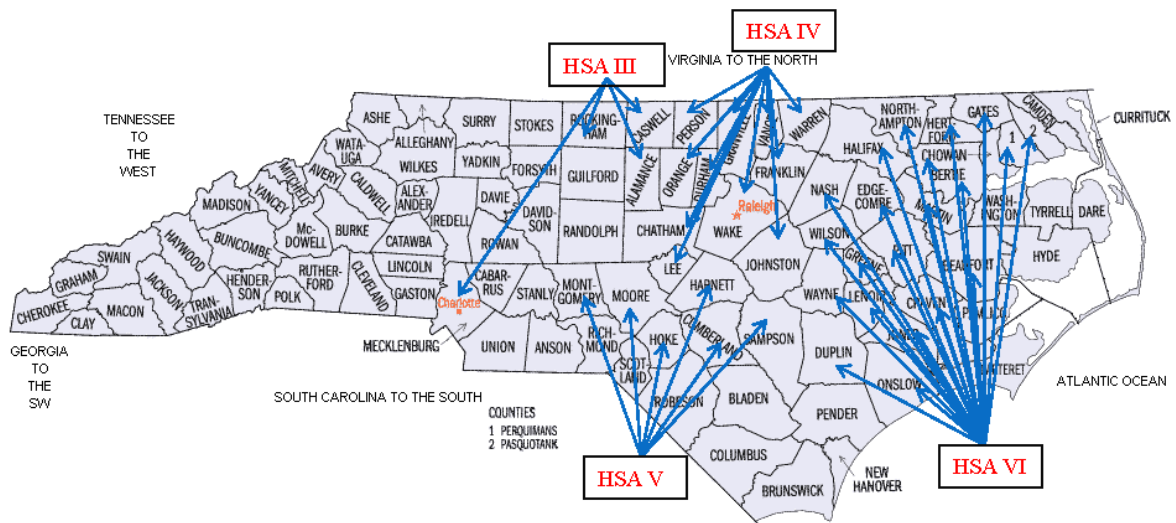

Figure 3. North Carolina map with designated Health Service Areas (HSA)

Enabling Resources

Number of Public Health Clinics were the number of public health centers located in each county for 2004. A new variable was created that assigned each participant the number of public health clinics in their home county.

Number of Emergency Departments were the number of emergency departments located in each county for 2004. A new variable was created that assigned each participant the number of emergency departments in their home county.

Household Income was the per capita income in each county for 2004. A new variable was created that assigned each participant the per capita income for the county in which they resided.

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Number of Primary Care Physicians were the number of primary care physicians located in each county for 2004. A new variable was created that assigned each participant the number of primary care physicians in their home county for 2004.

Individual Characteristics

Predisposing Factors

Predisposing factors are divided into four subcategories: demographic, social, cultural, and belief factors. Age is the only demographic factor. Social factors were measured using educational categories and the Religious Participation scale. Cultural factors were measured using two scales: Mistrust and Racism. Belief factors were measured using two scales: Religious Beliefs and Traditional Health Beliefs.

Age was a positive integer number of years used as a continuous variable.

Education described the highest grade or year of schooling completed. Since education is a categorical variable, it was grouped as $< 8^{th}$ grade, some high school, high school graduate, vocational/technical school, some college, college graduate, some graduate training, or graduate/professional degree.

Religious Participation was measured with an 11-item Participation in Religious Activities scale that assessed frequency of participation in a variety of religious activities (D. R. Brown & Gary, 1987). Items for the scale had 5 responses in a Likert format ranging from 1 (never), 2 (almost never), 3 (not sure), 4 (often), and 5 (very often). All items from the scale were summed. Higher scores indicated a higher degree of religious involvement or participation. In previous studies, Cronhach's alphas have been reported as .88-.91 (D. R. Brown & Gary, 1987; Mishel, et al., 2003; Porter et al., 2006).

Mistrust was measured with a 12-item Physician Trust scale that is a combination of the trust subscale from the PCAS (Safran, et al., 1998) and the Medical Mistrust Index (LeVeist, et al., 2000). Trust is a 7-item scale that assessed the patient's evaluation of health care provider's integrity, competence, and role as the patient's agent. Items 1, 3, 5, and 6 were reverse scored. In previous studies, factor analysis produced a single factor and Cronbach's alphas as .81-.86 (Safran, et al., 1998; Wei et al., 2008). The Medical Mistrust Index is a 5-item scale that assesses the patient's attitudes of mistrust of the health care system. In previous studies, Cronbach's alphas have been reported as .74-.76 (Brandon, Isaac, & LaVeist, 2005; LeVeist, et al., 2000). The items for both scales have 5 responses in a Likert format ranging from 1 (strongly disagree), 2 (disagree), 3 (not sure), 4 (agree), and 5 (strongly agree). All items from both scales were summed. Higher scores indicated a higher degree of mistrust.

Racism was measured with a 4-item Racism Within Health Care Settings scale that assessed the patient's perceived difference in treatment from health care providers by race. Items for the scale have 5 responses in a Likert format ranging from 1 (strongly disagree), 2 (disagree), 3 (not sure), 4 (agree), and 5 (strongly agree). Item numbers 1, 3, and 4 were reverse scored. All items from the scale were summed. Higher scores indicated a higher degree of racism. In previous studies, Cronbach's alpha has been reported as .76 (LeVeist, et al., 2000).

Religious Beliefs were measured with an 8-item God Scale which is a subscale of the Multidimensional Health Locus of Control scale (MHLC) that assesses the belief in God's role of taking control in one's health (Bekhuis et al., 1995). Items for the scale have 5 responses in a Likert format ranging from 1 (strongly disagree), 2 (disagree), 3

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(not sure), 4 (agree), and 5 (strongly agree). All items from the scale were summed.

Higher scores indicated a higher degree of religious belief. In previous studies,

Cronbach's alphas were reported as .81-.94 (Bekhuis, et al., 1995; Mishel, et al., 2003).

Traditional Health Beliefs were measured by a 17-item Traditional Health

Beliefs scale that assesses traditional beliefs about causes of cancer (Lannin et al., 1998).

Items for the scale are dichotomous yes/no with yes coded as a 1 and no as a 0. All items

from the scale were summed. Higher scores indicated a higher degree of traditional

beliefs about causes of cancer. In a previous study, Kuder-Richardson formula 20 was

reported as .83 (Mishel, 2003).

Enabling Resources

Enabling resources were measured based on health insurance, Perceived Access

to Care scale, and health literacy score.

Health Insurance was measured by 1-item to assess whether the participant had

health insurance. The question asked "Before you were diagnosed with prostate cancer,

did you have any health insurance?" The item was dichotomous yes/no with yes coded

as a 1 and no as a 0. This item did not assess the type of health insurance.

Perceived Access to Care was measured by a 10-item Perceived Access to Care

scale that assesses the ability to access medical care by addressing cost, convenience, and

feasibility (Facione, 1999). Items for the scale have 5 responses in a Likert format with 1

(strongly disagree), 2 (disagree), 3 (not sure), 4 (agree), and 5 (strongly agree). Item

numbers 2, 3, 7, and 9 were reverse scored. All items from the scale were summed.

Higher scores indicated a higher degree of perceived access to care. In previous studies,

Cronhbach's alpha were reported as .78-.83 and test-retest reliability of .85 (Facione, 1999).

Health Literacy was measured with the short form of the Rapid Estimate of Adult Literacy in Medicine (REALM) that is used to identify patients with low reading levels who have difficulty reading common medical and lay terms (Davis et al., 1993). Unlike the original REALM consisting of 125 common terms that took approximately five minutes to administer and score, the short form of the REALM consists of only 66 common terms and takes about one to two minutes to complete. Participants with raw scores 0-18 read at 3rd grade level or below, 19-44 read between the 4th-6th grade levels, 45-60 read between the 7th-8th grade levels, and 61-66 read at the 9th grade level or above. In previous studies, REALM had high face validity, high criterion validity, correlating .88 with the (Revised) WRAT-R, .96 with the SORT-R, and .97 with the Peabody Individual Achievement Test-Revised (PIATR). REALM also had high test-retest reliability of 0.97 (Davis, et al., 1998).

Health Behaviors

Health Behaviors had two categories: process of medical care and use of personal health services.

Process of Medical Care relates to the behavior of providers as they interact with patients in the delivery of medical care (Andersen, 2008). In this study, Process of Medical Care was measured using three scales: Patient-Provider Communication, Communications, and Interpersonal Treatment.

Patient-Provider Communications was measured with a 5-item Patient-Provider Communication scale that assesses the degree to which the patient communicates with his

health care provider (Mishel, et al., 2002; Mishel, et al., 2003). Items for the scale have 5

responses in a Likert format ranging from 1 (a great deal), 2 (a moderate amount), 3 (a

little), 4 (almost nothing), and 5 (nothing at all). All items in this scale were reverse

scored. All items in the scale were summed. Higher scores indicated a greater degree of

communication from the patient to the health care provider. In previous studies, factor

analysis produced a single factor with eigenvalue >1, all items loaded at .50 or above

with Cronbach's alpha of .75 for African American men (Mishel, et al., 2002; Mishel, et

al., 2003).

Communications was measured with a 5-item Communication scale which is a

subscale from the Primary Care Assessment Survey (PCAS) that assesses the health care

provider's communication with the patient in reference to explanation of health problems

and treatments, instructions about symptoms, answering of patient's questions, and

advice and assistance in making decisions about care (Safran, et al., 1998). Items in the

scale have 5 responses in a Likert format ranging from 1 (very poor), 2 (poor), 3 (not

sure), 4 (good), and 5 (very good). All items in the scale were summed. Higher scores

indicated a greater degree of communication from the health care provider to the patient.

In previous studies, factor analysis produced a single factor and Cronbach's alphas have

ranged from .92-.95 (Safran, et al., 1998; Safran, Montgomery, Chang, Murphy, &

Rogers, 2001).

Interpersonal Treatment was measured with a 5-item Interpersonal Treatment

scale which is a subscale from the PCAS that assesses the health care provider's patience,

friendliness, caring, respect, and time spent with the patient (Safran, et al., 1998). Items

in the scale have 5 responses in a Likert format ranging from 1 (very poor), 2 (poor), 3

(not sure), 4 (good), and 5 (very good). All items in the scale were summed. Higher

scores indicated a higher degree of interpersonal treatment from the health care provider.

In previous studies, factor analysis produced a single factor and Cronbach's alphas have

ranged from .94-.95 (Safran, et al., 1998; Safran, et al., 2001; Wei, et al., 2008).

Use of Personal Health Services relates to behaviors that individuals use to

determine purpose, type, and site for health care services in an episode of illness

(Andersen, 1995). In this study, Use of Personal Health Services were measured with

two scales: Habits of Health Care Utilization and Usual Site of Care.

Habits of Health Care Utilization was measured with a 9-item Habits of Health

Care Utilization scale that assesses the general likelihood of using health care services

(Facione, 1999). Items for the scale have 5 responses in a Likert format ranging from 1

(strongly disagree), 2 (disagree), 3 (not sure), 4 (agree), and 5 (strongly agree). Item

numbers 2, 4, 5, and 6 were reverse scored. All items in the scale were summed. Higher

scores indicated a higher degree of health promotion, early detection, and use when self-

discovered symptoms are attributed to serious illness. In a previous study, this scale had

a Cronbach's alpha of .81 which was used to support the results of factor analysis

(Facione, 1999).

Usual Site of Care is a place where the individual usually goes when there is a

medical problem. This was a categorical variable indicating doctor's office/group

practice, public health or community health clinic, hospital based clinic, Veteran's

Administration, emergency department, urgent care, some other place, or no usual place.

Dependent/Outcome Variable

Patient Satisfaction was measured with a 15-item Patient Satisfaction with Health Care System scale that assesses satisfaction with wait time, time spent with physician, information received, quality of care, and amount paid for care. Items for the scale have 5 responses in a Likert format with 1 (very dissatisfied), 2 (dissatisfied), 3 (not sure/never), 4 (satisfied), and 5 (very satisfied). Prior factor analysis of the scale used in prostate cancer patients indicated 2 subscales, quality of care and accessing care with Cronbach's alphas of .92 and .86 respectively (Mishel, 2003). All items for both scales were summed. Higher scores indicated a greater degree of patient satisfaction.

Data Analysis Plan

Statistical software SAS 9.2 (SAS Institute, Cary NC) was used to analyze the data for this study. Initially, the data file was screened for accuracy and missing data, because standard SAS procedures discard missing data (Cody, 2007). All negative responses were reverse coded prior to any analysis.

Univariate or descriptive statistics were conducted to assess central tendencies, variations, means, normal distribution, missing data, and outliers. Means were used for each continuous variable and modes were used for categorical variables to assess central tendencies. Variation among the sample was assessed by the standard deviation and range for each continuous variable and percentages and frequencies for categorical variables. Histograms and boxplots were produced to assist in visualization of data. Steps were taken to minimize violations to the five statistical assumptions: linearity, independence, homoscedasticity, symmetry, and normal distribution (Kleinbaum, et al., 1998; Montgomery, Peck, & Vining, 2006).

In addition to charts produced by univariate statistics, scatterplots were used to visualize distribution of data points and outliers. Careful attention were used to assess the amount and pattern of missing data. Patterns of missing data are more important than the amount of missing data (Tabachnick & Fidell, 2001). The data was assessed for ceiling and floor effects. Since most of the variables in this study were summed scales from item values, missing item values for a subject was replaced with the average of non-missing item values in the same scale for that subject as long as less than 25% of items were missing. If more than 25% of the items in a scale had missing values for a subject, the variable for that subject was treated as missing data.

When comparing methods used in resolving missing data in small versus large data sets, more flexibility is available for large data sets containing less than 5% random missing data (Tabachnick & Fidell, 2001). Final decisions about missing data did not occur until after careful evaluation and assessment of patterns, amounts, influence, and how the missing data affected the sample size.

Each variable was scanned for outliers via descriptive statistics and visualization of boxplots, stem and leaf plots, and histograms. Outliers are values or data points that are not typical of the rest of the data, and they can have moderate to severe effects on the regression model (Montgomery, et al., 2006). There are four explanations for outliers: incorrect data entry, missing values being read as real data due to failure to specify missing value codes, member is not from the target population, and member is from the target population, but the value is more extreme than would be expected under the normal distribution (Tabachnick & Fidell, 2001). In this study, outliers that were ±2.5-2.99 standard deviations from the mean was defined as mild, ±3.0-3.49 standard

deviations from the mean were defined as moderate, and $\pm$3.5 or greater were defined as extreme. Residual plots was used to help identify outliers.

Residual analysis is a very effective way to assess violations to assumptions and verify the adequacy of fit of the regression model to the data (Montgomery, et al., 2006). Once outliers are detected, every attempt should be made to determine the source, because some outliers may not be due to errors (Mickey, Dunn, & Clark, 2004). If the outliers are not due to error, steps could be taken to reduce their impact. If outliers are more than $\pm$3.5 standard deviations from the mean and skewed (Montgomery, et al., 2006), the data could be transformed to bring the outliers closer to the rest of the data. Transformation can reduce the impact of outliers and improves the results of analysis (Tabachnick & Fidell, 2001).

Transformation can also help to stabilize the variance of the dependent variable if the homoscedasticity assumption is violated, normalize the dependent variable if the normality assumption is violated, and may help linearize the regression model (Kleinbaum, et al., 1998). Samples greater than 100 are assumed large enough to meet the assumption of normal distribution for statistical tests (Katz, 1999). This study had a sample size of 505, so having a normal distribution was not an issue for these data.

Reliability of all scales were measured prior to any univariate and multivariate analysis. Reliability of an instrument refers to the consistency of items and how well items in a scale fit together (Pett, Lackey, & Sullivan, 2003). Reliable scales increase statistical power (DeVellis, 2003). Reliability was established for internal consistency of all scales. Cronbach's alpha is the most recognized measure of assessing internal consistency, and obtained by averaging all possible split-half reliability coefficients in a

set of items in a scale (DeVellis, 2003; Pett, et al., 2003). Cronbach's alphas were

computed for all scales. In evaluating reliability, <.60 is considered unacceptable, .60-.65

undesirable, .65-.70 minimally acceptable, .70-.80 respectable, .80-.90 very good, and

>.90 should consider shortening the scale (DeVellis, 2003). These were the guidelines

used in this study.

Research Questions and Aims

Aim one: To what extent do contextual characteristics, individual characteristics, and

health behaviors individually predict patient satisfaction among the sample of African

American men who have been treated for prostate cancer in North Carolina.

Research Question one: Is patient satisfaction significantly explained by contextual

characteristics (number of African American physicians, percentage of Blacks,

educational levels, unemployment rate, number of public health clinics, household

income, number of primary care physicians) within counties in North Carolina

where study participants reside (see Figure 4)?

Contextual Characteristics   Outcome

Predisposing	Enabling Resources
- # AA PC Providers	- # Public Health Clinics
- % Blacks	- Household Income
- Educational Levels	- # PC Providers
- Unemployment Rate	- Emergency Dept

Patient Satisfaction
- Satisfaction with HCS
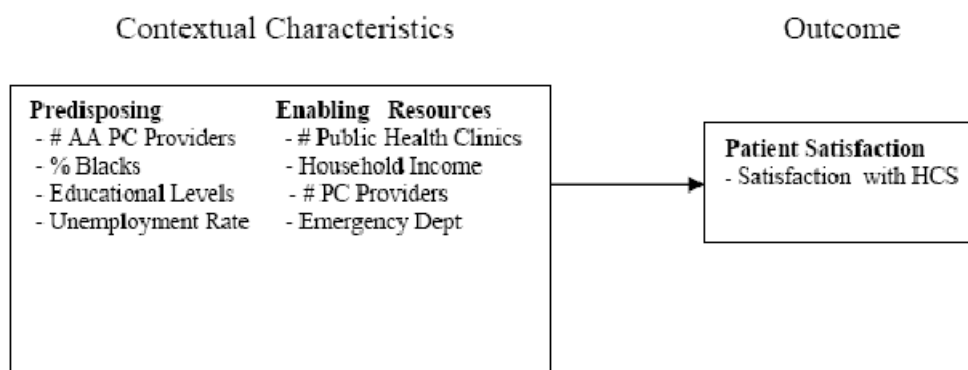
Figure 4. Model 1 for Research Question one: Patient satisfaction regressed on
contextual characteristics.

In model 1, bivariate analysis were conducted with the dependent outcome variable (patient satisfaction) and each of the independent contextual characteristic variables in the counties within the designated Health Service Area (HSA) for 2004 (see Figure 3).

Scatterplots with the best fitting regression line were produced to visually assess data points. SAS PROC REG was used to determine the best-fitting line using the least-squares method (Kleinbaum, et al., 1998). Correlations between variables were assessed using Pearson Product Moment Correlation (r) to determine strength and direction of the relationship between variables (Allison, 1999).

Bivariate regression models were generated with patient satisfaction and each of the independent variables. All models were assessed and interpreted for null hypothesis significance tests ($p<.05$) and variation (r^2) in patient satisfaction represented by the β coefficient, parameter estimates, and confidence limits. Standardized residual plots were produced to assess model assumptions (Tabachnick & Fidell, 2001).

After analysis of the bivariate regression models, all independent variables were placed in a multiple regression equation to predict patient satisfaction. Multiple regression is an extension of bivariate analysis where several independent variables are combined to predict the dependent variable (Cohen, et al., 2003; Tabachnick & Fidell, 2001). Multiple regression analysis has the ability to predict which variable or set of variables are the best predictors for patient satisfaction within the range of the data. Unlike bivariate regression, multiple regression takes into account the effect of each independent variable while controlling for the effects of the other independent variables in the model. Assessment and interpretation of multiple R^2, hypothesis tests, slopes,

parameter estimates, squared semi-partial (sr^2) and squared partial (pr^2) correlation

coefficients, and confidence intervals were conducted (Allison, 1999; Tabachnick &

Fidell, 2001).

Testing multiple variables simultaneously can introduce multicollinearity between

variables (Cohen, et al., 2003; Kleinbaum, et al., 1998; Montgomery, et al., 2006). This

was assessed using variance inflation factor (VIF) (Kleinbaum, et al., 1998). VIF >10 or

a tolerance <.10 suggests serious multicollinearity (Cohen, et al., 2003; Katz, 1999). In

this study VIF >10 was used as the criteria for assessing multicollinearity.

Forward selection, backward elimination, and stepwise procedures were used to

select or build refined regression models for contextual characteristics. The significance

limit was set at $p \leq .05$ as the criteria for a predictor to be considered for entry into the

model using forward selection. For backward elimination, the significance limit was also

set at $p \leq .05$ as the criteria for predictors not to be removed from the model. So all

predictors with a $p >.05$ was removed from the model. For stepwise regression, the

significance limit was set at $p \leq .05$ as the criteria for a predictor to be considered for

entry into the model, and the significance limit was set at $p >.05$ for the criteria for

predictors to be removed from the model. So, all predictors with a $p >.05$ were removed

from the model. Unlike backward elimination and forward selection, stepwise regression

permits reexamination of all previous variables at every step (Kleinbaum, et al., 1998).

SAS 9.2 statistical software has the ability to conduct forward selection, backward

elimination, and stepwise regression procedures (Cody, 2007).

Independent variables with VIF >10 were dropped from the full model. Forward

selection, backward elimination, and stepwise procedures were repeated using the

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reduced model without these overly collinear variables. The full model and the reduced

models were compared using Predicted Sums of Squares (PRESS). Smaller scores for

these criteria indicate better models, but not necessarily distinctly better models. If the

reduction in the scores is small (e.g., less than 1%), the model with the larger score is a

competitive alternative to the model with the smaller score and if that model is based on

fewer parameters, then it is a parsimonious competitive alternative and so preferable

(Knafl, 2009).

Research Question Two: Is patient satisfaction explained by individual characteristics

     (age, education, religious participation, mistrust, racism, religious beliefs,

     traditional health beliefs, health insurance, perceived access to care, and health

     literacy)?
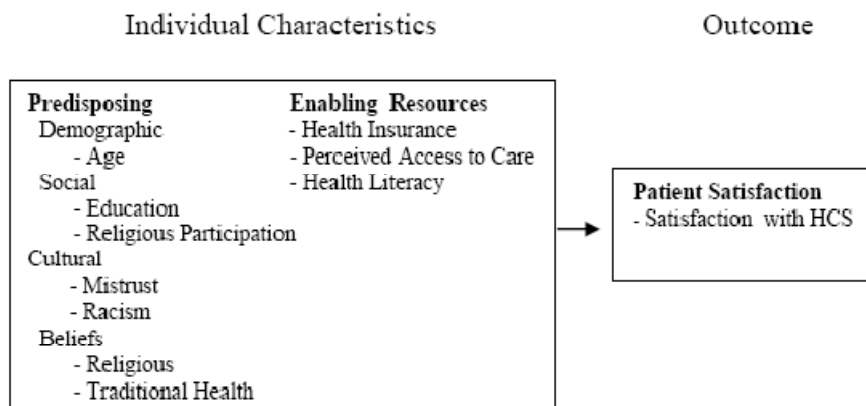
Figure 5. Model 2 for Research Question 2: Patient satisfaction regressed on individual characteristics.

    In model 2, the same statistical procedures for research question one was used for

research question two; however, the independent variables were different. Individual

characteristic variables (age, education, religious participation, mistrust, racism, religious

beliefs, traditional health beliefs, health insurance, perceived access to care, and health

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literacy) was used to assess relationships of individual and the group of variables as predictors of patient satisfaction.

Research Question Three. Is patient satisfaction explained by health behaviors (patient – provider communications, communications, interpersonal treatment, habits of health care utilization, and usual site of care)?

Health Behaviors   Outcome

```
┌─────────────────────────────────┐
│ Process of Medical Care         │
│ - PT/Provider Communication     │        ┌──────────────────────────┐
│ - Communications                │        │ Patient Satisfaction     │
│ - Interpersonal Treatment       │   ──▶  │ - Satisfaction  with HCS │
│                                 │        └──────────────────────────┘
│ Use of Personal Health          │
│ Service                         │
│ - Habits of H.C. Utilization    │
│ - Usual Site of Care            │
└─────────────────────────────────┘
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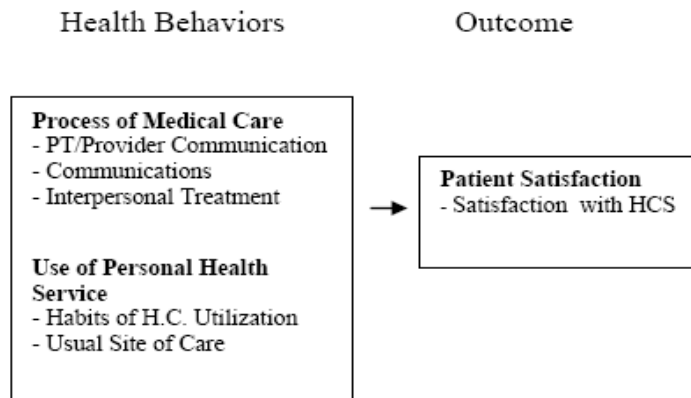
Figure 6. Model 3 for Research Question 3: Patient satisfaction regressed on health behaviors.

In model 3, the same statistical procedures for research questions one and two was used for research question three; however, the independent variables were different. The five health behavior variables (patient – provider communications, communications, interpersonal treatment, habits of health care utilization, and usual site of care) were used to assess relationships of individual and the group of variables as predictors of patient satisfaction.

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Aim Two: Is patient satisfaction explained by a combination of contextual

characteristics, individual characteristics, and health behaviors among African American

men who have been treated with prostate cancer in North Carolina?

Research Question Four: Do individual characteristics increase or decrease the variation

of contextual characteristics regressed on patient satisfaction?

Research Question Five: Do health behaviors increase or decrease the variation of

contextual and individual characteristics regressed on patient satisfaction?
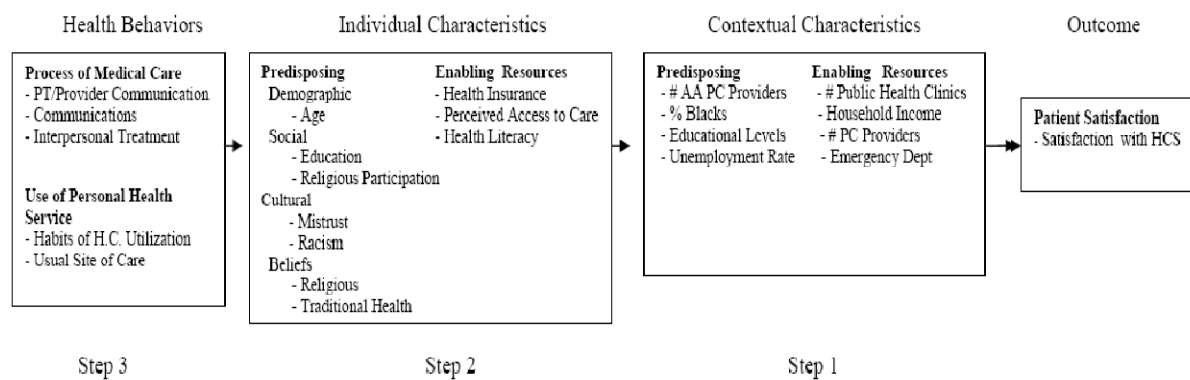
Figure 7. Model 4: Patient satisfaction regressed systematically on each domain.

A fourth model was introduced using hierarchical regression modeling to assess to

what extent each domain (contextual characteristics, individual characteristics, and health

behaviors) variance increase or decrease the prediction of patient satisfaction using the

reduced model with only statistical significant variable and the full model with all

variables. Hierarchical regression is similar to forward regression; however, hierarchical

regression allows the researcher to control the order in which variables enter the model

(Cohen, et al., 2003). All variables were grouped according to the domain.

The conceptual model (see Figure 2) was reversed on the analysis model (see Figure

7) in order to show the analysis steps. According to the conceptual model, contextual

characteristics domain was the first and most distal domain from the outcome variable; however, the contextual characteristic domain is most proximal in the analysis model. Health behaviors domain was most proximal in the conceptual model but most distal in the analysis model. The individual characteristic domain did not change positions in the analysis model.

The first step regressed patient satisfaction on the contextual characteristic domain variables. The contextual characteristic domain is the most distal group of variables from the outcome variable. Generally, it is recommended that the most distal group enter the model first followed by the less distal groups (Cohen, et al., 2003). The author of the Behavioral Model for Health Services Use also recommended following this sequencing of domains in the hierarchical analysis (R.M. Andersen, personal communication, November 3, 2009). The model was assessed for increases in R^2 which provided information about the proportion of variation in patient satisfaction accounted for beyond the previous domain (Cohen, et al., 2003). F tests were used to assess whether observed increases in R^2 were significant or not.

In the second step, individual characteristics domain was added to the model. Health behaviors domain, which is the most proximal group of variables, was added to the model. The health behaviors domain represents the actual use of health care services. This domain has the most immediate effect on patient satisfaction, because AAM would have actually experienced interactions with the health care system. Health behaviors are influenced by individual characteristics and individual characteristics are influenced by contextual characteristics within a particular geographical area or environment in which people live, work, socialize, and receive health care.

This hierarchical approach may be able to provide information and knowledge about areas amenable for future development of interventions to improve health service utilization and patient satisfaction for AAM. Also, hierarchical regression has the advantage of taking into account nested data within higher or lower levels of data (Tabachnick & Fidell, 2001). Analyzing county and Health Service Area level data may allow the ability to assess environmental or contextual characteristics.

Human Subject Protection

Since this is a secondary data analysis, the participants have already been consented; however, approval to use this data will be obtained from the PCaP Consortium Management Committee and the University of North Carolina at Chapel Hill Institutional Review Board (IRB). Study and data management is facilitated by a Data Tracking System that links Subject Tracking and Specimen Tracking modules developed by PCaP investigators and staff in collaboration with UNC Department of Epidemiology. Data entry is facilitated through the use of barcode-labeled scannable questionnaire forms. The data requested from the PCaP Consortium for this study will not have any participant identification data.

The PCaP Consortium Database serves as the ultimate repository for all study data, the Subject and Specimen Tracking Systems, questionnaire data, and all laboratory data. Results and publications based on the data collected by the PCaP Consortium are reviewed by the Consortium Management Committee to ensure that data are used and reported appropriately, and to ensure compliance with protocols developed to maintain confidentiality and privacy (Schroeder, et al., 2006).

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CHAPTER 4

Results

Introduction

A secondary data analysis of cross-sectional data obtained from 505 African

American in North Carolina treated for prostate cancer was conducted and is reported in

this chapter. The data set is a subset of the larger North Carolina-Louisiana Prostate

Cancer Project.   For each scale requiring reverse scoring, all items were reverse scored.

All missing data in the scales were imputed if at least 75% of the items were answered.

Scales were summed to create a total sum score of the variable. Reliability of all scales

was tested for internal consistency using Cronbach's alpha. Contextual characteristic

data were constructed based on the Health Service Area (HSA) and county location of the

PCaP sample of African American men in North Carolina.   Both data sets were merged

by county to form a unique data set that provides information about environmental

conditions where these men lived. Data from the PCaP sample were collected from

September 2004 to November 2007, so the majority of the contextual characteristic data

are relevant for 2004.

Analysis began with the description of demographic characteristics of the total

sample. Research questions 1-3 were tested using multiple regression with backward

elimination, forward selection, and stepwise procedures, and research questions 4 and 5

were tested using hierarchical regression.

Missing Data

Prior to evaluation of missing data, all items in scales requiring reverse scoring were reversed. The data were then evaluated for amounts and patterns of absence. All items in the scales had the same range of values 1 – 5, except for the traditional health beliefs scale where items were dichotomous ranging from 0 – 1. Items coded as 88 or 99 ("Don't Know or Refused") were recoded as missing. All items for each scale were further evaluated for the percentage of missing items for that scale.

If a subject had more than 25% missing item values for a particular scale, the entire scale for that subject was considered missing. If a subject had less than 25% missing item values for a particular scale, those missing item values were imputed using the average of the non-missing item values provided by that subject for that scale. All items in each scale were summed to create a total sum score for the variable for each subject. Missing data for each variable will be presented in a table for each research question.

According to the Central Limit Theorem, the sum or average of large numbers of independent observations from the same distribution has a normal distribution (Kleinbaum, et al., 1998). However, when the number of observations is not large, the data should be approximately normal for tests associated with regression analyses to be dependable. The total sample in this study consisted of 505 African American men diagnosed and treated for prostate cancer in North Carolina. There were 11 missing values for patient satisfaction, so the sample ($n = 494$) will be used as the starting sample size which is large enough so that normality is not an issue. With a sample of 494, this

sample was large enough to power all regression models for a medium effect size (.15) with a significance level (alpha) of .05 and even smaller effect sizes.

Outliers and assumptions were evaluated using predicted values, studentized residuals, Cook's Distance (Cook's D), Hat Diagonal (leverage), DFFITS, scatterplots, boxplots, stem and leaf plots, and histograms for residuals. Studentized residuals $> \pm2.5$ were used to identify potential outliers, and Cook's D, Hat Diagonal, and DFFITS were used to determine the influence of the outliers on regression coefficients. Sensitivity analyses were conducted with multiple regression analyses excluding potential identified outliers if any.

Scale Reliabilities

Prior to any analysis of the scales, reliabilities for all scales were checked for internal consistency using raw Cronbach's alpha. Overall, the scales used in this study had good internal consistency as shown in Table 1. For this sample, Cronbach's alphas ranged from .75 - .93.

Patient Satisfaction

These men lived in 41 out of the 100 counties in North Carolina. All 41 counties are located in the Piedmont and Coastal Plains regions of North Carolina (see Figure 3). The men from these regions in the state had a patient satisfaction mean of 62.7 ($n = 494$) with a standard deviation of 6.7. Using one-way analysis of variance, there were no significant ($p = .27$) differences in patient satisfaction across HSAs; therefore, all analyses were conducted without considering HSAs.

Table1. Sample Size, Number of Items, and Cronbach's Alpha Coefficients for Scales

Scale	Number of Items	*n*	Missing	Cronbach's Alpha
Participation in Religious Activities	10	418	87	.80
Mistrust	12	481	24	.78
Racism Within Health Care System	4	491	14	.82
Religious Beliefs	8	493	12	.90
Traditional Health Beliefs	17	395	110	.77
Perceived Access to Care	10	496	9	.76
Patient-Provider Communication	5	493	12	.75
Interpersonal Treatment	5	495	10	.93
Communications	5	495	10	.92
Habits of Health Care Utilization	9	495	10	.85
Patient Satisfaction	15	494	11	.90

Note. All scales with less than 25% missing items for each subject had missing items imputed with the average of the non-missing items in that scale for that same subject. All scales with more than 25% missing items for a subject were considered missing and were not used in calculating Cronhach's Alpha Coefficient.

Research Aims and Questions

Aim 1 of this study was to determine to what extent contextual characteristics, individual characteristics, and health behaviors predict patient satisfaction among the sample of African American men who have been treated for prostate cancer in North Carolina. All variables were used in a multiple regression model. Additionally, only variables found to be significantly associated with patient satisfaction were put in a multiple regression model to determine which variables remained significantly associated with patient satisfaction. Contextual characteristic variables are reported in Table 2.

Table 2. Contextual Characteristic Variables

Variable	*n*	Missing	M(SD)	*p* value*
# African American Primary Care Providers [a]	505	0	28.2(28.8)	.035
Percentage of Blacks [b]	505	0	29.2(11.9)	.044
Educational Levels [b]				
%Less than High School Degree	505	0	20.4(7.6)	.003
%High School Degree Only [c]	505	0	26.9(6.5)	.034
%Some College	505	0	27.7(4.4)	.021
%At Least a Bachelor's Degree	505	0	20.4%(7.6)	.042
Unemployment Rate [a]	505	0	5.6(1.3)	.015
# Public Health Clinics	505	0	1(.16)	.971
Household Income [a]	505	0	$28,603($6,179)	.007
# Primary Care Providers [a]	505	0	285(287.6)	.043
# Emergency Departments	505	0	2.5(2.6)	.144

Note. [a] Per 10K population in 2004. [b] Data obtained from 2000 Census and educational levels include the percentage of people 25 years or over. [c] High school degree includes those who completed the 12th grade and received a high school diploma or its equivalent (such as a GED) but did not report any college experience. * *P* values are from bivariate analyses regressing patient satisfaction on each variable independently involving smaller samples due to missing data.

Research Question One. Is patient satisfaction significantly explained by contextual

characteristics (number of African American physicians, percentage of blacks,

educational levels, unemployment rate, number of public health clinics, household

income, number of primary care physicians, and number of emergency departments)

within designated counties and Health Services Areas (HSAs) in North Carolina?

Multiple Regression

All contextual characteristics were considered in a multiple regression model. In

Model 1, patient satisfaction was regressed on all contextual characteristics. As shown in

Table 3, the overall model was not significant; however, the variables of household

income ($p = .01$) and number of emergency departments ($p = .05$) were associated with

patient satisfaction.

All contextual characteristic variables determined to be significant during

bivariate analysis in Table 2 were put in a model. As shown in Table 3, Model 2 ($n =$

494) was not significant ($p = .14$) with an F value of 1.51, and R^2 of .03. None of the

variables reached significance, and the VIF values were >10 for seven out of nine

variables suggesting multicollinearity.

Table 3. Patient Satisfaction Regressed on Contextual Characteristics

	N	*P*	*F*	*R^2*	*PRESS*
Model 1: All contextual characteristics	494	.0977	1.59	.04	22094
Model 2: Only significant[a] contextual characteristics	494	.1405	1.51	.03	22112
Model 3: FS with all contextual characteristics	494	.0027	9.06	.02	21641
Model 4: BE with all contextual characteristics	494	.0069	7.36	.02	21719
Model 5: Stepwise with all contextual characteristics	494	.0027	9.06	.02	21641

Note. [a] Variables located in Table 2 with *p* value < .05. FS (Forward Selection) and BE (Backward
Elimination).

Six potential outliers (ranging between -2.75 – -4.17) were identified as having studentized residuals $> \pm 2.5$. Criteria used to indicate influence on the regression model and coefficients were: Cook's D > .008, DFFITS > 2, and Hat Diagonal > .2 (Montgomery, et al., 2006). The outlier with the largest studentized residual (-4.17) had a Cook's D value of .016, DFFITS value of –0.2228, and Hat Diagonal value of 0.0029 indicating no influence or leverage on the regression model and coefficients as indicated by two of these three influence statistics. Since these subjects are part of the target population in this study and outliers did not have an influence or leverage on the regression model and coefficients, all subjects were retained in the remainder of the models.

Forward Selection

In Model 3, forward selection procedure was used with all contextual characteristics. The final model ($n = 494$) was significant ($p = .003$) with a F value of 9.06, and R^2 of .02. The percentage with less than a high school degree ($p = .003$) was the only variable that entered into the model. The percentage with less than a high school degree was negatively associated with patient satisfaction.

Backward Elimination

In Model 4, backward elimination procedure was used with all contextual characteristics. As shown in Table 3, the final model ($n = 494$) was significant ($p = .0069$) although R^2 was only .02. This model only retained household income ($p = .0069$) and was positively associated with patient satisfaction.

<u>Stepwise</u>

As indicated in Model 5 of Table 3, stepwise procedure with all contextual characteristics provided a final model ($n = 494$) that only retained the percentage with less than a high school degree ($p = .003$) identical to Model 3 using forward selection which was negatively associated with patient satisfaction.

<u>Model Comparison</u>

Predicted Sums of Squares (PRESS), p value, R^2, F value, and number of variables were used to compare two models. Since Model 3 and Model 5 are the same, Model 3 and Model 4 were compared. Model 3 and Model 5 only contained the percentage with less than a high school diploma. Model 4 only contained household income. Model 3 PRESS was 21641 which was lower than Model 4 PRESS of 21719, and so indicates that Model 3 and Model 5 were better models than Model 4.

In Model 4, backward elimination procedure was used which left only household income in the model. Backward elimination starts with the full model then removes variables sequentially starting with the lowest F value. Backward elimination procedure does not take into account multicollinearity. As a result, important variables can be removed in earlier steps, and variables with multicollinearity can remain in the model.

At Step 8 in the backward elimination procedure, the percentage with less than a high school degree had an *F* value of .34 and VIF of 8.3, number of emergency departments had an *F* value of 2.7 and VIF of 4.6, some college had an *F* value of 2.6 and VIF of 2.1, and household income had an *F* value of 3.7 and VIF of 12.6. Although household income had a higher VIF than the percentage with less than a high school degree, household income remained in the model, because, it had a higher *F* value.

In contrast, forward selection and stepwise procedures select variables with the highest F value first. Both of these procedures selected less than a high school degree ($F = 9.06$). After the percentage with less than a high school degree entered into the model, none of the other contextual characteristic variables was able to enter the model in which the p value was set at .05.

Considering the model comparison scores, number of variables, p value, F value, and R^2, Model 3 was determined to be the more parsimonious model. This final contextual characteristics model ($n = 494$) was significant ($p = .003$) with a R^2 of .02. The percentage with less than a high school degree was ($p = .003$) negatively associated with patient satisfaction.

Summary

Some contextual characteristics can explain variability in patient satisfaction individually such as the number of African American primary care providers (1%), the percentage of blacks (1%), the percentage with less than a high school degree (2%), the percentage with only a high school degree (1%), the percentage with some college (1%), the percentage with at least a bachelor's degree (4%), unemployment rate (1%), household income (2%), and the number of primary care providers (1%); however, multicollinearity existed between these variables. Model 3 ($n = 494$) was selected as the final contextual characteristics model reaching significance ($p = .003$) with an R^2 of .02. The percentage with less than a high school degree is negatively associated with patient satisfaction. Altogether, contextual characteristics explained a nonsignificant percentage (2%) of the variability in patient satisfaction.

Research Question Two. Is patient satisfaction explained by individual characteristics

(age, education, religious participation, mistrust, racism, religious beliefs, traditional

health beliefs, health insurance, perceived access to care, and health literacy)?

Individual characteristics are reported in Table 4 and 5.

Table 4. Individual Characteristic (Continuous) Variables

Variable	n	Missing	Percent Missing	M(SD)	p value*
Age	505	0	0%	61.1(8.1)	.47
Religious Participation	418	87	17%	40.6(5.9)	.002
Mistrust	481	24	5%	32.4(5.8)	<.0001
Racism	491	14	3%	10.7(3.0)	<.0001
Religious Beliefs	493	12	2%	33.3(5.7)	.19
Traditional Health Beliefs	496	9	2%	4.6(2.8)	<.0001
Perceived Access to Care	496	9	2%	37.2(4.6)	<.0001

Note: Categorical variables (education, health insurance, and health literacy) are located in Table 5. * *P* values are from bivariate analyses regressing patient satisfaction on each variable independently involving smaller samples due to missing data.

Multiple Regression

In Model 6, as shown in Table 6, patient satisfaction was regressed on all

individual characteristics. This model ($n = 407$) was significant ($p = <.0001$) with an R^2

of .28; however, only participation in religious activities ($p = .02$), mistrust ($p = <.0001$),

racism within the health care system ($p = .014$), and perceived access to care ($p = <.0001$)

were associated with patient satisfaction. All individual characteristic variables had VIF

values < 2, so multicollinearity was not an issue. Five outliers were identified as having

studentized residuals > ± 2.5 with the most extreme residual –3.71. After evaluating

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these potential outliers for influence and leverage, it was determined that these outliers

did not have influence or leverage on the regression model and coefficients, thereby

validating the results for all subjects.

The model was reanalyzed with only significant variables (participation in

religious activities, mistrust, racism within the health care system, and perceived access

to care) from bivariate analyses. In Table 6, Model 7 ($n = 411$) remained highly

significant ($p = <.0001$), R^2 remained unchanged .28, and VIF values remained < 2.

Participation in religious activities ($p = .016$) was positively associated with patient

satisfaction. Mistrust ($p = <.0001$) was negatively associated with patient satisfaction.

Racism within the health care system ($p = .010$) was negatively associated with patient

satisfaction. Perceived access to care ($p = <.0001$) was positively associated to with

patient satisfaction.

Table 5. Individual Characteristic (Categorical) Variables

Variable	*n*	Missing	Percent	*p* value*
Education	504	1	< 1%	.002
Less than 8th grade education	46		9%	
Some high school education	90		18%	
High school diploma	152		30%	
Vocational/Technical Training	31		6%	
Some college	94		19%	
College degrees	55		11%	
Some graduate training	12		2%	
Graduate/Professional degrees	24		5%	
Health Insurance	501	4	< 1%	.797
Yes	415		83%	
No	86		17%	
Health Literacy	504	1	< 1%	.003
3rd grade level and below	91		18%	
4th – 6th grade level	110		22%	
7th – 8th grade level	82		16%	
9th grade level and above	221		44%	

Note. * *P* values are from bivariate analyses regressing patient satisfaction on each variable independently involving smaller samples due to missing data.

Forward Selection

Forward selection procedure was used with all individual characteristic variables. Model 8 ($n = 407$) was significant ($p = <.0001$) and R^2 was .28. As shown in Table 6, mistrust, perceived access to care, racism, and participation in religious activities were entered into the model. All VIF values for the variables in the model were < 2 indicating

no multicollinearity. Health literacy, traditional health beliefs, age, education, religious beliefs, and health insurance variables did not enter the model.

Table 6. Patient Satisfaction Regressed on Individual Characteristics

	N	*P*	*F*	*R²*	*PRESS*
Model 6: All individual characteristics	407	<.0001	15.15	.28	14895
Model 7: Only significant[a] individual characteristics	411	<.0001	38.7	.28	13502
Model 8: FS with all individual characteristics	407	<.0001	36.75	.27	13360
Model 9: BE with all individual characteristics	407	<.0001	36.75	.27	13360
Model 10: Stepwise with all individual characteristics	407	<.0001	36.75	.27	13360

Note. FS (Forward Selection) and BE (Backward Elimination) procedures. [a] Variables included participation in religious activities, mistrust, racism, and perceived access to care.

Backward Elimination

In Model 9, backward elimination procedure with all individual characteristics produced a model ($n = 407$) that was significant ($p = <.0001$) with R^2 of .27. This model was identical to Model 8. Step 1 removed education from the model, Step 2 removed health insurance from the model, Step 3 removed religious beliefs from the model, Step 4 removed age from the model, Step 5 removed traditional health beliefs, and Step 6 removed health literacy from the model. All six variables removed from the model were not significant.

In this model using backward elimination procedure, participation in religious activities ($p = .027$) was positively associated ($pr^2 = .01$), mistrust ($p = <.0001$) was negatively associated ($pr^2 = .07$), racism within the health care system ($p = .019$) was negatively associated ($pr^2 = .02$), and perceived access to care ($p = <.0001$) was positively associated ($pr^2 = .05$) with patient satisfaction.

As shown in Table 6, Model 10 using stepwise procedure with all individual characteristics provided a final model ($n = 407$) that was significant ($p = <.0001$), and R^2 was .27. In step 1, mistrust was entered into the model, Step 2 perceived access to care entered into the model, Step 3 racism within the health care system entered into the model, and Step 4 participation in religious activities entered the model. The final model created using stepwise procedure is identical to Model 8 created using forward selection and Model 9 created using backward elimination.

Model Comparison

Model 6 contained the same variables as Model 8, Model 9, and Model 10; however, the F value in Model 6 was lower. Model 6 PRESS score was 14895 compared to Model 8 PRESS score of 13360. According to the PRESS scores, Model 8 was a better model. Considering the model PRESS scores, number of variables, p value, F value, and Multiple R^2, Model 8 was determined to be the more parsimonious individual characteristic model. Model 8 F value was 36.75 with a R^2 of .27 compared to Model 6 F value of 15.15 with a R^2 of .28. All variables in this model had VIF values < 2. Model 7 is not considered in these comparison since it is based on a different number of observations and so its results are not comparable to results for the other models.

Table 7. Patient Satisfaction Regressed on Individual Characteristics Using FS (Model 8)

Variable	P	F	Model R^2	pr^2
Step 1: Mistrust	<.0001	95.58	.19	.19
Step 2: Perceived Access to Care	<.0001	30.92	.25	.06
Step 3: Racism	.0019	5.59	.26	.01
Step 4: Participation in Religious Activities	.0268	4.94	.27	.01

Note: FS = Forward Selection

Summary

Individually, seven out of the ten individual characteristics significantly explained variability in patient satisfaction. Individually, education explained 2%, religious participation explained 2%, mistrust explained 18%, racism within the health care system explained 10%, traditional health beliefs explained 3%, perceived access to care explained 14%, and health literacy explained 2% of the variability in patient satisfaction. Age, religious beliefs, and health insurance did not significantly explain the variability in patient satisfaction.

Although seven out of the ten individual characteristic variables explained variability in patient satisfaction, only four variables remained significant ($p = <.05$) when entered into a multiple regression model. Model 8 was selected as the final individual characteristics multiple regression model. This model ($n = 407$) was significant ($p = <.0001$) with a R^2 of .27, and VIF values were < 2. Participation in religious activities ($p = .016$) was positively associated ($pr^2 = .02$), mistrust ($p = <.0001$) negatively associated ($pr^2 = .08$), racism within the health care system ($p = .010$) negatively associated ($pr^2 = $

.16), and perceived access to care ($p = <.0001$) positively associated ($pr^2 = .07$) with patient satisfaction. Overall, the individual characteristic model (Model 8) was able to explain approximately 27% of the variability in patient satisfaction.

Research Question Three. Is patient satisfaction explained by health behaviors (patient

– provider communications, communications, interpersonal treatment, habits of

health care utilization, and usual site of care)?

Health behavior variables are located in Tables 8 and 9.

Table 8. Health Behavior (Continuous) Variables

Variable	*n*	Missing	Percent Missing	Mean (SD)	*p* value*
Patient-Provider Communication	493	12	2%	19.3(4.2)	<.0001
Interpersonal Treatment	495	10	2%	21.5(3.2)	<.0001
Communications	495	10	2%	22.1(3.1)	<.0001
Habits of Health Care Utilization	495	10	2%	29.8(6.4)	<.0001

Note. * *P* values are from bivariate analyses regressing patient satisfaction on each variable independently involving smaller samples due to missing data.

Table 9. Health Behavior (Categorical) Variable

Variable	*n*	Missing	Percent
Usual Site of Care*	503	2	<1%
Doctor's office/Group Practice	350		69%
Public health clinic/Community health center	20		4%
Emergency room	22		4%
Urgent Care Center	7		1%
Hospital-based clinic	25		5%
Veteran's Administration	65		13%
Some other place	5		1%
No usual place	9		2%

Note. *Usual Source of Care *p* value = .785 from bivariate analysis.

In Model 11, as shown in Table 10, patient satisfaction was regressed on all health behavior variables. This model ($n = 491$) was significant ($p = <.0001$) with an R^2 of .45. Patient-provider communication ($p = <.0001$), communications ($p = .002$), and interpersonal treatment ($p = <.0001$) were significantly associated with patient satisfaction. Habits of health care utilization ($p = .10$) and usual site of care ($p = .81$) were not significant. All health behavior variables had VIF values < 3, so multicollinearity was not an issue. Nine outliers were identified as having studentized residuals $> \pm 2.5$ which ranged from -3.22 to -2.52 and 2.54 to 4.40. The largest residual of 4.40 had a Cook's D value of $.2646$, DFFITS value of 1.2833, and a Hat Diagonal value of $.0784$. After evaluating these potential outliers for influence and leverage, it was determined that these outliers did not have influence or leverage on the regression model and coefficients, so all outliers were retained in the models.

Only significant variables (patient-provider communication, interpersonal treatment, and communications) from bivariate analyses were analyzed in Model 12. This model ($n = 492$) remained highly significant ($p = <.0001$), R^2 remained unchanged .45, and VIF values were < 3. Patient-provider communication ($p = <.0001$), interpersonal treatment ($p = <.0001$), and communications ($p = .001$) were positively associated with patient satisfaction. In Table 11, these significant variables were put in a model using stepwise procedure to determine the F value of each variable.

Table 10. Patient Satisfaction Regressed on Health Behaviors

	N	P	F	R^2	$PRESS$
Model 11: All health behaviors	491	<.0001	79.76	.45	12318
Model 12: Only significant[a] health behaviors	492	<.0001	130.73	.45	12377
Model 13: FS with all health behaviors	491	<.0001	131.78	.45	12298
Model 14: BE with all health behaviors	491	<.0001	131.78	.45	12298
Model 15: Stepwise with all health behaviors	491	<.0001	131.78	.45	12298

Note. FS (Forward Selection) and BE (Backward Elimination) procedures. [a] Variables included patient-provider communication, interpersonal treatment, and communications.

Forward Selection

In Model 13, all health behavior variables were analyzed using forward selection procedure. Model 13 ($n = 491$) was significant ($p = <.0001$), F value was 131.78, and R^2 was .45. Step 1 entered interpersonal treatment into the model. Interpersonal treatment $p = <.0001$, $F = 313.53$, model R^2 was .39, and pr^2 correlation coefficient was .39. Step 2 entered patient-provider communication into the model. Patient-provider communication $p = <.0001$, $F = 39.78$, model R^2 was .44, and pr^2 correlation coefficient was .05. Step 3 entered communications into the model. Communications $p = .002$, $F = 10.11$, model R^2 was .45, and pr^2 correlation coefficient was .01. Habits of health care utilization and usual site of care were not added in the model. All VIF values for the variables in the model were < 3.

Backward Elimination

Model 14 of Table 10 used backward elimination procedure with all health behavior variables. This model ($n = 491$) was significant ($p = <.0001$), F value of 131.78, and R^2 was .45. This procedure only used two steps and removed usual site of

care and habits of health care utilization from the model. Usual site of care $p = .8051$, F = .06, model R^2 was .45, and pr^2 correlation coefficient was .00 and habits of health care utilization $p = .098$, $F = 2.76$, model R^2 was .45, and pr^2 correlation coefficient was .00. This model was identical to Model 13 that used forward selection procedures.

Stepwise

Model 15 used stepwise procedure with all health behavior variables. This model ($n = 491$) was significant ($p = <.0001$), and had an R^2 of .45. Variables were entered in the same order when forward selection procedure was used. The final model determined using stepwise procedure was identical to Model 13 created using forward selection and Model 14 backward elimination.

Table 11. Patient Satisfaction Regressed on Only Significant Health Behaviors Using Stepwise (Model 12)

Variable	P	F	Model R^2	pr^2
Step 1: Interpersonal Treatment	<.0001	309.84	.39	.39
Step 2: Patient-Provider Communication	<.0001	40.18	.43	.05
Step 3: Communications	.001	10.29	.45	.01

Note: Stepwise procedure was used with only significant variables for Model 12 to determine F values.

Model Comparison

In comparing models, Model 11 contained patient-provider communication, interpersonal treatment, and communications. Models13, 14, and 15 contained habits of health care utilization, patient-provider communication, interpersonal treatment, and communications. Since Models 13-15 are identical, only model 15 was used in the

comparison. Model 11 PRESS score was 12318 which was lower than the Model 15

PRESS of 12298, and so indicates that Model 15 was a better model. However, the

reduction of Model 15 scores was not distinctly different from Model 11. Considering

the model PRESS scores, number of variables, p value, F value, and R^2, Model 15 was

determined to be the more parsimonious model. Model 11 F value was 79.76 with a R^2

of .45 compared to Model 15 F value of 131.78 with a R^2 of .45.

Summary

Individually, four out of the five health behavior variables significantly explained

variability in patient satisfaction. Individually, patient-provider communication

explained 14%, interpersonal treatment explained 39%, communications explained 33%,

and habits of health care utilization explained 32% of the variability in patient

satisfaction. Usual site of care did not significantly explain the variability in patient

satisfaction.

Although four out of the five health behavior variables individually explained

variability in patient satisfaction, only three variables remained significant when entered

into multiple regression models. Habits of health care utilization became nonsignificant.

Model 15 was selected as the final health behavior multiple regression model. This

model ($n = 491$) was highly significant ($p = <.0001$), F value of 131.78, R^2 was .45 with

VIF values < 3. Patient-provider communication ($p = <.0001$), interpersonal treatment (p

$= <.0001$), and communications ($p = .001$) were all positively associated with patient

satisfaction. Overall, this final health behavior model was able to explain approximately

45% of the variability in patient satisfaction.

Based on the multiple analyses conducted, the conceptual model was modified to contain only those variables that were significant in accounting for variability in patient satisfaction. Variables that did not contribute significantly to the variability were excluded from the model. The final model is depicted in Figure 8.
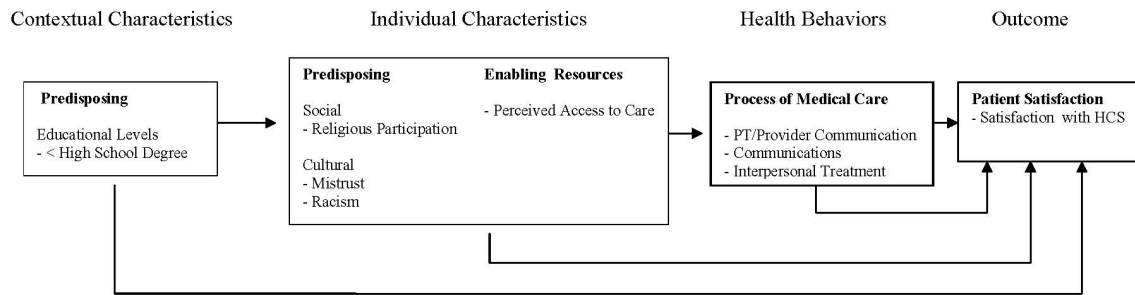
Figure 8. Final behavioral model of health service use for African American Men treated for prostate cancer (PCA).

Aim 2 of this study was to determine if addition of individual characteristics would explain or add to the variability in patient satisfaction already accounted for by contextual characteristics and if addition of health behaviors would explain or add to the variability in patient satisfaction already accounted for by contextual and individual characteristics among African American men who have been treated for prostate cancer in North Carolina. Hierarchical regression was used to determine the change in the variability of patient satisfaction. In order to conduct hierarchical regression, a dataset was constructed to eliminate all subjects with missing variables for calculation of F Statistic. F Statistic is used to test a significant change in R^2. This dataset had a sample size of 405 African American men with complete data for all variables.

Research Question Four: Do individual characteristics increase or decrease the

variation of contextual characteristics regressed on patient satisfaction?

Hierarchical Regression with All Variables

In step 1 of the hierarchical regression analysis, patient satisfaction was regressed on all contextual characteristic variables. As shown in Table 12, Model 16 ($n = 405$) was significant ($p = .03$), F value was 1.97, and R^2 was .05. In this model, only household income ($p = .010$) was positively associated with patient satisfaction.

In step 2, all individual characteristic variables were added to the model with all contextual characteristic variables. Model 17 ($n = 405$) was significant ($p = <.0001$), F value was 8.36, and R^2 was .31. Household income remained ($p = .047$) positively associated with patient satisfaction. The number of African American primary care providers ($p = .024$) became negatively associated with patient satisfaction when

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individual characteristic variables were added to the model. Participation in religious

activities ($p = .02$) and perceived access to care ($p = <.0001$) were positively associated to

patient satisfaction. Mistrust ($p = <.0001$) and racism within the health care system ($p =$

.015) were negatively associated with patient satisfaction.

When all individual characteristic variables were added in the model with all

contextual characteristic variables, the model p value improved from .03 to <.0001, F

value improved from 1.97 to 8.36, and R^2 improved from .05 to .31. By adding all

individual characteristic variables to all contextual characteristic variables, Model 17

accounted for 31% of the variability in patient satisfaction compared to only 5%

accounted for by only contextual characteristic variables. Individual characteristic

variables improved R^2 by .26, and this change in R^2 was significant ($F = 14.63$ and $p =$

<.001).

Table 12. Hierarchical Regression with All Individual Characteristics Added to All
Contextual Characteristics.

	N	P	F	R^2	Δ in R^2
Model 16: (Step 1) - All contextual characteristics	405	.03	1.97	.05	--
Model 17: (Step 2) - All individual characteristics	405	<.0001	8.36	.31	+.26**

Note. Δ = change ** This was a significant change [$F (10,383) = 14.63$, and P value = <.001].

Hierarchical Regression with Only Significant Variables

In Step 1 shown in Table 13, patient satisfaction was regressed on less than a high

school degree. Model 18 only contained less than a high school degree, because it was

the only contextual variable reaching significance as demonstrated in Model 3 and Model

5. Model 18 ($n = 405$) was significant ($p = .0003$) with a F value of 13.36, and R^2 of .03.

In this model, the percentage with less than a high school degree ($p = .0003$) was negatively associated with patient satisfaction.

   In step 2, only significant individual characteristic variables (participation in religious activities, mistrust, racism within the health care system, and perceived access to care) from bivariate analyses were added to the model with one contextual characteristic variable (less than a high school degree). Model 19 ($n = 405$) was significant ($p = <.0001$) with a F value was 32.63, and R^2 of .29. The percentage with less than a high school degree remained significant ($p = .0004$) and was negatively associated with patient satisfaction. Participation in religious activities ($p = .026$) and perceived access to care ($p = <.0001$) were positively associated to patient satisfaction. Mistrust ($p = <.0001$) and racism within the health care system ($p = .01$) were negatively associated with patient satisfaction.

Table 13. Hierarchical Regression with Only Significant Individual Characteristics Added to Only Significant Contextual Characteristics

	N	*P*	*F*	*R²*	Δ *in R²*
Model 18:(Step 1) - Significant contextual [a]	405	.0003	13.36	.03	--
Model 19:(Step 2) - Significant individual added [b]	405	<.0001	32.63	.29	+.26**

Note. [a] Variables included the percentage with less than a high school degree. [b] Variables included participation in religious activities, mistrust, racism, and perceived access to care. Δ = change. ** This was a significant change [$F(4,399) = 36.28$, and P value = <.001].

   When only significant individual characteristic variables were added in the model with only significant contextual characteristic variables, the model p value improved from .0003 to <.0001, F value improved from 13.36 to 32.63, and R^2 improved from .03 to .29. By adding only significant individual characteristic variables to only significant

contextual characteristic variables, Model 19 accounted for 29% of the variability in patient satisfaction compared to only 3% accounted for by only the percentage with less than a high school degree. This change in R^2 was significant ($F = 36.28$ and $p = <.001$).

Summary

When all contextual and individual characteristic variables are considered, individual characteristics increased the variability accounted for in patient satisfaction from 5% in Model 16 to 31% in Model 17. R^2 improved by .26 when all individual characteristic variables were added to Model 16. When only significant contextual and individual characteristic variables are considered, individual characteristics increased the amount of variability accounted for in patient satisfaction from 3% in Model 18 to 29% in Model 19. Whether using all variables or only significant variables, R^2 improved by .26. Changes in R^2 were significant when using all variables or only significant variables.

Research Question Five: Do health behaviors increase or decrease the variation of contextual characteristics and individual characteristics regressed on patient satisfaction?

Hierarchical Regression with All Variables

In step 2, all individual characteristic variables were added to the model with all contextual characteristic variables. Model 17 ($n = 405$) was significant ($p = <.0001$), F value was 8.36, and R^2 was .31. Household income ($p = .04$) was positively associated with patient satisfaction. The number of African American primary care providers ($p = .02$) became negatively associated with patient satisfaction when individual characteristic variables were added to the model; however, the number of African American primary

care providers had a VIF value of 58.67 indicating substantial multicollinearity. Participation in religious activities ($p = .02$) and perceived access to care ($p = <.0001$) were positively associated to patient satisfaction. Mistrust ($p = <.0001$) and racism within the health care system ($p = .01$) were negatively associated with patient satisfaction.

In Step 3 as shown in Table 14, Model 20 added all health behavior variables to the model with all contextual and individual characteristic variables. In Model 20, the p value remained $<.0001$, F value improved from 8.36 to 16.31, and R^2 improved from .31 to .53. By adding all health behavior variables to all contextual and individual characteristic variables, Model 20 accounted for 53% of the variability in patient satisfaction compared to 31% accounted for by all of the contextual and individual characteristic variables. The number of African American primary care providers ($p = .03$) remained negatively associated with patient satisfaction, and VIF value increased to 61.07 indicating multicollinearity. Racism within the health care system became nonsignificant. Health behavior variables improved R^2 by .22, and this change in R^2 was significant ($F = 34.4$ and $p = <.001$).

Table 14. Hierarchical Regression With All Health Behaviors Added to Contextual and Individual Characteristics.

	N	P	F	R^2	$\Delta\ in\ R^2$
Model 17: (Step 2) - All contextual and individual and characteristics	405	<.0001	8.36	.31	
Model 20: (Step 3) - All health behaviors added	405	<.0001	16.31	.53	+.22**

Note. Δ = change. ** This was a significant change [F (5,378) = 34.4, and P value = <.001].

Hierarchical Regression with Only Significant Variables

In step 2, Model 19 with only significant individual characteristic variables (participation in religious activities, mistrust, racism within the health care system, and perceived access to care) were added to Model 18 with only one contextual characteristic variable (percentage with less than a high school degree). As shown in Table 13, Model 19 ($n = 405$) was significant ($p = <.0001$) with a F value of 32.63, and R^2 of .29. Percentage with less than a high school degree remained significant ($p = .003$) and negatively associated with patient satisfaction with a VIF < 2. Participation in religious activities ($p = .026$) and perceived access to care ($p = <.0001$) were positively associated to patient satisfaction. Mistrust ($p = <.0001$) and racism within the health care system ($p = .01$) were negatively associated with patient satisfaction.

As shown in Table 15, step 3 added only significant health behavior variables (patient-provider communication, interpersonal treatment, and communications) to Model 19 with only previously significant contextual and individual characteristics. In Model 21, the p value remained $<.0001$, F value improved from 32.63 to 51.6, and R^2 improved from .29 to .51. By adding only significant health behavior variables to only previously significant contextual and individual characteristic variables, Model 21 accounted for 51% of the variability in patient satisfaction compared to 29% accounted for by Model 19. Only significant health behavior variables improved R^2 by .22, and this change in R^2 was significant ($F = 59.35$ and $p = <.001$).

Table 15. Hierarchical Regression With Only Significant Health Behaviors Added to Only Significant Individual Characteristics.

	N	P	F	R^2	Δ in R^2
Model 19:(Step 2) - Significant contextual and individual characteristics [a]	405	<.0001	32.63	.29	
Model 21: (Step 3) - Significant health behaviors [b] added	405	<.0001	51.6	.51	+.22**

Note. [a] Variables included the percentage with less than a high school degree, participation in religious activities, mistrust, racism, and perceived access to care. [b] Variables included patient-provider communication, interpersonal treatment, and communications. Δ = change. ** This was a significant change [F (3,396) = 59.35, and P value = <.001].

Summary

When all health behaviors variables are added to all contextual and individual characteristics, R^2 increased from .31 in Model 16 to .53 in Model 17. When only significant heath behavior variables are added to only previously significant contextual and individual characteristic variables, R^2 increased from .29 in Model 19 to .51 in Model 20. Regardless of analyzing all variables or only significant variables, health behavior variables increase R^2 by .22. This change in R^2 was significant in whether using all health behavior variables or only significant variables.

<p style="text-align:center">**Summary**</p>

Patient satisfaction was regressed on all variables independently. The number of African American primary care providers, the percentage of blacks, the percentage with less than a high school degree, the percentage with only a high school degree, the percentage with some college, the percentage with at least a bachelor's degree,

unemployment rate, household income, and the number of emergency departments were all significant contextual characteristics with bivariate analyses; however, most became nonsignificant when put in multiple regression models.

When all variables were used in the models, none of the contextual variables consistently remained significant throughout all models. However, the percentage with less than a high school degree remained significant in all hierarchical regression models when only significant variables were considered in models. Taken altogether, contextual characteristic variables accounted for a nonsignificant amount (2%) of variability in patient satisfaction with the percentage with less than a high school degree as the strongest predictor and negatively associated with patient satisfaction.

Education, participation in religious activities, mistrust, racism within the health care system, traditional health beliefs, perceived access to care, and health literacy were all significant individually; however, traditional health beliefs and health literacy became nonsignificant in the multiple regression analyses. Participation in religious activities and perceived access to care were positively associated with patient satisfaction. In contrast, mistrust and racism were negatively associated with patient satisfaction. Individual characteristics accounted for approximately 27% of the variability in patient satisfaction, and increased R^2 by .26 ($p = <.001$) when added to contextual characteristic variables.

Patient-provider communication, interpersonal treatment, communications, and habits of health care utilization were significant health behavior variables individually; however, habits of health care utilization became nonsignificant when put in multiple regression models. As demonstrated in Table 16, health behavior variables accounted for

approximately 51% of the variance in patient satisfaction, and increased R^2 by .22 ($p =$

<.001) when added to contextual and individual characteristic variables.

Table 16. Hierarchical Regression with Patient Satisfaction Regressed on All Domains
Using Only Significant Variables

	N	P	F	R^2	Δ in R^2
Model 18:(Step 1) - Significant contextual [a]	405	.003	13.36	.03	--
Model 19:(Step 2) - Significant individual added [b]	405	<.0001	32.63	.29	+.26*
Model 21: (Step 3) - Significant health behaviors [c] added	405	<.0001	51.6	.51	+.22**

Note. [a] Variables included the percentage with less than a high school degree. [b] Variables
included participation in religious activities, mistrust, racism, and perceived access to care.
[c] Variables included patient-provider communication, interpersonal treatment, and
communications. Δ = change. * This was a significant change [F (4,399) = 36.28, and P
value = <.001]. ** This was a significant change [F (3,396) = 59.35, and P value =
<.001].

Clearly, the percentage with less than a high school degree ($F = 9.06$) was the

strongest contextual characteristic variable, mistrust ($F = 95.58$) was the strongest

individual characteristic variable, and interpersonal treatment ($F = 309.84$) was the

strongest health behavior variable in accounting for the variability in patient satisfaction

in this sample. There are a variety of reasons suggested to explain these results. They

are presented and discussed in Chapter 5.

CHAPTER 5

Discussion

Introduction

This chapter will discuss the results found in Chapter 4 with greater detail. After discussing these findings, additional information will be presented about how these results may impact current and future clinical practice. Limitations for this study and suggestions for future research will be offered. Finally, this chapter will summarize and draw conclusions from this study.

Summary of Study

Briefly, under-utilization of health care services is a major problem for African American men that can lead to long-term health consequences. Patient satisfaction is an indicator of health care quality; however, it is less frequently studied in African American men with prostate cancer (Jayadevappa, Schwartz, et al., 2009b). Patient satisfaction provides the opportunity to explore underlying components of health care utilization that may affect future health behaviors. Patient satisfaction has implications for health care faculty accreditation, reputation, and financial viability. The JCAHO tracks and publicly report patient satisfaction scores to assist individuals in determining if health care facilities provide quality care.

The purpose of this study was to explore whether contextual factors, individual characteristics, and health behaviors influence patient satisfaction among a sample of

505 African American men in North Carolina diagnosed with prostate cancer. These men are a subsample of a larger North Carolina-Louisiana Prostate Cancer Project (PCaP).

Major Findings

The quality of the patient-provider interaction or process of medical care is one of the most important factors in determining patient satisfaction (Gordon, et al., 2006; R. L. Street, et al., 2008). When patients perceive that the health care providers are focusing on them, they perceive those providers as spending time actively listening, showing patience with questions, worries or concerns, and projecting a genuine friendly, warm, caring and respectful attitude towards them (Napoles, et al, 2009; Royak-Schaler et al, 2008). These attributes are represented and measured by the variable interpersonal treatment in this study. Consistent with previous study results (Jackson, 2005; Napoles, et al., 2009), in this study how the health care provider focused on the patient (interpersonal treatment) was the strongest predictor ($p = <.0001$, $F = 268$,) in accounting for the variability in patient satisfaction for these African American men. The higher the score on the interpersonal treatment scale, the higher the score was on the patient satisfaction scale.

Interpersonal treatment accounted for 39 of the 45 percent variability in patient satisfaction for health behaviors. This finding is significant ($p = <.0001$) considering the number of other variables ($n = 26$) that were measured in this study. The interpersonal treatment scale contained questions referring to the amount of time the health care provider spent with the patient, and the health care provider's patience with questions or worries, friendliness, warmth, caring, concern, and respect shown towards the patient. According to the African American men in this study, these qualities displayed or demonstrated by health

care providers during interactions were the most important qualities that determined levels of patient satisfaction.

In a study of 277 African American men, the men expressed that health care providers were not sensitive to their health concerns nor did they seek inquiries from them (Woods, et al., 2004). These African American men reported that non-black health care providers ignored or did not respond to questions posed about prostate cancer and how it may impact their lives. This lack in communication can result in African American men receiving reduced amounts of information about prostate cancer.

In this study, increases in communication scores (communication and patient-provider communication) resulted in increases in patient satisfaction. The communications scale measures the degree to which the health care provider communicates with the patient; whereas, patient-provider communication scale measures the degree to which the patient communicates with the health care provider (Mishel, et al., 2002). Communicating is an interdependent process, because one person's communication style affects the other person's communication style (Lewis, et al., 2002). Communication does not take place in a vacuum, so two people must exchange words, gestures, or expressions. In health care, these two people are the patient and the health care provider. The patient communicates to the health care provider, and health care provider communicates with patient representing a reciprocal relationship. The communication process is not mutual when the patient or health care provider does not engage in the conversation.

Although communication ($p = .002$, $F = 10.11$) and patient-provider communication ($p = <.0001$, $F = 39.78$) variables were positively associated with patient satisfaction, the degree to which the patient communicated with the health care provider was more important in the

amount of variability in patient satisfaction explained than the degree to which the health care provider communicated with the patient. In this study, patient satisfaction increased as the patient communicated more with the health care provider.

A study of 29 health care providers (41% Asian, 28% African American, and 31% Caucasian) and 207 patients (39% African American, 11% Hispanic, and 50% Caucasian) investigated factors that affect the communication process during outpatient appointments. The researchers reported that the patient's communication style was the strongest predictor in determining the health care provider's communication style (R. L. J. Street, et al., 2007). Although similar results were reported in other studies in which patient-centered communication allowed the provider to elicit more information by patients participating more in the interactions, a study consisting of 458 patients (202 Caucasian and 256 African American) investigated the association between patient race/ethnicity and patient-provider communications during medical appointments (R. L. Johnson, et al., 2004). The investigators reported that health care providers were more verbally dominant with African American patients (43%) than with Caucasian patients (24%), and African American patients visits were less patient-centered than Caucasian patient visits (R. L. Johnson, et al., 2004). Health care providers were also less-focused on African American patients than with Caucasian patients during visits.

Other investigators have reported that patients viewed by health care providers as less effective communicators received less information and were less satisfied (Guerra, Jacobs, Holmes, & Shea, 2007). Other investigators have reported that African American men are passive in their communication styles, and these communication styles result in them receiving less information (Siminoff, et al., 2006; Thomas, et al., 2005). Adequate amounts

of information are needed in order to make informed decisions about prostate cancer screening and treatments. Poor communication experiences and lack of information from health care providers have been reported to have a negative effect on patient-provider relationships and patient satisfaction (Gordon, et al., 2006; Napoles, et al., 2009). Patient-provider relationships characterized by mutual respect and trust are effective in changing health behaviors of any patient (Lewis, et al., 2002). Some cultures may have different expectations of health care providers, and this lack of congruency may foster unrealistic expectations and hinder positive health outcomes (Gordon, et al., 2006; Wray et al., 2009).

The framework used in this study, Andersen Behavioral Model for Health Services, did not consider culture as a component; therefore, the model was modified by adding a cultural component that included mistrust and racism factors. Culture can be defined as set of learned beliefs, attitudes, or characteristics that are shared and transmitted from previous generations and can be seen in a group's values, norms, practices, and ways of life (Kreuter, et al., 2002). Although culture is shared, there are varying degrees of beliefs and attitudes within a certain population. The impetus for adding these factors stem from knowing that there are some experiences or factors that may be more prevalent in particular populations. It has been well-established that mistrust and racism are attitudes most associated with African Americans.

This study verified the importance of including cultural factors. An important finding in this study was that the mistrust ($p = <.0001$, $F = 95.58$) and racism ($p = <.002$, $F = 5.59$) variables were significantly negatively associated with patient satisfaction. In relation to the number of individual characteristics variables (10 variables in this case) tested in this study, mistrust and racism accounted for the greatest percentage of variability in patient satisfaction.

As found in Table 7, mistrust and racism accounted for 20 out of 27 percent of the variability represented by individual characteristics. Higher levels of these attitudes (mistrust and racism) predicted concomitant decrease in patient satisfaction. It is important to note that the items in these scales inquired about attitudes prior to being diagnosed with prostate cancer, so they responded based on their previously, established experiences with the health care system. These attitudes (mistrust and racism) are brought into interactions or encounters with health care providers. In addition to passive communication styles, mistrust and racism will impact the quality of interactions with health care providers (Cobie-Smith, et al., 2002; Ravenell, et al., 2006).

Mistrust is extremely important in the African American population. In this study, mistrust accounted for the second highest percentage ($pr^2 = .05$) of the overall variability ($R^2 = .51$) in patient satisfaction among all variables in the study following interpersonal treatment ($pr^2 = .39$). Increased levels of mistrust have been associated with decreased desire to utilize health care services (even when needed) and difficulty in accepting and following health care provider recommendations (Byrne, 2008; Hausmann, et al., 2008). When health care is not sought out when needed, some of the consequences are late-diagnosis and poorer treatment outcomes (Gordon, et al., 2006; L. Ross, et al., 2007). Racism within the health care system has been identified as one of the reasons for the development of mistrust in African Americans (Fowler-Brown, et al., 2006). Prior personal experiences or experiences of others receiving inferior care, being stigmatized and/or stereotyped by health care providers, and poor communications have been described as forms of racism experienced by African Americans that are enduring within the culture (Allen, et al., 2007; Byrne, 2008; Plumb & Brawer, 2006).

As in other studies (Hausmann, et al., 2008; Institute of Medicince, 2002; Institute of Medicine, 2002), racism within the health care system has been reported to be negatively associated with patient satisfaction. When racism increases, patient satisfaction decrease. Receiving inferior care has been the most widely accepted indicator of racism within the health care system for African Americans (Dovidio, et al., 2008; Thomas A. LaVeist, et al., 2000). Racial and ethnic minorities tend to receive a lower quality of health care than non-minorities, even when access, health insurance status, and income are controlled (Plowden, 2006). Bias in health care treatment parallels social prejudice and discrimination directed towards African Americans who have been negatively labeled and stereotyped for many years (Cort, 2004; Dovidio, et al., 2008).

Health care institutions have been known to promote racism through segregation, hiring practices, education of African American physicians, physician to physician referrals, and admitting privileges (Aluko, 2008; Washington, 2006). Institutional racism is a systematic set of patterns, policies, procedures, or practices that operates within institutions that exploit and take advantage of non-White members (D M Griffith, et al., 2007). Racism among health care providers was found in several hospitals located in Charlotte, North Carolina until the early 1990's (Aluko, 2008). African American physicians were prevented from joining professional medical associations; therefore, they were ineligible to take board certification exams (Aluko, 2008).

A significant number of African Americans rely on Medicaid for health care services. Medicaid recipients are disadvantaged and treated differently, because some health care facilities are a great distance from residential and work areas, are not obligated to provide services to these patients, or receive reduces services due to decreased amounts of

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reimbursement to health care facilities and providers (Subban, Terwoord, & Schuster, 2008). Health care providers bring their biases into the health care setting (Allen, et al., 2007; Woods, et al., 2004). Racism in the health care system continues, wherever the ability or motivation to address racism is lacking (Subban, et al., 2008).

Trust in health care providers has a strong influence on health behaviors of patients and is built over time with repeated positive experiences. Investigators, in a study evaluating prostate screening practices of 234 Department of Defense beneficiaries (41% African American, 53% Caucasian, and 6% Hispanic/Asian), reported that 89% of the men trusted their health care provider and 76% reported that the health care provider was the most influential person for them in seeking prostate cancer screening (Boyles, et al., 2003). As a result of the trust and influence of the health care provider, the majority (98%) of the African American men were screened annually for prostate cancer. All of the men in that study had health insurance, 99% had at least a high school degree, all had access to care, and most were accustomed to periodic health evaluations. That study demonstrated the power and influence that health care providers can have on health behaviors if trusted by patients. Other studies have reported that hearing about prostate cancer from the health care provider was the best predictor in determining participation in prostate cancer screening (Nivens, et al., 2001).

A study tested the relationship of racism on trust and patient satisfaction of 145 African Americans receiving care at two ambulatory clinics (Benkert, et al., 2006). The investigators reported that racism had a strong positive relationship ($r = .47, p < .01$) with mistrust, and both had a negative effect on patient satisfaction. Consistent with that study, in this study racism and mistrust had an even stronger positive relationship ($r = .57, p = < .0001$), and both

affected patient satisfaction negatively. Similarly, age and individual educational levels were not significant.

It is well known that education impacts individuals in many ways. Education shapes and establishes social placement, impacts income potential, builds critical thinking and verbal expression, and affects one's ability to understand complex medical information such as cancer screening, diagnosis, treatment, and symptom management (D B Friedman, S J Corwin, G M Dominick, & I D Rose, 2009; Herd, Goesling, & House, 2007). Additional contextual characteristics (levels of education, percentage of blacks, and unemployment rates) were added to the model in this study prior to any data analysis in hopes of providing more environmental information on the men in this study. The men in this study were fairly well-educated, because approximately 73% of them had at least a high school degree. Not to confuse individual educational levels with contextual educational levels, contextual educational levels are indirect measures of people in a particular area (41 counties) in which the men in this sample lived. Individual educational levels are measures from those men who participated in this study.

For men who participated in the study, individual educational levels ($p = .002$, $F = 9.4$) were positively associated with patient satisfaction in bivariate analysis. Nonetheless, individual educational levels became nonsignificant when put into multiple regression models.

Health literacy levels ($p = .003$, $F = 8.87$) were positively associated with patient satisfaction in bivariate analysis, and there were some differences ($p = <.05$) in the means of several groups. However, health literacy became nonsignificant in predicting variability in patient satisfaction in the multiple regression models.

Pierce and colleagues (2003) reported that African American men with less than a high school education ranked highest among men most likely to delay or avoid testing and screening for prostate cancer. People tend to avoid situations valued as negative. A study used focus groups consisting of 16 African Americans and 2 Caucasians to examine the racial barriers that limit effective implementation of health care (Subban, et al., 2008). The investigators reported that the participants voiced negative experiences due to their lower levels of education, relying on Medicaid as the only source of health insurance, and occurrences of discrimination and racism. These negative experiences discourage them from returning to health care facilities (Subban, et al., 2008).

The men in this study did not avoid seeking health care. Habits of health care utilization ($p = <.0001$, $F = 8.12$) was found to be positively associated with patient satisfaction in bivariate analysis in this study. However, habits of health care utilization became nonsignificant when put into the multiple regression models.

Several studies have reported that having health insurance and a consistent source of care contribute to building trusting relationships and improved patient satisfaction (Bade, et al., 2008; D. M. Griffith, et al., 2007). Having health insurance and a consistent source of care have been reported as key elements needed to maintain good health (Matthews, et al., 2002). It seems logical that having health insurance and a consistent source of care provides the milieu to foster trusting relationships, because they allow access to care.

In this study, 83% of the men reported having health insurance and 82% reported the doctor's office/group practice or Veteran's Administration (69% and 13%, respectively) as their usual source of care before being diagnosed with prostate cancer. In contrast to these studies, although the majority of the men in this study were educated, had health insurance, a

consistent source of care, and good habits of health care utilization (M=29.8/SD=6.4), mistrust continued to predict less patient satisfaction.

The type, amount, or duration of health insurance were beyond the scope of this study, because participants were only asked whether they had health insurance prior to being diagnosis with prostate cancer. Further study is needed to explore whether having health insurance affected their choice of health care providers or facilities where they received their care. In order to have access to health care, African American men must not only have adequate insurance which allows entry into the health care system, but they must have access to needed and timely health care services. However, it is likely that the men have health insurance, but lack access to care due to limited information concerning how health insurance works.

The results from this study point out the necessity for health insurance and access to care to coincide. In the current study, health insurance did not account for any of the variability in patient satisfaction. Although 83% of the men in this study had health insurance, it is possible that some had limited choices in selecting a provider or facility due to constraints in their insurance policy. Due to high cost, most individuals obtain health insurance from their employer (American Cancer Society, 2008). As a result of highly concentrated markets with only a few health insurance companies, employers often restrict their employees to selecting plans that have lower premiums, limited choice of providers, and higher co-pay (J. S. Ross & Detsky, 2009). After health insurance is secured, a usual source or site of care is dictated based on parameters of the health insurance policy. Several studies have reported that choice of provider increased patient satisfaction (Benkert, et al., 2006; T A LaVeist, et al., 2002).

Others have reported that inadequate health insurance coverage negatively impacts patient satisfaction (D. M. Griffith, et al., 2007; Plumb & Brawer, 2006).

In the current study, perceived access to care was the second strongest individual characteristic predicting patient satisfaction. Comparable to other studies, greater perceived access to care increased patient satisfaction (Fowler-Brown, et al., 2006; Gold, et al., 2009). Access to health care services should be achieved if the participant is able to navigate through the health care system. For many people, the intricacies and frequent changes in the health care system may act as a barrier to care.

Investigators in a study exploring the perceptions and experiences of the health care system for 25 focus group members (96% African American and 4% Latino) reported that participants indicated frustration with contacting health insurance companies, lack of understanding of health insurance policies, inability to change health care providers if they were not comfortable with them, and the complexity of the health care system (Bade, et al., 2008). The development and implementation of patient navigation programs have shown promise in assisting patients in getting through the health care system to receive that care needed in a timely manner (Vargas, Ryan, Jackson, Rodriguez, & Freeman, 2008). The ability to measure all three variables (health insurance, access to care, and usual source/site of care) simultaneously are strengths of this study. Most studies only measure health insurance, access to care, or usual source/site of care; however, very few studies have measured all three factors simultaneously.

Some African Americans turn to the church for support in times where access to health care facilities may be difficult. The majority (98%) of the men in this study believed in God which is not surprising since religion is important and plays a major part in the African

American culture. The church is the most trusted institution in the African American culture.

The church has been used to address, discuss, and promote political issues, as a school, a

place to socialize with family and friends, provide assistance with issues of daily living, and

as a sacred place of worship. Religious beliefs and participating in religious activities have

been associated with improved health outcomes and greater patient satisfaction (Krause,

2002; Levin, et al., 2005). In this study, of the men who believed in God, 83% ($n = 471$) of

them participated in religious activities. Religious participation was measured by the

frequency in attending religious services, praying, listening to religious services on the radio,

watching religious services on television, contributing money to the church, and

commonalities with friends (D. R. Brown & Gary, 1987).

Similar to other studies (Figueroa, et al., 2006; Levin, et al., 2005), in this study

participating in religious activities ($p = .026$) positively influenced patient satisfaction. As

religious participation increased, patient satisfaction increased. Levin and colleagues (2005)

reviewed many studies on religious participation, and the unequivocal conclusion was that

religious participation is a protective factor for physical and psychological morbidity among

African Americans. Participating in religious activities or church involvement is a constant

source of social support for African Americans. Many churches use members that are health

care professionals to provide health education and screening. Some churches bring in outside

health organizations to educate and provide health promotion screenings for their

congregations.

Since the church is the most trusted institution in the African American community,

congregates can get armed with information and tools to assist them in navigating the health

care system and handling interactions with health care providers. In a study of 239

Caucasian and African American men treated for prostate cancer, investigators explored whether certain individual characteristics moderated the effects of a psycho-educational intervention on outcomes of cancer knowledge and patient-provider communications for men with localized prostate cancer (Mishel, et al., 2003). Only men with low levels of religious participation benefited from the psycho-educational intervention. The investigators concluded that the results could be an indication that men with higher levels of religious participation relied on their church to provide the education needed during interactions with health care providers, instead of using the intervention materials.

Although religion is important to the African American culture for women and men, religious beliefs ($p = .19$) did not influence patient satisfaction in this study. One explanation could be that there was no variability in the sample and a ceiling effect was present since, 98% of the men believed in God. However, another explanation could be that the religious belief scale used in this study was not appropriate for this population, because it did not function similarly to religious activities to predict patient satisfaction. Religiosity has been broadly defined and used interchangeably to describe and measure spirituality, religious beliefs, practices, and participation (Figueroa, et al., 2006; Mishel, et al., 2003; Underwood & Powell, 2006).

While religious participation describes the frequency in attending church services, prayer, listening to religious services (D. R. Brown & Gary, 1987), religious beliefs are an organized system of beliefs, practices, rituals, and symbols (Holt et al., 2009); however, both provide support in most cultures as evidenced by numerous studies. Nevertheless, the African American culture approaches belief in God as a more personal relationship with God. Spirituality refers to that personal relationship and also includes religious beliefs (Hamilton,

Powe, Pollard, Lee, & Felton, 2007; Holt, et al., 2009). Through life experiences, the strength of the relationship changes and can range from loss of faith to increased faith or from hopefulness to hopelessness (Ferrell, Smith, Juarez, & Melancon, 2003) which is different from beliefs that are resistant to change (Bekhuis, et al., 1995). These changes in the strength of that relationship may be important, especially in patients diagnosed with cancer. Whereas religious participation and religious beliefs provides support, spirituality provides a mechanism for coping.

Spirituality is a concept that is not readily understood and not used apart from religious participation (Hamilton, et al., 2007). Hamilton and colleagues (2007) reported that spirituality is a personal, intimate relationship with God who is present at all times and heals through the use of other people and medicine (if healing is His will). Although the situation is turned over to God for His will to be done, African Americans kept faith that He would heal them; however, turning the situation over to God did not refer to not seeking treatment (Hamilton, et al., 2007). This view of "turning it over to God" can be interpreted as not worrying about something that they cannot control (Ferrell, et al., 2003). Spirituality promotes positive health behaviors (Blocker, et al., 2006; Hamilton, et al., 2007). Likewise, others believe that their body is God's temple, and it's their responsibility to be proactive and take care of the body (Blocker, et al., 2006; Figueroa, et al., 2006). Therefore, there is a need for an accurate measure of spirituality in African Americans. The Perceived Support From God scale (Hamilton, Carter, & Lynn, 2010) may be a useful tool to more accurately measure spirituality in African Americans in future studies.

An alternative view of "turning it over to God," is the concept of fatalism. Cancer fatalism is defined as the belief that death is inevitable when cancer is present (Powe, et al.,

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2005). Investigators in a study designed to explore perceptions of patients ($n = 52$) and

health care providers ($n = 35$), reported that health care providers viewed patients as being

more fatalistic (10.17 out of 15 points) compared to patient reported fatalistic scores (4.6 out

of 15 points) (Powe, et al., 2005).   On the contrary, some people have reported that cancer is

one way that God punishes those who have sinned, perpetuating a fatalistic attitude about

leaving it up to God (Blocker, et al., 2006; Chin, et al., 2000; Powe, et al., 2005).

Similar to religious beliefs, the traditional health belief variable was not significant in

predicting patient satisfaction in this study. Out of a total possible score of 17, the men in

this study had a mean score of 4.6 with a standard deviation of 2.8. For the most part, the

men in this study did not believe the statements presented in the traditional health belief

scale. After further review of the items in this scale, several items refer to religion and

fatalistic undertones. This is an indication that there are similarities in the religious and

traditional health belief scales. Since beliefs are resistant to change (Bekhuis, et al., 1995), it

is not surprising that both belief factors (religious beliefs and traditional health beliefs) were

not significant.

In viewing how health care seeking takes place, it is important to appreciate the

sequence in which care is conceived. Referring back to the conceptual model, contextual

characteristics describe the environment in which people live. Having less than a high school

degree only accounted for approximately 2% of the variability in patient satisfaction. When

individual characteristics (mistrust, racism, perceived access to care, and participation in

religious activities) were added to the contextual characteristic (less than a high school

degree), these individual characteristics accounted for approximately 29% of the variability

in patient satisfaction ($p = <.001$).

Individual characteristics can somewhat be controlled by the patient (Lewis et al., 2006). This study illustrates the importance of particular individual characteristics that help predict patient satisfaction. These individual characteristics are the most amenable to change. Knowing the variables which are predictors of patient satisfaction provides useful information for the developing interventions to address variables that positively affect patient satisfaction and reduce variables that lower patient satisfaction.

In this study, health behaviors (patient-provider communication, interpersonal treatment, and communications) increased the variability of patient satisfaction accounted for beyond by the contextual and individual characteristics from 29% to 51% ($p = <.001$). Together, patient variables and health provider variables account for almost 50% of the variability in patient satisfaction, and these findings are consistent with shared responsibility. For example, patients have the responsibility to communicate their concerns with health care providers; however, they must also be open to suggestions and recommendations from health care providers. Likewise, health care providers have the responsibility to listen to patients, show concern and respect for them, and be cognizant of mistrust and racism attitudes among African Americans.

Implications for Clinical Practice

Although contextual characteristics accounted for only 2% of the variability in patient satisfaction, it does provide evidence for the importance of education from a policy prospective. Large percentages of residents having at least a high school degree benefits overall health by improving patient satisfaction. Patients that are satisfied with their care are more likely to adhere to recommended treatment regimes and follow-up which should decrease health care costs.

Since health care facilities and providers cannot control who has less than a high school degree, they need to know that African American men with less than a high school degree may require additional attention to improve patient satisfaction. While interventions are delivered at a 5th grade level, health care providers in the clinical setting often present information about prostate cancer screening, risk factors, treatment options, and side effects at higher educational levels (Guerra, et al., 2007). Because patient satisfaction now plays a role in facility accreditation and financial incentives, lower levels of patient satisfaction may hinder professional recognition and financial viability for health care facilities and health care providers.

Knowing that mistrust and racism are negatively associated with patient satisfaction, steps should be taken to assess and eliminate policies, procedures, processes, or personnel that foster mistrust and racism in the health care setting. Institutions should make a concerted effort to diversify the health care setting by increasing the percentage of minority health care personnel, researchers, and leaders in prominent positions to make institutional changes. Changes need to be made at the top executive levels to ensure diversity programs and policies are sustained. Decreasing mistrust will take time, and there is no solution to a quick reversal to values and biases that people carry.

Since having access to care influences patient satisfaction, patients need to know and be able to actually have access to health care services when needed. It may be very frustrating for a patient if they have a medical problem but unable to get assistance when they actually need it. More patient navigation programs are needed to assist individuals in gaining better access to health care services. Funding research to encourage development of innovative technologies to improve access to health care is needed. Newer technologies that

target increasing access to care should be promoted such as the ability to schedule medical appointments online, participate in online chats about health information, provide patients with the option to send in patient information electronically to health care providers, and to closer monitor patients at home. Some of these technologies can increase access yet reduce visits to the clinic.

Clinicians need to know that religious participation positively influences patient satisfaction and provides a source of support especially for African Americans. Health care providers should incorporate church involvement as part of the treatment regimen or at least be mindful of how treatments may affect the patient's ability to actively participate in routine religious activities. Patients with concerns about their ability to continually participate in religious activities should be referred to the appropriate ministry or clergy services. Researchers need to tailor interventions that incorporate the teachings and beliefs for the members of the church instead of using the church as a venue to deliver interventions. For example, interventions may recommend foods, actions, or activities that are prohibited according to the teachings of that faith. Although interventions may have proven to be effective in other populations, these interventions fail, because they do conform to the teachings of that faith.

Health care providers and health care facilities need to know that African American men will bring these individual characteristics into the health care facility and will influence health behaviors while at that facility and during interactions with health care providers. These individual characteristics are also patient-controlled and more amenable to change.

Unlike individual characteristics, health behaviors are health care provider-controlled. This study illustrates that above all, how a patient is treated by the health care provider is the

most important predictor of patient satisfaction. Poor communications have lead to increased levels of mistrust (R. L. Johnson, et al., 2004). This study has demonstrated that mistrust and interpersonal treatment are the most important variables in predicting patient satisfaction in this sample of African American men with prostate cancer. Interpersonal treatment is health care provider-controlled and positively affects patient satisfaction, mistrust is patient-controlled and negatively affects patient satisfaction.

Current recommendations from the American Cancer Society emphasizes the need for informed decision making and use of decision aids (Brooks, Wolf, Smith, Dash, & Guessous, 2010) , so it is paramount that conditions allow for adequate communication between the patient and the health care provider. Patients need to have all the information to make an informed decision, and that information should be clear and culturally relevant in order to make that decision. The persistent controversy surrounding prostate cancer screening and treatment (Andriole, Crawford, Grubb, et al., 2009; Schroder et al., 2009) further intensifies the need for open discussions and patient-centered communications. In order to detect prostate cancer, men must get screened, because there is no other way to detect it. Once symptoms start, the prostate cancer is usually in the later stages where outcomes are poor (American Cancer Society, 2009). There are considerable barriers preventing prostate cancer screening and subsequent treatment; however, none are more important than increased levels of mistrust in health care providers and decreased levels of interpersonal treatment of African American men according to this study. Health care providers need to create a clinical environment that allows African American men to feel comfortable and safe.

There must be a two-prone approach for interventions to address how health care providers treat and communicate with patients, and how patients communicate with health

care providers. Patients can be taught how to better communicate with health care providers by being assertive, participate in the interactions, ask more questions, clarify information about treatments options side-effects, and follow-up appointments, and handle inappropriate health care provider behaviors. Lay health advisors are trusted members within their communities and can be used to provide training for these men. Lay health advisors can also assist in bridging the gaps between health care institutions intentions and African American men expectations.

Health care providers can benefit from cultural training instead of the cultural sensitively training that occurs today. Cultural competency training should be mandatory, implemented early in medical education, and continually assessed for compliance. Making providers accountable such as assessing for patient satisfaction on performance evaluations may be helpful. Financial incentives for health care providers that maintain a specific level of patient satisfaction among patients may be a more rapid way of changing health care provider behaviors. Due to interdependence, patients behaviors will change health care provider behaviors; although, these changes will probably occur at a much slower pace.

Limitations

This study is limited by cross-sectional data of individual characteristics, health behaviors, and the outcome variables which were collected at one time point. Cross-sectional data cannot assume causality and cannot be generalized beyond the values in this data set (Shadish, Cook, & Campbell, 2002). Questionnaires were self-reported and subject to recall and bias. There is also the possibility of selection bias. Men could have participated in this study in hopes of receiving prostate cancer care that they would not have otherwise

received. The men in the study may also be different than the men that decided not to participate in the study.

In the 41 counties where these men were located, those 25 years and older with less than a high school degree (p = .003) was negatively associated with patient satisfaction. Although this study corresponds with other studies that have reported African American men with lower levels of education are less satisfied with patient care (Fowler-Brown, et al., 2006; Jayadevappa, Schwartz, et al., 2009b; Williems, et al., 2004), the ability for contextual education to predict individual patient satisfaction is not meaningful.

It is not appropriate to compare the men in the study who answered the questions in multiple questionnaires with a group that did not answer any questions in the questionnaire. The sample in this study may not have been representative of the contextual characteristics selected for this study (e.g. educational levels were higher in the sample than in the counties they lived). Also, there is no way to verify that participants received their health care in the counties in which they lived. It is common, especially in rural areas, for residents to travel long distances to receive health care. Counties (41) were too numerous to compare and provide useful information.

Spirituality, an important construct for African Americans, could not be assessed with the current scale which measures only religious beliefs. Additional information about health insurance was also a limitation of this study, because the different types of health insurance, duration of health insurance, and the patient's value of the health insurance was not available in the data set. Due to the accumulation of missing data, it was not possible to get full representation of the entire sample when using hierarchical regression. For instance, the initial sample of 505 was reduced to 494 due to missing the dependent variable. This sample

size was further reduced to 405 due to additional missing data. Although the initial sample was 505, a sample size of 405 could be used in the hierarchical regression. This study also did not consider interactions between the available variables during the analyses.

Future Studies

Future studies should compare the results of this study with Caucasian men in North Carolina to determine if the same variables are significant in accounting for patient satisfaction. Future research needs to explore reasons why mistrust continues to be prevalent in a population with large percentages of men with health insurance, access to care, good habits of health care utilization, and a usual site of care located in doctor's offices or group practices. Asking participants about how they rate the value of their health insurance may provide some insight to continuity of care. Adding a measure of spirituality to compare with religious beliefs would perhaps provide a better cultural context of having a personal relationship with God to guide health behaviors for African American men. Future studies should consider possible interactions between variables. Contextual characteristics that provide better measures for predicting patient satisfaction are needed.

Conclusions

This study identified that interpersonal treatment and mistrust were the two most important predictors in patient satisfaction for the men in this study. The variables selected in the final model (less than a high school education, participation in religious activities, mistrust, racism, perceived access to care, patient-provider communication, interpersonal treatment, and communications) accounted for 51% ($p = <.0001$) of the variability in patient

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satisfaction. While contextual characteristics ($p = .003$, $F = 13.36$) accounted for only 2% of the variability, individual characteristics ($p = <.001$, $F = 32.63$) added 27% more, and health behaviors ($p = <.001$, $F = 51.6$) added an additional 22%. Patient-control variables (individual characteristics) and health care provider-controlled variables (health behaviors) are similar in the amount of variability in patient satisfaction they explain. This study also provided evidence for the need to look at cultural factors of mistrust and racism when considering individual characteristics. Patient satisfaction can inform us of future health care utilization.

■ **BACKGROUND QUESTIONNAIRE** ☐☐☐☐☐ ■

Now, I'm going to ask some general questions about your background and habits. Many people have never been in an interview like this, so I'll start by explaining how it works. I am going to read you a set of questions, which everyone in the study will be asked. Sometimes I'll ask you to answer in your own words. For other questions, I'll give you a list of choices and ask you to pick the one that fits best. Try to answer the questions carefully and completely as you can. All of your answers will be combined with others so no one will be able to tell what your particular answers were. Even so, you don't have to answer any questions that you don't want to. If there's any question you don't want to answer please tell me, and I'll just move on to the next one.

start time: ☐☐ : ☐☐ **am pm**

1. First, are you presently married, living as married, widowed, separated, divorced, or have you never married?

☐ Married/Living as   ☐ Widowed   ☐ Separated   ☐ Divorced   ☐ Single/Never   ☐ Refused

2. How many other people live in your home with you? **number** ☐☐   ☐ Don't Know   ☐ Refused

    2a. How long have you lived here?

years ☐☐   **months** ☐☐   ☐ Don't Know   ☐ Refused

3. Do you consider yourself to be Hispanic or Latino?   ☐ Yes

☐ No   ☐ Don't Know   ☐ Refused

4. Do you consider yourself to be Cajun?   ☐ Yes

☐ No   ☐ Don't Know   ☐ Refused **Skip to 5**

    4a. Was French spoken in your home when you were a child?   ☐ Yes

☐ No   ☐ Don't Know   ☐ Refused

5. Do you consider yourself to be Creole?   ☐ Yes

☐ No   ☐ Don't Know   ☐ Refused

6. What is your race? ☐ Black or AA   ☐ White   ☐ Don't Know   ☐ Refused

☐ Other (specify) ☐☐☐☐☐☐☐☐☐☐☐

7. What is the highest grade or year of school you have completed? If you've attended vocational or technical school, please include that in your answer. **[DO NOT READ CHOICES]**

☐ < 8th grade   ☐ HS GRAD   ☐ Some College   ☐ Some Grad Training   ☐ Don't Know

☐ Some HS   ☐ VO/TEC   ☐ College GRAD   ☐ Grad/Prof Degree   ☐ Refused

8. Before you were diagnosed with prostate cancer, what kind of place did you usually go to when you had a medical problem? **[READ CHOICES]**

☐ A doctors office or group practice   ☐ Emergency Room   ☐ No usual place **Go to 9**

☐ Public health clinic or community health ctr   ☐ Urgent Care Center   ☐ Don't Know **Go to 9**

☐ Hospital based clinic   ☐ Some other place (specify)   ☐ Refused **Go to 9**

☐ VA   **specify other** ☐☐☐☐☐☐☐☐☐☐☐☐☐☐

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8a. Did you see a particular doctor, nurse or other medical person there, or did you see a different person at each visit?

☐ Particular doctor, nurse or other medical staff   ☐ Don't Know

☐ Different doctor, nurse or other medical staff   ☐ Refused

9. Before you were diagnosed with prostate cancer did you have <u>any</u> health insurance?

☐ Yes   ☐ Don't Know   **Go to 9a**

☐ No ⟶ **Skip to 9b**

☐ Refused ⟶ **Skip to 9b**

9a. Did you have any of the following types of insurance? **[READ OPTIONS AND CHECK ALL THAT APPLY]**

☐ Part A Medicare (pays hospitalization)   ☐ Private health insurance/HMO for any part of hospital bills

☐ Part B Medicare (pays doctor bills)   ☐ Private health insurance/HMO for any part of doctor's bills

☐ Part D Medicare (pays prescriptions)   ☐ Any other insurance that pays part of medical bills

☐ Medicaid or other public assistance/welfare program ☐ Don't Know

☐ CHAMPUS/CHAMPVA   ☐ Refused

9b. Were you able to receive free health care from a doctor, hospital, clinic, health center, or the Veteran's Administration (VA)?

☐ Yes

☐ No   ☐ Don't Know   ☐ Refused

10. Did a doctor ever tell your father or any of your brothers or sons that they had prostate cancer? Please tell me only about blood relatives, including half-brothers that you share one parent with. Please don't include stepbrothers or adopted sons that aren't related to you by blood. [Include both living and deceased relatives.]

☐ Yes ⟶ **Go to 10a**

☐ No ⟶ **Skip to 10b**

☐ Don't Know   ☐ Refused   **Skip to 10b**

10a. What relation was he [were they] to you? Was he [were they] 60 or older when diagnosed with prostate cancer? **[LIST ALL FIRST DEGREE RELATIVES WITH PROSTATE CANCER]**

Relative1: ☐ Father ☐ Brother ☐ Son ☐ Half-brother   ☐ < 60 Years Old / ☐ 60 + Years Old   ☐ Don't Know   ☐ Refused

Relative2: ☐ Father ☐ Brother ☐ Son ☐ Half-brother   ☐ < 60 Years Old / ☐ 60 + Years Old   ☐ Don't Know   ☐ Refused

Relative3: ☐ Father ☐ Brother ☐ Son ☐ Half-brother   ☐ < 60 Years Old / ☐ 60 + Years Old   ☐ Don't Know   ☐ Refused

10b. Did a doctor ever tell any of your other blood relatives that they had prostate cancer? [Grandfathers, uncles, great uncles, cousins, nephews (living or deceased)]

☐ Yes ⟶ **Go to 10c**

☐ No ⟶ **Skip to 11**

☐ Don't Know   ☐ Refused   **Skip to 11**

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■ RAPID ESTIMATE OF ADULT LITERACY IN MEDICINE (REALM) ■

I am going to give you a sheet of words to say. These are words that doctors often use when talking to patients. I'd like you to start with the word 'fat' and say the words as far down the page as you can. Please say each word out loud. [**Show Card RLM1 and RLM2**]

fat	☐	fatigue	☐	allergic	☐
flu	☐	pelvic	☐	menstrual	☐
pill	☐	jaundice	☐	testicle	☐
dose	☐	infection	☐	colitis	☐
eye	☐	exercise	☐	emergency	☐
stress	☐	behavior	☐	medication	☐
smear	☐	prescription	☐	occupation	☐
nerves	☐	notify	☐	sexually	☐
germs	☐	gallbladder	☐	alcoholism	☐
meals	☐	calories	☐	irritation	☐
disease	☐	depression	☐	constipation	☐
cancer	☐	miscarriage	☐	gonorrhea	☐
caffeine	☐	pregnancy	☐	inflammatory	☐
attack	☐	arthritis	☐	diabetes	☐
kidney	☐	nutrition	☐	hepatitis	☐
hormones	☐	menopause	☐	antibiotics	☐
herpes	☐	appendix	☐	diagnosis	☐
seizure	☐	abnormal	☐	potassium	☐
bowel	☐	syphilis	☐	anemia	☐
asthma	☐	hemorrhoids	☐	obesity	☐
rectal	☐	nausea	☐	osteoporosis	☐
incest	☐	directed	☐	impetigo	☐

Section end time: ☐☐ : ☐☐ am pm

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Appendix D:

GOD SCALE

Do you believe in God?   ☐ No   **Skip to "Participation in Religious Activities"**

☐ Yes   **Go to 1**

For some people a belief in God is a major source of strength, and it may or may not be for you. These next questions are about your belief in God as it relates to health. Look at the choices for replying to each item. As I read these questions, tell me the answer which best suits your belief. [**Show Card GOD1**]

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree	Refused/Don't Know
1. Your well-being is in God's hands.	☐	☐	☐	☐	☐	☐
2. Health and strength are God-given gifts.	☐	☐	☐	☐	☐	☐
3. God will decide what will happen to your health.	☐	☐	☐	☐	☐	☐
4. God plays a big part in your health.	☐	☐	☐	☐	☐	☐
5. Only God can keep you healthy.	☐	☐	☐	☐	☐	☐
6. Only God can keep you safe.	☐	☐	☐	☐	☐	☐
7. God will protect your health.	☐	☐	☐	☐	☐	☐
8. Whether or not you get hurt is largely up to God.	☐	☐	☐	☐	☐	☐

PARTICIPATION IN RELIGIOUS [ ][ ][ ][ ] ■
ACTIVITIES

Do you participate in religious activities? ☐ No **Skip to "Prostate Cancer Diagnosis"**

☐ Yes **Go to 1**

Some people use religious activities as a way of expressing their religious beliefs. Look at this card that has the reply choices. As I read the questions, choose the answer which best describes how religion plays a part in your life. [**Show Card PRA1**]

	Never	Almost Never	Not Sure	Often	Very Often	Refused/Don't Know
1. I attend religious crusades, revival meetings or missions.	☐	☐	☐	☐	☐	☐
2. I attend religious services.	☐	☐	☐	☐	☐	☐
3. I listen to religious services on radio or TV.	☐	☐	☐	☐	☐	☐
4. I pray, either privately or with family.	☐	☐	☐	☐	☐	☐
5. Ideas I have learned from religion sometimes help me understand my own life.	☐	☐	☐	☐	☐	☐
6. I contribute money to my place of worship.	☐	☐	☐	☐	☐	☐
7. I regularly take part in various activities in my religious organization.	☐	☐	☐	☐	☐	☐
8. I feel that my friends who share my religious beliefs help me in getting ahead in life.	☐	☐	☐	☐	☐	☐
9. The religious beliefs I learned when I was young still help me.	☐	☐	☐	☐	☐	☐
10. I feel that my friends who share my religious beliefs help me in my marriage or relationships.	☐	☐	☐	☐	☐	☐

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TRADITIONAL HEALTH BELIEFS ▢▢▢▢▢

First, we want to know what you **believe** about cancer. People have a number of beliefs about cancer; what causes it or how to treat it. Some of these beliefs relate to God; others to one's beliefs about health. There are no right or wrong answers. When I read the questions, respond with YES if the statement is what you believe about cancer; respond with NO if the statement is not what you believe. You do not have to answer every question.
[Show Card THB1]

1. If a cancer is cut open in surgery, it will grow faster.
☐ Yes ☐ No ☐ Refused ☐ Don't Know

2. If a man has problems passing water, he should not bother to see a doctor because by then it would be too late.
☐ Yes ☐ No ☐ Refused ☐ Don't Know

3. Men who started having sexual relations at a young age are more likely to get prostate cancer than those who started in later life.
☐ Yes ☐ No ☐ Refused ☐ Don't Know

4. If a person has cancer, it is part of God's plan.
☐ Yes ☐ No ☐ Refused ☐ Don't Know

5. Cancer is caused by what people eat or drink.
☐ Yes ☐ No ☐ Refused ☐ Don't Know

6. If a person has cancer, there is no sense in trying to do anything about it.
☐ Yes ☐ No ☐ Refused ☐ Don't Know

7. If a person prays about their cancer, medical treatments are not necessary because God will cure it.
☐ Yes ☐ No ☐ Refused ☐ Don't Know

8. Cancer can be caused by dirty blood.
☐ Yes ☐ No ☐ Refused ☐ Don't Know

9. Someone can give you cancer by putting a root or spell on you.
☐ Yes ☐ No ☐ Refused ☐ Don't Know

10. People get cancer when they are tired and their resistance is down.
☐ Yes ☐ No ☐ Refused ☐ Don't Know

11. God works through medical doctors to cure cancer.
☐ Yes ☐ No ☐ Refused ☐ Don't Know

12. You can catch cancer from other people.
☐ Yes ☐ No ☐ Refused ☐ Don't Know

13. A person with high blood is more likely to get cancer than a person with normal blood.
☐ Yes ☐ No ☐ Refused ☐ Don't Know

14. If a person worries about their cancer a lot, it will get worse.

☐ Yes
☐ No ☐ Refused ☐ Don't Know

15. If a person has cancer, their children are very likely to get it too.

☐ Yes
☐ No ☐ Refused ☐ Don't Know

16. The devil can cause a person to get cancer.

☐ Yes
☐ No ☐ Refused ☐ Don't Know

17. Nothing works to cure cancer or stops it from coming back.

☐ Yes
☐ No ☐ Refused ☐ Don't Know

PHYSICIAN TRUST

■   ▢▢▢▢▢ ■

In the next set of questions I will read to you, I want you to tell me about your experience with doctors, and with the health care system <u>before</u> you were diagnosed with prostate cancer. Using the card with the response choices tell me how strongly do you agree or disagree with the following statements. [Show Card P1]

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree	Refused/Don't Know
1. I can tell doctors anything, even things that I might not tell anyone else.	⊔	⊔	⊔	⊔	⊔	⊔
2. Doctors sometimes pretend to know things when he/she is really not sure.	▢	▢	▢	▢	▢	▢
3. I completely trust doctors' judgements about my medical care.	▢	▢	▢	▢	▢	▢
4. Doctors care more about holding down costs than about doing what is needed for my health.	▢	▢	▢	▢	▢	▢
5. Doctors would always tell me the truth about my health, even if there were bad news.	▢	▢	▢	▢	▢	▢
6. Doctors care as much as I do about my health.	▢	▢	▢	▢	▢	▢
7. If a mistake were made in my treatment, doctors would try to hide it from me.	▢	▢	▢	▢	▢	▢
8. I have sometimes been misled at hospitals.	▢	▢	▢	▢	▢	▢
9. Hospitals often want to know more about your personal affairs or business than they really need to know.	▢	▢	▢	▢	▢	▢
10. Hospitals have sometimes done harmful experiments on patients without their knowledge.	▢	▢	▢	▢	▢	▢
11. Rich patients receive better care at hospitals than poor patients do.	▢	▢	▢	▢	▢	▢
12. Male patients receive better care at hospitals than female patients do.	▢	▢	▢	▢	▢	▢

PERCEIVED ACCESS TO CARE

As I read the following questions about health services, look at the response choices on this card and tell me the response that best fits the experience you had _prior_ to your diagnosis of prostate cancer. [Show Card PAC1]

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree	Refused/Don't Know
1. I was able to get medical care whenever I needed it.	☐	☐	☐	☐	☐	☐
2. Sometimes it was a problem to cover my share of the cost for a medical visit.	☐	☐	☐	☐	☐	☐
3. Sometimes I would go without the medical care I needed because it was too expensive.	☐	☐	☐	☐	☐	☐
4. Places where I could get medical care were conveniently located.	☐	☐	☐	☐	☐	☐
5. If I had a medical question, I could reach a doctor or a nurse for help.	☐	☐	☐	☐	☐	☐
6. I had easy access to the medical specialist I needed.	☐	☐	☐	☐	☐	☐
7. I had not seen a health care provider for at least three years.	☐	☐	☐	☐	☐	☐
8. I didn't worry much about the cost when I needed to seek medical care.	☐	☐	☐	☐	☐	☐
9. I saw a different health care provider almost every time I had an appointment.	☐	☐	☐	☐	☐	☐
10. I had a health care provider I felt comfortable talking to when I needed medical care.	☐	☐	☐	☐	☐	☐

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■ HABITS OF HEALTH CARE UTILIZATION ☐☐☐☐ ■

Now we would like to know in your everyday life when you would seek health care from your healthcare professionals. This is <u>before</u> your diagnosis of prostate cancer. As I read these questions, tell me the response choice that best fits your experience. [Show Card HHC1]

Did you see a... ☐ **Nurse?**

☐ **Nurse Practitioner?**

☐ **Physician Assistant?**

☐ **Resident/Intern?**

☐ **Doctor?**

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree	Refused/Don't Know
1. Going to the doctor regularly is a normal part of how I take care of myself.	☐	☐	☐	☐	☐	☐
2. I really have to be hurting before I go to the doctor.	☐	☐	☐	☐	☐	☐
3. I go to the doctor as soon as I get sick so I don't get worse.	☐	☐	☐	☐	☐	☐
4. I only see a doctor when I'm seriously sick.	☐	☐	☐	☐	☐	☐
5. When I've been sick, I haven't seen a doctor or gone to a clinic about it.	☐	☐	☐	☐	☐	☐
6. I usually ignore my sickness for a while to see if it goes away.	☐	☐	☐	☐	☐	☐
7. I get a checkup even when I'm not sick, just to make sure I'm OK.	☐	☐	☐	☐	☐	☐
8. I go to my doctor or clinic every year or two to get my PSA measured for prostate cancer.	☐	☐	☐	☐	☐	☐
9. I go to my doctor or clinic every year or two to get a rectal exam for prostate cancer.	☐	☐	☐	☐	☐	☐

RACISM WITHIN HEALTH CARE SETTINGS

We would like to know about your experience with doctors, or what you believe about how people are treated by doctors and hospitals. As I read the following questions, look at this card for the response choices, and choose the response that best fits with your belief or experience with the health care system. [Show Card RWHS1]

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree	Refused/Don't Know
1. Doctors treat African American and white people the same.	☐	☐	☐	☐	☐	☐
2. Racial discrimination in a doctor's office is common.	☐	☐	☐	☐	☐	☐
3. In most hospitals, African Americans and whites receive the same kind of care.	☐	☐	☐	☐	☐	☐
4. African Americans can receive the care they want as equally as white people can.	☐	☐	☐	☐	☐	☐

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COMMUNICATION

COMMUNICATION ☐☐☐☐☐ ■

For the next 5 questions that I will read to you, look at the response choices and tell me about the talking that occurs when you see the urologist or person treating you for prostate cancer after you were diagnosed. [Show Card CM1]

How would you rate the:

	Very Poor	Poor	Not Sure	Good	Very Good	Refused/Don't Know
1. Thoroughness of your doctor's questions about your symptoms and how you are feeling.	☐	☐	☐	☐	☐	☐
2. Attention your doctor gives to what you have to say.	☐	☐	☐	☐	☐	☐
3. Doctor's explanation of your health problems or treatments that you need.	☐	☐	☐	☐	☐	☐
4. Doctor's instructions about symptoms to report and when to seek further care.	☐	☐	☐	☐	☐	☐
5. Doctor's advice and help in making decisions about your care.	☐	☐	☐	☐	☐	☐

■ **INTERPERSONAL TREATMENT** ☐☐☐☐ ■

For the next 5 questions that I will read to you, look at the response choices and tell me what you think about the personal aspects of the care you receive from the person treating you for your prostate cancer, and how you would rate the following. [Show Card IT1]

How would you rate the:	Very Poor	Poor	Not Sure	Good	Very Good	Refused/Don't Know
1. Amount of time your doctor spends with you.	☐	☐	☐	☐	☐	☐
2. Doctor's patience with your questions or worries.	☐	☐	☐	☐	☐	☐
3. Doctor's friendliness and warmth toward you.	☐	☐	☐	☐	☐	☐
4. Doctor's caring and concern for you.	☐	☐	☐	☐	☐	☐
5. Doctor's respect for you.	☐	☐	☐	☐	☐	☐

■ **PATIENT PROVIDER COMMUNICATION** [ ][ ][ ][ ][ ] ■

Think about a visit to your urologist or clinic treating your prostate cancer. As I read each question, please look at the response choices and tell me which response best describes your visit to your urologist or clinic treating your prostate cancer. [Show Card PPC1]

	A great deal	A moderate amount	A little	Almost nothing	Nothing at all	Refused/Don't Know
1. During the visit, how much did the doctor tell you about your prostate cancer and what he/she is doing to treat it?	☐	☐	☐	☐	☐	☐
2. During the visit, how much did the nurses and other treatment staff tell you about your prostate cancer and what they are doing to treat it?	☐	☐	☐	☐	☐	☐
3. During the visit, how much did you tell the doctor about concerns you might be having about your prostate cancer?	☐	☐	☐	☐	☐	☐
4. During the visit, how much did you tell the nurses and other treatment staff about concerns you might be having about your prostate cancer?	☐	☐	☐	☐	☐	☐
5. During the visit, how much did you help with the planning of your treatment?	☐	☐	☐	☐	☐	☐

■ **PATIENT SATISFACTION WITH** ☐☐☐☐ ■
HEALTH CARE SYSTEM

Now I want to ask you a series of questions about your experience with the health care system and your typical visit to your urologist and clinic. Look at the card with the response choices and choose the response, which best describes how <u>satisfied</u> you are with your visit to the urologist or clinic treating your prostate cancer. [Show Card PSH1]

Are you satisfied with the:	Very Dissatisfied	Dissatisfied	Not Sure/Never	Satisfied	Very Satisfied	Refused/Don't know
1. Amount of time it took to travel to the clinic or doctor.	☐	☐	☐	☐	☐	☐
2. Cost of getting to the clinic.	☐	☐	☐	☐	☐	☐
3. How easy it was to get to the clinic.	☐	☐	☐	☐	☐	☐
4. Time spent waiting to get an appointment.	☐	☐	☐	☐	☐	☐
5. Time spent waiting at the doctor's office to see a physician.	☐	☐	☐	☐	☐	☐
6. Time spent waiting in clinic to see nurses and treatment staff.	☐	☐	☐	☐	☐	☐
7. Amount of time spent with the physician.	☐	☐	☐	☐	☐	☐
8. Amount of time spent with nurses.	☐	☐	☐	☐	☐	☐
9. Information the doctors told you.	☐	☐	☐	☐	☐	☐
10. Information the nurses told you.	☐	☐	☐	☐	☐	☐
11. Quality of care received.	☐	☐	☐	☐	☐	☐
12. Increase in knowledge about your prostate cancer.	☐	☐	☐	☐	☐	☐
13. Improvement in how you are able to manage your prostate cancer.	☐	☐	☐	☐	☐	☐
14. Reading material given to you by the doctors or nurses.	☐	☐	☐	☐	☐	☐
15. The amount you paid for care received.	☐	☐	☐	☐	☐	☐

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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. doi: 10.1016/j.socscimed.2007.01.007

Allison, P. D. (1999). *Multiple regression: A primer*. Thousand Oaks: Pine Forge Press, Inc.

Aluko, Y. (2008). American Medical Association apologizes for racism in medicine. *Journal of the National Medical Association, 100*(10), 1246-1247.

American Medical Association. (2006). Total physicians by race/ethnicity - 2006. *Minority Affairs Consortium* Retrieved 27 October 2008 from http://www.ama-assn.org/ama/pub/category/12930.html

American Cancer Society. (2007). Cancer facts & figures for African Americans 2007-2008 (pp. 1-27). Atlanta: American Cancer Society.

American Cancer Society. (2008). Cancer facts and figures 2008 (pp. 1-68). Atlanta: American Cancer Socity.

American Cancer Society. (2009). Cancer facts and figures for African Americans 2009-2010 (pp. 28). Atlanta: American Cancer Society.

Andersen, R. M. (1995). Revisiting the behavioral model and access to medical care: Does it matter? *Journal of Health and Social Behavior, 36*(March), 1-10. doi: doi:10.2307/2137284

Andersen, R. M. (2008). National health surveys and the behavioral model of health services use. *Medical Care, 46*(7), 647-653. doi: 10.1097/MLR.0b013e31817a835d

Andersen, R. M., & Newman, J. F. (1973). Societal and individual determinants of medical care utilization in the United States. *Health and Society, 51*(2), 95-124.

Andriole, G. L., Crawford, D., Grubb, R. L., Buys, S. S., Chia, D., Church, T. R., et al. (2009). Mortality results from a randomized prostate-cancer screening trial. *New England Journal of Medicine, 360*(13), 1310-1319. doi: 10.1056/NEJMoa0810696

Andriole, G. L., Crawford, D., III, R. L. G., Buys, S. S., Chia, D., Church, T. R., et al. (2009). Mortality results from a randomized prostate-cancer screening trial. *New England Journal of Medicine, 360*(13), 1310-1319.

Arora, N. K. (2003). Interacting with cancer patients: The significance of physicians' communication behavior. *Social Science & Medicine, 57*(5), 791-806. doi: 10.1016/S0277-9536(02)00449-5

Bade, E., Evertsen, J., Smiley, S., & Banerjee, I. (2008). Navigating the health care system: A view from the urban medically underserved. *Wisconsin Medical Journal, 107*(8), 374-379.

Bartsch, G., Horninger, W., Klocker, H., Pelzer, A., Bektic, J., Oberaignert, W., et al. (2008). Tyrol prostate cancer demonstration project: Early detection, treatment, outcome, incidence and mortality. *BJU International, 101*(7), 809-816. doi: 10.1111/j.1464-410X.2008.07502.x

Beach, M. C., Sugarman, J., Johnson, R. L., Arbelaez, J. J., Duggan, P. S., & Cooper, L. A. (2005). Do patients treated with dignity report higher satisfaction, adherence, and receipt of preventive care? *Annuals of Family Medicine, 3*(4), 331-338. doi: 10.1370/afm.328

Bekhuis, T., Cook, H., Holt, K., Scott-Lennox, J., Lennox, R., Price, L., et al. (1995). Ethnicity, church affiliation and beliefs about the causal agents of health: a comparative study employing a multivariate analysis of convarience. *Health Education Research, 10*(1), 73-82. doi: 10.1093/her/10.1.73

Benkert, R., Peters, R. M., Clark, R., & Keves-Foster, K. (2006). Effects of perceived racism, cultural mistrust and trust in providers on satisfaction with care. *Journal of the National Medical Association, 98*(9), 1532-1540.

Blocker, D. E., Romocki, L. S., Thomas, K. B., Jones, B. L., Jackson, E. J., Reid, L., et al. (2006). Knowledge, beliefs and barriers associated with prostate cancer prevention and screening behaviors among African-American men. *Journal of the National Medical Association, 98*(8), 1286-1295.

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

Brandon, D. T., Isaac, L. A., & LaVeist, T. A. (2005). The legacy of Tuskegee and trust in medical care: Is Tuskegee responsible for race differences in mistrust of medical care? *Journal of the National Medical Association, 97*(7), 951-956.

Brawley, O. W., & Wallington, S. F. (2009). Disparities in Prostate Cancer *Toward the elimination of cancer disparities* (pp. 179-202). New York: Springer.

Brooks, D. D., Wolf, A. M. D., Smith, R. A., Dash, C., & Guessous, I. (2010). Prostate cancer screening 2010: Updated recommendations from the American Cancer Society. *Journal of the National Medical Association, 102*(5), 423-429.

Brown, D. R., & Gary, L. E. (1987). Stressful life events, social support networks, and the physical and mental health of urban black males. *Journal of Human Stress*(Winter), 165-174.

Brown, E. R., Davidson, P. L., Yu, H., Wyn, R., Andensen, R. M., Becerra, L., et al. (2004). Effects of community factors on access to ambulatory care for lower-income adults in large urban communities. *Inquiry, 41*(Spring), 39-56.

Byrne, S. K. (2008). Healthcare avoidance. *Holistic Nursing Practice, 22*(5), 280-292.

Casagrande, S. S., Gary, T. L., LaVeist, T. A., Gaskin, D. J., & Cooper, L. A. (2006). Perceived discrimination and adherence to medical care in a racially integrated community. *Journal of General Internal Medicine, 22*(3), 389-395.

Chin, M. H., Polonsky, T. S., Thomas, V. D., & Nerney, M. P. (2000). Developing a conceptual framework for understanding illness and attitudes in older, urban African Americans with diabetes. *The Diabetes Educator, 26*(3), 439-449.

Cobie-Smith, G., Thomas, S. B., & George, D. M. M. S. (2002). Distrust, race, and research. *Archives of Internal Medicine, 162*(21), 2458-2463. doi: 10.1001/archinte.162.21.2458

Cody, R. (2007). *Learning SAS by example: A programmer's guide*. Cary, North Carolina: SAS Institute, Inc.

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.). Mahwah: Lawrence Erlbaum Associates.

Cort, M. A. (2004). Cultural mistrust and use of hospice care: Challenges and remedies. *Journal of Palliative Medicine, 7*(1), 63-71. doi: 10.1089/109662104322737269

Davidson, P. L., Andersen, R. M., Wyn, R., & Brown, E. R. (2004). A framework for evaluating safety-net and other community-level factors on access for low-income populations. *Inquiry, 41*(1), 21-38.

Davis, T. C., Long, S. W., Jackson, R. H., Mayeaux, E. J., George, R. B., Murphy, P. W., et al. (1993). Rapid estimate of adult literacy in medicine: A shortened screening instrument. *Family Medicine, 25*(6), 391-395.

Davis, T. C., Michielutte, R., Askov, E. N., Williams, M. V., & Weiss, B. D. (1998). Practical assessment of adult literacy in health care. *Health Education & Behavior, 25*(5), 613-624. doi: 10.1177/109019819802500508

DeVellis, R. F. (2003). *Scale developement: Theory and applications* (2nd ed.). Thousand Oaks: Sage Publications.

Dovidio, J. F., Penner, L. A., Albrecht, T. L., Norton, W. E., Gaertner, S. L., & Shelton, J. N. (2008). Disparities and distrust: The implications of psychological processes for understanding racial disparities in health and health care. *Social Science and Medicine, 67*, 478-486. doi: 10.1016/j.socscimed.2008.03.019

Facione, N. C. (1999). Breast cancer screening in relation to access to health services. *Oncology Nursing Forum, 26*(4), 689-696.

Ferrell, B. R., Smith, S. L., Juarez, G., & Melancon, C. (2003). Meaning of illness and spirituality in ovarian cancer survivors. *Oncology Nursing Forum, 30*(2), 249-257. doi: 10.1188/03.ONF.249-257

Figueroa, L. R., Davis, B., Baker, S., & Bunch, J. B. (2006). The influence of spirituality on health care-seeking behaviors among African Americans. *American Black Nursing Faculty Journal, 17*(2), 82-88.

Fiscella, K., Meldrum, S., Franks, P., Shields, C. G., Duberstein, P., McDaniel, S. H., et al. (2004). Is it related to patient-centered behavior of primary care physicians? *Medical Care, 42*(11), 1049-1055.

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*(4 Suppl A), 22-30. doi: 10.1353/hpu.2005.0122

Fowler-Brown, A., Ashkin, E., Corbie-Smith, G., Thaker, S., & Pathman, D. E. (2006). Perception of racial barriers to health care in the rural south. *Journal of Health Care for the Poor and Underserved, 17*(1), 86-100. doi: 10.1353/hpu.2006.0022

Freeman, H. P., & Chu, K. C. (2005). Determinants of cancer disparities: Barriers to cancer screening, diagnosis, and treatment. *Surgical Oncology Clinics of North America, 14*(4), 655-669. doi: 10.1016/j.soc.2005.06.002

Friedman, D. B., Corwin, S. J., Dominick, G. M., & Rose, I. D. (2009). African American men's understanding and perceptions about prostate cancer: Why multiple dimensions of health literacy are important in cancer communication. *Journal of Community Health*.

Friedman, D. B., Corwin, S. J., Dominick, G. M., & Rose, I. D. (2009). African American men's understanding and perceptions about prostate cancer: Why multiple dimensions of health literacy are important in cancer communication *Journal of Community Health, 34*(5), 449-460. doi: 10.1007/s10900-009-9167-3

Gerend, M. A., & Pai, M. (2008). Social determinants of black-white disparities in breast cancer mortality: A review. *Cancer Epidemiology, Biomarkers, and Prevention, 17*(11), 2913-2923. doi: 10.1158/1055-9965.EPI-07-0633

Goffman, E. (1963). *Stigma: Notes on the management of spoiled identity*. New Jersey: Prentice-Hall.

Gold, H. T., Thwin, S. S., Burist, D. S., Field, T. S., Wei, F., Yood, M. U., et al. (2009). Delayed radiotherapy for breast cancer patients in integrated delivery systems. *The American Journal of Managed Care, 15*(11), 785-789.

Gordon, H. S., Street, R. L., Sharf, B. F., & Souchek, J. (2006). Racial differences in doctors' information-giving and patients' participation. *Cancer, 107*(6), 1313-1320. doi: 10.1002/cncr.22122

Griffith, D. M., Childs, E. L., Eng, E., & Jeffries, V. (2007). Racism in organizations: The case of a county public health department. *Journal of Community Psychology, 35*(3), 287-302. doi: 10.1002/jcop.20149

Griffith, D. M., Mason, M. A., Rodela, M., Matthews, D. D., Tran, A., Royster, M., et al. (2007). A structural approach to examining prostate cancer risk for rural southern African American men. *Journal of Health Care for the Poor and Underserved, 18*(4 Suppl), 73-101. doi: 10.1353/hpu.2007.0121

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 of General Internal Medicine, 22*, 901-907.

Hamilton, J. B., Carter, J. K., & Lynn, M. R. (2010). Reliability and validity of the perspectives of support from God scale *Nursing Research, 59*(2), 102-109. doi: 10.1097/NNR.0b013e3181d1b265

Hamilton, J. B., Powe, B. D., Pollard, A. B., Lee, K. J., & Felton, A. M. (2007). Spirituality among African American cancer survivors: Having a personal relationship with God. *Cancer Nursing, 30*(4), 309-316. doi: 10.1097/01.NCC.0000281730.17985.f5

Hausmann, L. R., Jeong, K., Bost, J. E., & Ibrahim, S. A. (2008). Perceived discrimination in health care and health status in a racially diverse sample. *Medical Care, 46*(9), 905-914.

Hekkert, K. D., Cihangir, S., Kleefstra, S. M., Berg, B. v. d., & Kool, R. B. (2009). Patient satisfaction revisted: A multilevel approach. *Social Science and Medicine, 69*(1), 68-75. doi: 10.1016/j.socscimed.2009.04.016

Herd, P., Goesling, B., & House, J. S. (2007). Socioeconomic position and health: The differential effects of education versus income on the onset versus progression of health problems. *Journal of Health and Social Behavior, 48*(3), 223-238. doi: DOI: 10.1177/002214650704800302

Hillemeier, M. M., Lynch, J., Harper, S., & Casper, M. (2003). Measuring contextural characteristics for community health. *Health Services Research, 38*(6), 1645-1718. doi: 10.1111/j.1475-6773.2003.00198.x

Hoffman, C., & Paradise, J. (2008). Health insurance and access to health care in the United States. *Annals of the New York Academy of Sciences, 1136*(1), 149-160. doi: 10.1196/annals.1425.007

Holt, C. L., Wynn, T. A., Litaker, M. S., Southward, P., Jeames, S., & Schulz, E. (2009). A comparison of a spiritually based and non-spiritually based educational intervention for informed decision making for prostate cancer screening among church- attending African-American men. *Urologic Nursing, 29*(4), 249-258.

Institute of Medicince. (2002). Unequal treatment: What health care system administrators need to know about racial and ethnic disparities in healthcare. In B. D. Smedley, A. Y. Smith & A. R. Nelson (Eds.), *Shaping the future of health* (pp. 8). Washington D.C.: Institute of Medicine.

Isaacs, S. L., & Schroeder, S. A. (2004). Class- The Ignored determinant of the nation's health. *New England Journal of Medicine, 351*(11), 1137-1142.

Jackson, J. L. (2005). Communication about symptoms in primary care: Impact on patient outcomes. *The Journal of Alternative and Complimentary Medicine, 11*(Supplement 1), S51-S56. doi: 10.1089/acm.2005.11.s-51

Jayadevappa, R., Chhatre, S., Wein, A. J., & Malkowicz, S. B. (2009). Predictors of patient reported outcomes and cost of care in younger men with newly diagnosed prostate cancer. *The Prostate, 68*(10), 1067-1076.

Jayadevappa, R., Schwartz, S., Chhatre, S., Wein, A. J., & Malkowicz, B. (2009a). Satisfaction with care: A measure of quality of care in prostate cancer patients. *Medical Decision Making*, 1-12.

Jayadevappa, R., Schwartz, S., Chhatre, S., Wein, A. J., & Malkowicz, B. (2009b). Satisfaction with care: A measure of quality of care in prostate cancer patients. *Medical Decision Making*, 1-12. doi: 10.1177/0272989X09342753

Johnson, R. (2005). Gender differences in health-promoting lifestyles of African Americans. *Public Health Nursing, 22*(2), 130-137. doi: 10.1111/j.0737-1209.2005.220206.x

Johnson, R. L., Roter, D., Powe, N. R., & Cooper, L. A. (2004). Patient race/ethnicity and quality of patient-physician communication during medical visits. *American Journal of Public Health, 94*(12), 2084-2090. doi: 10.2105/AJPH.94.12.2084

Jones, R. A., Steeves, R., & Williams, I. (2009). How African American men decide whether or not to get prostate cancer screening. *Cancer Nursing, 32*(2), 166-172.

Joseph, H. J. (2006). Determinants of prostate cancer screening in a sample of African American militrary servicemen. *Military Medicine, 171*(5), 430-435.

Katz, M. H. (1999). *Multivariable analysis: A practical guide for clinicians*. New York: Cambridge University Press.

Klassen, A. C., Smith, K. C., Shariff-Marco, S., & Juon, H. (2008). A healthy mistrust: How worldview relates to attitudes about breast cancer screening in a cross-sectional survey of low-income women. *International Journal for Equity in Health, 7*(5), 1-19.

Kleinbaum, D. G., Kupper, L. L., Miller, K. E., & Nizam, A. (1998). *Applied regression analysis and other multivariable methods* (3rd ed.). New York: Brooks/Cole Publishing Company.

Knafl, G. J. (2009, November 3). [Longitudinal methods & analysis: Correlation & regression].

Krause, N. (2002). Church-based social support and health in old age: Exploring variations by race. *Journal of Gerontology, 57B*(6), S332-S347.

Kreuter, M. W., Lukwago, S. N., Bucholtz, D. C., Clark, E. M., & Sanders-Thompson, V. (2002). Achieving cultural appropriateness in health promotion programs: Targeted and tailored approaches. *Health Education & Behavior, 30*(2), 133-146. doi: 10.1177/1090198102251021

Kripalani, S., Sharma, J., Justice, E., Justice, J., Spiker, C., Laufman, L. E., et al. (2007). Low-literacy interventions to promote discussion of prostate cancer: A randomized controlled trial. *American Journal of Preventive Medicine, 22*(2), 83-90. doi: 10.1016/j.amepre.2007.03.018

Kudadjie-Gyamfi, E., Consedine, N. S., Ungar, T., & Magai, C. (2008). Influence of coping with prostate cancer threat on frequency of digital rectal examinations. *American Journal of Health Behavior, 32*(2), 188-200.

Kutney-Lee, A., McHugh, M. D., Sloane, D. M., Cimiotti, J. P., Flynn, L., Neff, D. F., et al. (2009). Nursing: A key to patient satisfaction. *Health Affairs, 28*(4), w669-677. doi: 10.1377/hlthaff.28.4.w669

Lannin, D. R., Matthews, H. F., Mitchell, J., & Swanson, M. S. (2002). Impacting cultural attitudes in African-American women to decrease breast cancer mortality. *American Journal of Surgery, 184*(5), 418-423.

Lannin, D. R., Matthews, H. F., Mitchell, J., Swanson, M. S., Swanson, F. H., & Edwards, M. S. (1998). Influence of socioeconomic and cultural factors on racial differences in late-stage presentation of breast cancer. *Journal of the American Medical Association, 279*(22), 1801-1807. doi: 10.1001/jama.279.22.1801

LaVeist, T. A. (2003). Racial segregation and longevity among African Americans: An individual-level analysis. *Health Services Research, 36*(6), 1719-1734. doi: 10.1111/j.1475-6773.2003.00199.x

LaVeist, T. A., Nickerson, K. J., & Bowie, J. V. (2000). Attitudes about racism, medical mistrust, and satisfaction with care among African American and white cardiac patients. *Medical Care Research and Review, 57*(4), 146-161. doi: 10.1177/107755800773743637

LaVeist, T. A., Nuru-Jeter, A., & Jones, K. E. (2002). The association of doctor-patient race concordance with health service utilization. *Journal of Public Health Policy, 24*(3), 312-323.

LaVeist, T. A., Nickerson, K. J., & Bowie, J. V. (2000). Attitudes about racism, medical mistrust, and satisfaction with care among African American and white cardiac patients. *Medical Care Research and Review, 57*, 146-161.

Levin, J., Chatters, L. M., & Taylor, R. J. (2005). Religion, health and medicine in African Americans: Implications for physicians. *Journal of the National Medical Association, 97*(2), 237-249.

Lewis, M. A., DeVellis, B. M., & Sleath, B. (2002). Social influence and interpersonal communication in health behavior. In K. Glanz, B. K. Rimer & F. M. Lewis (Eds.), *Health behavior and health education: Theory, research, and practice* (3rd ed., pp. 240-264). San Francisco: Jossey-Bass.

Lewis, M. A., McBride, C. M., Pollock, K. I., Puleo, E., Butterfield, R. M., & Emmons, K. M. (2006). Understanding health behavior change among couples: An interdependence and communal coping approach. *Socail Science and Medicne, 62*(6), 1369-1380.

Little-Blanton, M., Brodie, M., Rowland, D., Altman, D., & McIntosh, M. (2000). Race, ethnicity, and the health care system: Public perceptions and experiences. *Medical Care Research and Review, 57*(Supplement 1), 218-235.

Mancuso, C. A., & Rincon, M. (2006). Asthma patients' assessments of health care and medical decision making: The role of health literacy. *Journal of Asthma, 43*(1), 41-44. doi: 10.1080/02770900500447052

Mandelblatt, J. S., Edge, S. B., Meropol, N. J., Senie, R., Tsangaris, T., Grey, L., et al. (2003). Predictors of long-term outcomes in older breast cancer survivors: Perceptions versus patterns of care. *Journal of Clinical Oncology, 21*(5), 855-863.

Mangelsdorff, D., & Finstuen, K. (2003). Patient satisfaction in military medicine: Status and an empirical test of a model. *Military Medicine, 168*(9), 744-749.

Marion, M. S., & Schover, L. R. (2006). Behavioral science and the task of resolving health disparities in cancer. *Journal of Cancer Education, 21*(1), S80-S86. doi: 10.1207/s15430154jce2101s_14

Matsuyama, R. K., Grange, C., Lyckholm, L. J., Utsey, S. O., & Smith, T. J. (2007). Cultural perceptions in cancer care among African-American and Caucasian patients. *Journal of the National Medical Association, 99*(10), 1113-1118.

Matthews, A. K., Sellergren, S. A., Manfredi, C., & Williams, M. A. (2002). Factors influencing medical information seeking among African American cancer patients. *Journal of Health Communication, 7*(3), 205-219. doi: 10.1080/10810730290088094

McFall, S. L., Hamm, R. M., & Volk, R. J. (2006). Exploring beliefs about prostate cancer and early detection in men and women of three ethnic groups. *Patient Education and Counseling, 61*(1), 109-116. doi: 10.1016/j.pec.2005.02.016

McKinstry, B., Ashcroft, R., Car, J., Freeman, G. K., & Sheikh, A. (2006). Interventions for improving patient's trust in doctors and groups of doctors. *Cochrane Database of Systematic Reviews*(3), 1-25.

Mickey, R. M., Dunn, O. J., & Clark, V. A. (2004). *Applied statistics: Analysis of variance and regression* (3rd ed.). New Jersey: John Wiley & Sons, Inc.

Mishel, M. H. (2003). *Cultural and demographic predictors of interaction with the health care system and prostate cancer aggressiveness*. Project 2. Grant Proposal. University of North Carolina at Chapel Hill. Chapel Hill.

Mishel, M. H., Belyea, M., Germino, B. B., Stewart, J. L., Bailey, D. E., Robertson, C., et al. (2002). Helping patients with localized prostate cancinoma manage uncertainty and

treatment side effects: Nurse-delivered psychoeducational intervention over the telephone. *Cancer, 94*(6), 1854-1866. doi: 10.1002/cncr.10390

Mishel, M. H., Germino, B. B., Belyea, M., Stewart, J. L., Bailey, D. E., Mohler, J., et al. (2003). Moderators of an uncertainty management intervention for men with localized prostate cancer. *Nursing Research, 52*(2), 89-97. doi: 10.1097/00006199-200303000-00005

Montgomery, D. C., Peck, E. A., & Vining, G. G. (2006). *Introduction to linear regression analysis*. New Jersey: John Wiley & Sons Inc.

Napoles, A. M., Gregorich, S. E., Santoyo-Olsson, J., O'Brien, H., & Stewart, A. L. (2009). Interpersonal processes of care and patient statisfaction: Do associations differ by race, ethnicity, and language? *Health Services Research, 44*(4), 1326-1344. doi: 10.1111/j.1475-6773.2009.00965.x

Newell-Withrow, C. (2000). Health protecting and health promoting behaviors of African Americans living in Appalachia. *Public Health Nursing, 17*(5), 392-397. doi: 10.1046/j.1525-1446.2000.00392.x

Nivens, A. S., Herman, J., Weinrich, S. P., & Weinrich, M. C. (2001). Cues to participation in prostate cancer screening: A theory for practice. *Oncology Nursing Forum, 28*(9), 1449-1456.

North Carolina State Center for Health Statistics. (2006). 2004 North Carolina prostate mortality rate Retrieved July 1, 2009, from www.schs.state.nc/SCHS/CCR/Mort2004r.pdf

Paez, K. A., Allen, J. K., Beach, M. C., Carson, K. A., & Cooper, L. A. (2009). Physician cultural competence and patient ratings of the patient-physician relationship. *Journal of General Internal Medicine, 24*(4), 495-498.

Parrish, D. D., & Kent, C. K. (2008). Access to care issues for African American communities: Implications for STD disparities. *Sexually Transmitted Diseases, 35*(12), S19-S22. doi: 10.1097/OLQ.0b013e31818f2ae1

Pearson, S. D., & Raeke, L. H. (2000). Patient's trust in physicians: Many theories, few measures, and little data. *Journal of General Internal Medicine, 15*, 509-513.

Peters, R. M., Aroian, K. J., & Flack, J. M. (2006). African American culture and hypertension prevention. *Western Journal of Nursing Research, 28*(7), 831-854. doi: 10.1177/0193945906289332

Pett, M. A., Lackey, N. R., & Sullivan, J. J. (2003). *Making sense of factor analysis: The use of factor analysis for instrument development in health care research*. Thousand Oaks: Sage Publications.

Pierce, R., Chadiha, L. A., Vargas, A., & Mosley, M. (2003). Prostate cancer and psychosocial concerns in African American men: Literature synthesis and recommendations. *Health and Social Work, 28*(4), 302-311.

Plomondon, M. E., Magid, D. J., Steiner, J. F., MaWhinney, S., Gifford, B. D., Shih, S. C., et al. (2007). Primary care provider turnover and quality in managed care organizations. *The American Journal of Managed Care, 13*(8), 465-472.

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. *Urological Nursing, 26*(6), 477-482.

Plumb, J. D., & Brawer, R. (2006). The social and behavioral foundations of men's health - A public health perspective. *Primary Care: Clinics in Office Practice, 33*(1), 17-34. doi: 10.1016/j.pop.2005.11.015

Polit, D. F., & Sherman, R. E. (1990). Statistical power in nursing research. *Nursing Research, 39*(6), 365-369.

Porter, L. S., Clayton, M. F., Belyea, M., Mishel, M., Gil, K. M., & Germino, B. (2006). Predicting negative mood state and personal growth in African American and white long-term breast cancer survivors. *Annuals of Behavioral Medicine, 31*(3), 195-204. doi: 10.1207/s15324796abm3103_1

Powe, B. D., Daniels, E. C., & Finnie, R. (2005). Comparing perceptions of cancer fatalism among African American patients and their providers. *Journal of the American Academy of Nurse Practitioners, 17*(8), 318-324. doi: 10.1111/j.1745-7599.2005.0049.x

Project, N. C.-L. P. C. (2009, November 5, 2009). Guidelines for use of data and biospecimens from the North Carolina-Louisiana Prostate Cancer Project (PCaP) Retrieved November 5, 2009, from http://www.ncla-pcap.org

Ravenell, J. E., Jr., W. E. J., & Whitaker, E. E. (2006). African-American men's perceptions of health: A focus group's study. *Journal of the National Medical Association, 98*(4), 544-550.

Rawaf, M. M., & Kressin, N. R. (2007). Exploring racial and sociodemographic trends in physician behavior, physician trust and their association with blood pressure control. *Journal of the National Medical Association, 99*(11), 1248-1254.

Richardson, J. T., Webster, J. D., & Fields, N. J. (2004). Uncovering myths and transforming realities among low-SES African-American men: implications for reducing prostate cancer disparities. *Journal of the National Medical Association, 96*(10), 1295-1302.

Ricketts, T. C., & Goldsmith, L. J. (2005). Access in health services research: The battle of the frameworks. *Nursing Outlook, 53*(6), 274-280.

Ross, J. S., & Detsky, A. S. (2009). Health care choices and decisions in the United States and Canada. *Journal of the American Medical Association, 302*(16), 1803-1804. doi: doi:10.1001/jama.2009.1566

Ross, L., Kohler, C. L., Grimley, D. M., Green, B. L., & Anderson-Lewis, C. (2007). Toward a model of prostate cancer information seeking: Identifying salient behavioral and normative beliefs among African American Men. *Health Education & Behavior, 34*(3), 422-440. doi: 10.1177/1090198106290751

Ross, L. E., Taylor, Y. J., Richardson, L. C., & Howard, D. L. (2009). Patterns in prostate-specific antigen test use and digital rectal examinations in the Behavioral Risk Factor Surveillance System, 2002-2006. *Journal of the National Medical Association, 101*(4), 316-324.

Royak-Schaler, R., Passmore, S. R., Gadalla, S., Hoy, M. K., Zhan, M., Tkaczuk, K., et al. (2008). Exploring patient-physician communication in breast cancer care for African American women following primary treatment. *Oncology Nursing Forum, 35*(5), 836-843. doi: 10.1188/08.ONF.836-843

Safran, D. G., Kosinski, M., Tarlov, A. R., Rogers, W. H., Taira, D. A., Lieberman, N., et al. (1998). The primary care assessment survey: Tests of data quality and measurement performance. *Medical Care, 36*(5), 728-739. doi: 10.1097/00005650-199805000-00012

Safran, D. G., Montgomery, J. F., Chang, H., Murphy, J., & Rogers, W. H. (2001). Switching doctors: Predictors of voluntary disenrollment from a primary physician's practice. *The Journal of Family Practice, 50*(2), 130-136.

Saha, S., Arbelaez, J. J., & Cooper, L. A. (2003). Patient-physician relationships and racial disparities in the quality of health care. *American Journal of Public Health, 93*(10), 1713-1719. doi: 10.2105/AJPH.93.10.1713

Sanda, M. G., Dunn, R. L., Michalski, J., Sandler, H. M., Northouse, L., Hembroff, L., et al. (2008). Quality of life and satisfaction with outcome among prostate-cancer survivors. *The New England Journal of Medicine, 358*(12), 1250-1261.

Schensul, J. J. (2009). Community, culture and sustainability in multilevel dynamic systems intervention science. *American Journal of Community Psychology, 43*(3-4), 241-256.

Schroder, F. H., Hugosson, J., Roobol, M. J., Tammela, T. L., Ciatto, S., Nelen, V., et al. (2009). Screening and prostate-cancer mortality in a randomized European study. *New England Journal of Medicine, 360*(13), 1320-1328. doi: 10.1056/NEJMoa0810084

Schroeder, J. C., Bensen, J. T., Su, L. J., Mishel, M., Ivanova, A., Smith, G. J., et al. (2006). The North Carolina-Louisiana prostate cancer project (PCaP): Methods and design of a multidisciplinary population-based cohort study of racial differences in prostate cancer outcomes. *The Prostate, 66*(11), 1162-1176. doi: 10.1002/pros.20449

Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs: for generalized causal inference*. New York: Houghton Mifflin Company.

Siminoff, L. A., Graham, G. C., & Gordon, N. H. (2006). Cancer communication patterns and the influence of patient characteristics: Disparities in information-giving and affective behaviors. *Patient Education and Counseling, 62*(3), 355-360. doi: 10.1016/j.pec.2006.06.011

Simmonds, G. (2008). African American participation in public health research. *The Association of Black Nursing Faculty Journal, 19*(2), 69-72.

Sirois, F., & Purc-Stephenson, R. J. (2008). When one door closes, another door opens: Physician availability and motivations to consult complementary and alternative medicine providers. *Complementary Therapies in Clinical Practice, 14*(4), 228-236. doi: 10.1016/j.ctcp.2008.06.002

Soper, D. S. (2009). The free statistics calculators website Retrieved November 11, 2009, from http://www.danielsoper.com/statcalc/

Street, R. L., Gordon, H. S., Ward, M. M., Krupat, E., & Kravitz, R. L. (2005). Patient participation in medical consultations: Why some patients are more involved than others. *Medical Care, 43*(10), 960-969.

Street, R. L., O'Malley, K. J., Cooper, L. A., & Haidet, P. (2008). Understanding concordance in patient-physician relationships: Personal and ethnic dimensions of shared identity. *Annuals of Family Medicine 6*(3), 198-205.

Street, R. L., Richardson, M. N., Cox, V., & Suarez-Almazor, M. E. (2009). (Mis)Understanding in patient-health care provider communication about total knee replacement. *Arthritis & Rheumatism, 61*(1), 100-107. doi: 10.1002/art.24371

Street, R. L. J., Gordon, H., & Haidet, P. (2007). Physicians' communication and perceptions of patients: Is it how they look, how they talk, or is it just the doctor? *Social Science & Medicine, 65*(3), 586-598. doi: 10.1016/j.socscimed.2007.03.036

Subban, J. E., Terwoord, N. A., & Schuster, R. J. (2008). With or without intent: How racial disparities prevent effective implementation of care. *The Journal of Nutrition, Health & Aging, 12*(10), 770S-775S.

Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics* (4th ed.). Boston: Allyn and Bacon.

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. *Cancer, 109*(8), 1599-1606. doi: 10.1002/cncr.22583

Thomas, V. N., Saleem, T., & Abraham, R. (2005). Barriers to effective uptake of cancer screening among Black and minority ethnic groups. *International Journal of Palliative Nursing, 11*(11), 562-571.

Toles, C. A. (2008). Black men are dying from prostate cancer. *American Black Nursing Faculty Journal, 19*(3), 92-95.

Underwood, S. M., & Powell, R. L. (2006). Religion and spirituality: influence on health/risk behavior and cancer screening behavior of African Americans. *American Black Nursing Faculty Journal, 17*(1), 20-31.

Vargas, R. B., Ryan, G. W., Jackson, C. A., Rodriguez, R., & Freeman, H. P. (2008). Characteristics of the original patient navigation programs to reduce disparities in the diagnosis and treatment of breast cancer. *American Cancer Society*, 426-433. doi: DOI 10.1002/cncr.23547

Washington, H. A. (2006). *Medical apartied: The dark history of medical experimentation on Black Americans from colonial times to the present*. New York: Harlem Moon.

Wei, X., Barnsley, J., Zakus, D., Cockerill, R., Glazier, R., & Sun, X. (2008). Assessing continuity of care in a community diabetes program: Initial questionnaire development and validation. *Journal of Clinical Epidemiology, 61*(9), 925-931. doi: 10.1016/j.jclinepi.2007.12.010

Williams, D. R., & Collins, C. (2001). Racial residential segregation: A fundamental cause of racial disparities in health. *Public Health Reports, 116*(5), 404-416. doi: 10.1093/phr/116.5.404

Williems, S., Maesschalck, S. D., Deveugele, M., Derese, A., & Maeseneer, J. D. (2004). Socio-economic status of the patient and doctor-patient communication: Does it make a difference? *Patient Education and Counseling, 56*(2), 139-146. doi: 10.1016/j.pec.2004.02.011

Wolff, M., Bates, T., Beck, B., Young, S., Ahmed, S. M., & Maurana, C. (2003). Cancer prevention in underserved African American communities: Barriers and effective strategies-A review of the literature. *Wisconsin Medical Journal, 102*(5), 36-40.

Wood, M. J., & Ross-Kerr, J. C. (2006). *Basic steps in planning nursing research: From question to proposal* (6th ed.). Boston: Jones and Bartlett Publishers.

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

Wray, R., McClure, S., Vijaykumar, S., Smith, C., Ivy, A., Jupka, K., et al. (2009). Changing the conversation about prostate cancer among African Americans: Results of formative research. *Ethnicity & Health, 14*(1), 27-43. doi: 10.1080/13557850802056448