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**DECISIONAL BALANCE FOR PROSTATE CANCER SCREENING**

**By**

**Evelyn Pearl Thompson Gladney**

**A DISSERTATION**

**Submitted to  
Michigan State University  
in partial fulfillment of the requirements  
for the degree of**

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## ABSTRACT

### DECISIONAL BALANCE FOR PROSTATE CANCER SCREENING

By

Evelyn Pearl Thompson Gladney

This is an exploratory study to examine factors and decisional balance (DB) that influence participation in prostate cancer (PCa) screening. Decisional balance is the weighing of the pros (perceived benefits) and cons (perceived risks) and is the decision-making component of the Transtheoretical Model (Prochaska, 1979). The secondary purpose of the study is to develop the groundwork for future interventions to support at-risk men, including African-American men, to develop the health habit of getting a yearly prostate specific antigen (PSA) and digital rectal examination (DRE). The sample consisted of 324 men who resided in Lansing, MI, Muskegon, MI and the Detroit, MI metropolitan area who participated in free PCa screening events. Men completed three surveys and demographic data was also collected. The selected factors are demographic (age, race, marital status), structural (insurance coverage) and behavioral (screening history).

A secondary data analysis showed significant positive associations between being African-American (N=168),  $df(1)$ ,  $\chi^2=0.013$  and being age 50 or older (N=192),  $df(1)$ ,  $\chi^2=0.031$  for DRE and intent to screen.

Results for PSA DB and the factors of race, insurance coverage and PSA screening history show a slightly negative association (N=287)

$r=-0.174$ ,  $p=0.003$  with African-American race, a slightly positive ( $N=260$ )  $r=0.175$ ,  $p=0.005$  association for insurance coverage and PSA screening history ( $N=241$ )  $r=0.180$ ,  $p=0.005$ . Results for DRE DB show a slightly positive ( $N=260$ )  $r=0.175$ ,  $p=0.005$  association with insurance coverage and DRE screening history ( $N=237$ )  $r=0.191$ ,  $p=0.003$ .

These findings indicate that demographic variables are associated with DRE intent to screen. In addition, DB for PSA and DRE are associated with demographic, structural and behavioral variables. Additional investigations are needed to understand the role of DB to participate in PCa screening.

Nursing implications for the findings of the study include research and clinical practice implications. In terms of research nurses should focus on the recruitment of men, to include AAM, in prostate cancer awareness and screening. Other roles for nurses in research is the development of reliable and valid assessment survey questions to measure patient knowledge, attitudes and cultural beliefs that can identify variations in individuals' decision making processes and benefits/risk perception.

Implications for nurses in the clinical setting include PCa educational interventions as well as continuing to establish relationships outside of the clinical setting to coordinate community health efforts to provide men with resources to obtain culturally relevant information on the latest PCa developments.

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**This work is dedicated to the memory of my father, Arthur Thompson, to my mother, Evelyn D. Thompson who prayed fervently for my success. I also dedicate this work to the memory of my other mom and dad, Annie Bell Gladney and George Edward Gladney.**

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## KEY TO SYMBOLS AND ABBREVIATIONS

African-American: AA

African-American Men: AAM

American Cancer Society: ACS

American Urologist Association: AUA

Analysis of variance: ANOVA

Cancer Prevention Research Center: CPRC

Decisional balance: DB

Digital Rectal Exam: DRE

European Randomized Study of Screening for Prostate Cancer: ERSPC

Healthcare Provider: HCP

Ingham Regional Medical Center: IRMC

Institutional Review Board: IRB

Marital Status: MS

Michigan: MI

Michigan State University: MSU

National Institute of Nursing Research: NINR

Prostate Cancer: PCa

Prostate, Lung, Colorectal and Ovarian: PLCO

Prostate Specific Antigen: PSA

Socioeconomic Status: SES

Stage of Change: SOC

**Statistical Package for Social Science: SPSS**

**Transtheoretical Model: TTM**

**United States: US**

**United States Preventive Task Force: USPTF**

**University Committee on Research Involving Human Subjects: UCHRIS**

## INTRODUCTION

Prostate cancer (PCa) is a major health problem in the United States (US) and is more prevalent in African-American men (AAM) than any other ethnic or racial group in this country. The incidence rate for AAM is 1.5 times that of Caucasian males, with rates of 243 per 100,000 and 156 per 100,000 respectively American Cancer Society (ACS) (2007). The disparities between the mortality rates are even more alarming, with AAM being diagnosed with PCa at a rate 2.4 times that of Caucasians. AAM mortality rates are 65 per 100,000 compared with 27 per 100,000 for white men. The PCa death rate has declined for African-American men and Caucasian men since the early 1990's apparently due to advances in public awareness, diagnosis and improved screening, specifically with the prostate specific antigen (PSA) (Jones, Underwood and Rivers, 2007). Although improved screening techniques and treatments are more pervasive, striking racial-ethnic differences in screening and treatment outcomes persist. Such disparate outcomes suggest a need for nursing interventions aimed at reduction of the overwhelming burden of prostate cancer in AAM and other at-risk men.

Screening for PCa with the PSA and the Digital Rectal Exam (DRE) is the most common method utilized for early detection in asymptomatic men (Odedina, Campbell, LaRose-Pierre, Scrivens and Hill, 2008). Screening rates have increased over the past ten years for all men, yet

AAM are less likely than Caucasian men to participate in PCa screening (ACS, 2007; Gwede and McDermott, 2006; Weinrich, Weinrich, Priest and Fodi, 2003). Research continues to address the question of how and/or what influences men's decisions for or against screening. Several researchers (Weinrich et al., 2004; Plowden 2002; Jones, Underwood and Rivers, 2008) substantiate that gaps exist in research literature to describe how men make decisions about getting screened for PCa. These researchers and others agree that the concept of patient decision making for participation in health care is complex and not clearly understood (Charles, Gafni and Whelan, 1999; Torke, Corbie-Smith and Branch, 2004). Understanding patient decision making becomes even more complex in a population of minority men, men who have no usual source of care and men who are underserved (Torke, Corbie-Smith and Branch, 2004).

One major problem that may affect men's decisions for PCa screening is that screening is highly controversial due to its efficacy not being well established in randomized clinical trials (Jones, Underwood and Rivers, 2007; Woods, Montgomery, Belliard, Ramirez-Johnson and Wilson, 2004; Krist, Woolf, Johnson and Kerns, 2007). While professional healthcare organizations conflict in their recommendations for or against PCa screening in the general population, they all agree that men should be given information about the potential benefits and harms of screening to allow them to make their own decisions (ACS, 2007;



American Medical Association, 2005; American College of Preventive Medicine 2006 and The US Preventive Task Force, 2008). Most of these organizations agree that at-risk men, including AAM should be screened.

Even if a clear benefit were to be found, the individual makes a trade off of benefits vs. harms when considering screening. Demographic factors, psychological factors, and structural factors influence how benefits and harms of screening are viewed. The benefits (gains) and harms (risks) are two decisional balance (DB) constructs (Janis and Mann, 1968, 1973) critical to the stages of change in Prochaska and DiClemente's Transtheoretical Model (TTM) (1983) of behavioral change. Further development of the DB construct within the TTM resulted in incorporating the individual's perceptions of cost vs. benefit associated with behavior change (Velicer, DiClemente, Prochaska and Brandenburg, 1985); thus, emerged the components of pros (perceived benefits) and cons (perceived risks). These two components, pros and cons, are utilized in Decision Balance. Decision Balance is the "mathematical" weighting of the pros and cons of a decision to engage in a particular health behavior (Ashing-Giwa, 1999). Prochaska and DeClemente's (1983) concepts of stages of change and DB have been used successfully to design behavior change in smoking cessation, mammography, cervical, colorectal screening and other behaviors such as drug addiction.

To our knowledge, no research has been conducted utilizing DB to learn what men consider being the balance of pros (perceived benefits)

and cons (perceived risks) in deciding for or against participation in PCa screening. Further discussion of the DB pros and cons and their characteristics will be shared in the literature review chapter of this dissertation. Demonstrating a relationship between factors that influence DB and screening behavior will support the designing of nursing interventions to help men who are at-risk for PCa to participate in early detection strategies.

It is critical to know what men perceive as the pros (perceived benefits) and cons (perceived risks) of PCa screening as well as the pros and cons that influence maintenance for screening behavior as recommended by healthcare organizations. To learn what factors influence decisional balance is fundamental to getting men to engage in PCa screening. Studies (Prostate Cancer Outcomes Study, 2003; Ashing-Giwa, 1999; Weinrich, et al., 2003, Woods, et al., 2004, Torke, et al., 2004; and Jones, et al., 2008) posit that demographic factors, structural factors and behavioral factors affect the pros and cons in decision making regarding screening. Demographic factors such as age, race, education, marital status are salient as men decide to participate in screening. The behavioral factors of having a screening history are considered to be of great importance in the balance of pros and cons for screening. Finally, structural factors, (e.g., lack of insurance or the ability to pay for screening), may also contribute to the DB.

The focus of this dissertation is a secondary data analysis of Decisional Balance (Janis and Mann, 1968, 1977; Prochaska, 1979) and its influence on the pros and cons for participation in PCa screening. The original study "The Prostate Health Behaviors and Attitudes for the PSA and the DRE" was conducted in 2005 in a sample of men (n=324) considering PCa screening, who were surveyed at PCa screening sites in Michigan. Behaviorally, the men may be considered to be in the action stage of change (SOC). According to Prochaska and DiClemente (1983) this is the fourth stage of change and the person is considered to be in the action stage when s/he has implemented a practice needed for successful behavior change (e.g., prostate cancer screening). Since the dissertation utilizes the sample of the original study with men in the action SOC, any further discussion of SOC, processes of change and the temptation scales, is beyond the scope of this dissertation.

In summary, disparities in PCa mortality and morbidity for AAM and other at-risk men have created a public health crisis. Even though there has been some improvement in decreasing PCa illness and death, nurses and other health care providers must learn influential factors that affect men's decision-making for early detection. By taking action on those findings through culturally sensitive interventions we can make a bold impact to get men involved in early detection for PCa. If relationships between demographic factors, behavioral factors, structural factors and DB are found to be significant they will provide the

foundation for future intervention studies to increase PCa screening for men, families and communities.

### *Significance*

Decisions about health care are often made between healthcare provider and patient. Yet, patient decision-making is not clearly understood (Torke, et al., 2004). Furthermore, there is no clear understanding of how underserved men, men without a usual source of care or minority men make health care decisions. Therefore, a better understanding is needed on how men weigh the importance of pros (perceived gains) and cons (perceived risks) in changing behavior for health promotion and early detection for PCa. Their approach to weighing benefits and risks to make a decision to get screened may depend on factors that have not been included in research efforts that have predominantly focused on white, educated, upper-income men, thus omitting factors of personal demographics, psychological factors and structural factors which AA men consider important to meet their goals and needs for prostate health.

In addition, this dissertation is consistent with the overall objective of Healthy People 2010 “to reduce cancer death rates by addressing illness, disability and death by cancer” (Healthy People 2010, 2001). Also, this dissertation parallels current research endeavors of the National Institute of Nursing Research (NINR) emphasizing the need to identify factors that influence decision-making that results in behavioral

changes to promote health and prevent disease. Finally, this dissertation dovetails with an ongoing study from the National Cancer Institute sponsored by the Prostate Cancer Outcomes Study (2003) examining racial differences on screening attitudes and behaviors.

### *Purpose of the Study*

Previous research has noted various health promotion activities implemented to assist men, especially AAM, to understand PCa and participate in early detection efforts. As a nurse who is committed to community efforts to reduce disparities in prostate cancer incidence and morbidity and as a member of the African-American community of Lansing, MI, the researcher serves on the Michigan Department of Community Health Prostate Cancer Action Committee. Within this context she was made aware of "The Prostate Health Behaviors and Attitudes Survey for the PSA and DRE". Drs. George Rowan and Ralph Levine, both from Michigan State University, developed the survey in collaboration with Drs. James Prochaska and Colleen Redding, faculty members at the University of Rhode Island. The data set, which has not been previously analyzed, has been made available to this researcher for secondary data analysis.

The purpose of this study is to: 1) examine factors and DB that influence participation in PCa screening. Participants in the in the study completed surveys in free PCa screening programs in three Michigan communities; 2) to contribute to the patient decision-making literature

by examining select factors and their relationship to decisional balance (DB); 3) identify preliminary findings that may support more definitive hypotheses generation, and 4) contribute to the nursing literature from the perspective of preliminary findings that may support development of measures and concepts for studying how to maintain screening behavior as a habit with particular focus on AAM.

The secondary purpose of the study is to develop the groundwork for future research which can lead to findings that support the development of interventions that lead men to the health habit of getting a yearly PSA and DRE.

#### *Specific Aims*

1. To describe the association between the factors, DB and intent to screen with the PSA and DRE.
2. To describe the characteristics of men who indicated intention to be screened for PCa the following year.

The study undertaken by Drs. Rowan, Levine, Prochaska and Redding is framed by the concepts of the TTM's decisional balance (Prochaska et al., 1983). As noted above, this researcher has focused on the concept of Decisional Balance (DB) for purposes of the proposed analysis. In this proposal, the key conceptual definitions are factors, decisional balance, and prostate cancer screening.

### *Conceptual Definitions*

Factors are predisposing agents that are behavioral, psychological, social, and structural. These are agents that will add insight to the health behavioral outcome of PCa screening participation and future involvement in yearly recommended screenings. For this study, the analysis is limited by the data available in the survey. Factors will be defined as race, age, marital status, recent screening and insurance status.

Decisional Balance is a conflict model characterized by an individual making decisions with regard to the gains or benefits (pros) and losses or costs (cons) in decision making, particularly regarding health care (Janis and Mann, 1968). This study will define decisional balance as the weighing of pros and cons that enable men to reach a decision to receive free screening in a community outreach project. Though we do not have all of the SOC in the data set, we do have intent to participate in PCa screening the following year.

Intention to screen the following year is defined as men indicating a “Yes” or “No” response in a survey questionnaire asking “Are you planning to continue to get a PSA and DRE every year?” The desired outcome of the screening program, for which the survey was conducted, is for men to move from the action SOC to the maintenance stage of change for prostate cancer screening. This is consistent with the researchers desire to get men to adopt PCa screening as a yearly health

habit. From here and throughout this dissertation, pros are defined as perceived benefits and cons are defined as perceived risks.

Prostate Cancer Screening is a test to determine disease or disease precursors in earlier stages of the natural history of disease, so that optimal care may be achieved in the health care structure (Bhopal, 2002). The iceberg of disease is uncovered by screening. Screening tests may or may not be diagnostic and PSA with DRE it is a simple test, applied to a population with minimum cost, harm and reasonable accuracy in detecting disease. The PSA is a simple blood test that measures the amount of prostate specific antigen (ACS, 2007). The DRE is a rectal examination where the prostate gland is palpated in search of nodules, irregular shape and other signs that may indicate an abnormality (ACS, 2007). Ideally, screening tests should have high sensitivity and specificity (Bhopal, 2002). The issue of sensitivity and specificity for the PSA and DRE has caused much of the controversy regarding prostate cancer screening (US Preventive Services Task Force, 2003). Sensitivity refers to the ability of a diagnostic test to identify the percentage of individuals who have the disease for which they are being tested (Bhopal, 2002). Specificity of a diagnostic test refers to the percentage of individuals who do not have the disease and are ruled out by the test (Bhopal, 2002). Over the past several years, researchers have improved the PSA sensitivity and specificity, thus decreasing some of the



unnecessary procedures, such as biopsies, which followed false-positive results (Williams, 2004).

The ACS (2007) recommend that the PSA and DRE be utilized annually, beginning at the age of 50 by men who have at least a ten year life expectancy. Screening for AAM and at-risk men (those with one or more first-degree relatives with PCa) begin at age 45. Testing could begin as early as age 40 for men who have multiple first-degree relatives with a PCa diagnosis. If the test results are negative at age 40, then no further testing is recommended until age 45 (ACS, 2007).

The latest recommendations for PCa screening come from the United States Preventive Task Force (USPTF, 2008). Their recommendation is against routine screening for men age 75 and older due to the lack of available evidence that early detection leads to decreased mortality. The USPTF (2008) recommended that men talk with their health care provider and make a decision based on individual preferences and risk factors.

In summary, this is a secondary data analysis to examine factors and DB that influence participation in PCa screening. The secondary purpose of the study will be to develop more effective nursing interventions to support at-risk get men, especially AAM, to develop the health habit of getting a yearly screening with the PSA and DRE. The key concepts of this study are the factors (e.g., race, age, MS, insurance coverage and screening history), DB and prostate cancer screening.

The following chapter will focus on review of the literature followed by the conceptual framework that includes a critical review of decisional balance and an explanation of how it will be applied in this dissertation.

## REVIEW OF THE LITERATURE

### *Cancer and African-American Men*

Prostate cancer is the most commonly diagnosed cancer in men in the United States (Jones et al., 2007). Approximately 95% of all PCas develop in the glandular cell of the prostate ducts and are classified as adenocarcinomas. Approximately 4% of PCas are thought to arise in the lining of the prostatic urethra, tumors that arise from neuroendocrine stem cells and tumors that are believed to be the result of changes in cell transformation (Jones et al., 2007).

The ACS (2007) estimated that approximately 219,000 new cases of PCa would be diagnosed in men in the US in 2007. One in six men will be diagnosed with PCa in their lifetime. PCa accounts for about 9% of cancer deaths and is exceeded only by lung cancer deaths in men. The ACS estimated that 27,050 men would die in 2008 from PCa in the US. Prostate cancer affects all racial and ethnic groups and overall reductions in PCa disease and death has been observed over the past ten years (Ford, Vernon, Havstad and Thomas, 2006; Gwede and McDermott and the National Prostate Cancer Coalition, 2007). However, when incidence, mortality and survival rates are compared by race and ethnicity, AAM are disproportionately burdened when compared to their Caucasian counterparts (Ford et al., 2006).

## *Prostate Cancer Screening*

The best method for detecting PCa currently involves screening with both the PSA and DRE (Gwede, 2006). Either test alone is insufficient. The PSA is a blood test used in the general population with a traditional value on the upper limit of 4.0 ng/mL (Gwede, 2006). The DRE, performed by a trained healthcare provider (HCP), is intended to detect subtle palpable changes in the prostate gland for abnormalities including consistency, marked indurations or nodules and symmetry (Jones et al., 2007). A single screening may not detect PCa which is why annual age-appropriate screenings are recommended by various organizations such as AUA and the ACS.

Demographic factors such as race, age, education, marital status, and recent screening influence whether men participate and continue to participate. The same factors also influence their future screening intentions, participating in yearly PCa screening (Clarke-Tasker and Wade, 2002; Plowden, 2002; Weinrich et al., 2003; Gwede and McDermott, 2006; Jones et al., 2007)

The structural factor of insurance status could facilitate or inhibit screening. The study sample for this dissertation consisted of men who were screened at a free community outreach program. Therefore, free access to screening removes the cost barrier. However, for men who may not have the opportunity to be screened without cost, participating in screening for PCa may be unlikely due to the inability to pay for services.

Weinrich (2003), IOM (2004) and Blocker et al. (2006) list cost of screening as one of the main reasons men do not get screened for PCa.

To summarize, demographic factors, structural factors and behavioral and have been long-standing determinants in the fight against PCa. Though factors such as age and race may not be modifiable, strong efforts to assist men in diverse populations, acknowledging personal characteristics, to include SES and psychological differences, should be the focus of healthcare professionals to reduce PCa disparity and increase screening rates among at-risk men.

The next section of this dissertation will discuss the factors utilized to determine DB to get men to participate in PCa screening.

### *Factors*

A vast amount of literature is available regarding the TTM and stages of change, process of change and levels of change for mammography, cervical and colorectal screening for behavioral change. However, there is a paucity of literature using decisional balance based on the TTM for prostate cancer screening. Therefore, the literature is virtually non-existent using DB pros and cons based on the TTM for changing behavior for prostate cancer screening (See Table 1).

**Table 1**

**Prostate Health Behaviors and Attitudes Pros and Cons of the PSA and DRE**

<b>Prostate Health Behaviors and Attitudes Pros and Cons of the PSA</b>	
<b>7 PSA Pros</b>	<b>7 PSA Cons</b>
Test reduces my anxiety	Blood draw a hassle for me
Getting test makes me feel responsible	Blood draw too much trouble
Test gets rid of worry for about my health	Blood draw causes me discomfort
Reduce anxiety for family/friends about my health	Getting test scares me
Test an easy way to protect my health	Test results would be stressful
Test would be over quickly	Test hurts
Test this year makes me feel good	Possible test bad news scares me

<b>Prostate Health Behaviors and Attitudes Pros and Cons of the DRE</b>	
<b>7 DRE Pros</b>	<b>7 DRE Cons</b>
Test reduces my anxiety	A hassle for me
Getting test makes me feel responsible	Too much trouble
Test gets rid of worry for about my health	Makes me uncomfortable
Reduce anxiety for family/friends about my health	Getting test scares me
Test an easy way to protect my health	Test results would be stressful
Test would be over quickly	Test hurts
Test this year makes me feel good	Possible test bad news scares me

Research has provided strong support for the reliability and validity of the core constructs of the model such as the stages of processes and levels of change. In addition, studies have demonstrated the predictive validity of demographic and problem history variables (Prochaska, Velicer, Rossi, Goldstein, Marcus, Rakowski, Fiore, Harlow, Redding, Rosenbloom and Rossi (1994). DB based on the TTM has been used in health behaviors across a wide variety of populations to include Caucasians, minorities, college students and individuals with low SES. The twelve major health behaviors previously studied using the TTM and DB are: 1) smoking cessation, 2) quitting cocaine, 3) weight control, 4) nutrition, 5) adolescent delinquent behaviors, 6) safer sex, 7) condom use, 8) sunscreen use, 9) radon gas exposure, 10) exercise acquisition, 11) mammography screening and 12) physicians' preventive practices with smokers (Prochaska et al., 1994). Further investigation into studies of behavior change using DB with the TTM shows that each study examined stages of change, process of change and levels of change. This dissertation will focus on DB of men in one SOC, the action stage, and will not focus on the other four stages of change, process of change or levels of change.

Because DB based on the TTM has been used in a variety of populations and problem behaviors, the DB construct of the TTM will be useful for guiding this dissertation. The influence of demographic (i.e., age, race, education, marital status, recent screening and future

screening intention) the structural factor of insurance status and the behavioral factor of screening history are hypothesized to influence decisional balance; weighting the pros and cons to participate in PCa screening and the men's intention to get screened the following year (See Table 1).

A review of how the literature applies to components of the dissertation conceptual framework of demographic factors, behavioral factors and structural factors will follow.

### *Race*

Identification of factors that influence mammography did report race as a significant variable, but (Pearlman, Rakowski and Clark, 1997) did not mention which SOC the women were in as they adopted the screening behavior. As with breast cancer, prostate cancer affects all racial and ethnic groups. However, when incidence, mortality and survival rates are compared by race, AAM are disproportionately burdened with PCa when compared to their Caucasian counterparts for PCa incidence and death (Sanchez et al., 2007). PCa is the most common form of cancer diagnosed in AAM and the second most common cause of cancer-related death (Ford, Vernon, Havstad and Thomas, 2006). The ACS estimated that nearly 31,000 cases of PCa would be diagnosed in AAM and that approximately 4,240 AAM would die of the disease in 2007. PCa rates are 30% higher among AAM age 65 or older, compared to Caucasian men in the same age group (Ford, et al., 2006).



## *Age*

One study was found using DB and the TTM, comparing older adults to younger adults in cancer screening behavior. However, prostate cancer screening was not included in this sample assessing behavior change for performing cancer self-exams (Nigg, Burbank, and Padula, 1999). Findings from a cross sectional survey (n=2,098) report that men aged 50 years or older decreased participation in PCa screening (Chiu, Anderson and Corbin, 2005). It has also been suggested that as men age they may lack the ability to navigate the healthcare system to seek care and obtain information on health promotion and early detection (Lambert, Fearing, Bell and Newton, 2002). It will be interesting to learn if age influences DB as men weigh the pros (perceived benefits) and cons (perceived risks) in deciding to participate in PCa screening.

The risk of developing PCa increases after the age of 50. Approximately two-thirds of all PCa are diagnosed in men older than 65 (ACS, 2007). While men over the age of 60 are more likely to be diagnosed with PCa than men under age 60, AAM are more likely to be diagnosed at a much younger age than men from other racial and ethnic groups (Pierce, et al., 2003). Pierce et al., (2003) add that even when controlling for SES, AAM are at risk for being diagnosed at a much earlier age and with more advanced stages of PCa than Caucasians.

Thus, AAM over the age of 50 have an increased risk for developing PCa and this group of men should be adhering to screening guidelines.

ACS and the AUA recommend that PCa screening begin at age 50 and five to ten years earlier for AAM and men with a family history (Richardson, 2004). If at-risk men are failing to participate in PCa screening right at the time they should be vigilantly participating in early detection strategies, future research must consider age when developing interventions to encourage PCa screening.

### *Marital Status*

Literature suggests that married men live longer and have better quality of life than non-married men than (Williams, 2003). Literature also supports that marital status is an important demographic influencing participation in prostate cancer screening and that married men were more likely to participate in screening for prostate cancer (Tudiver and Talbot, 1999; Weinrich, 2001; Pierce, Chadiha, Vargas and Mosley, 2003). Encouragement by wives and significant others to seek early detection for prostate cancer are reported as a value by a group of community dwellings AAM (Pierce, et al., 2003). In support of these findings (Niveva, Herman and Weinrich, 2001) points out that married/partnered men had higher screening rates than single men; widowed men had the highest screening rates, probably because they tend to be older. However, Chiu and Corbin (2005) contradict the work of the previous researchers by reporting that as men increase in age,

participation in PCa screening decreased. Tudiver and Talbot (1999) report in a study of physicians regarding why men seek health care, that male patients get much support from their wives and that wives spend time talking to men instead of talking with men about male health. Wives often go a step further by setting up appointments, influencing men to keep those appointments.

Two cancer screening studies were found using the TTM and DB. However, the cancer screening pertained to sunscreen use and mammography screening, contained a high percentage of Caucasians and made no mention of the sample marital status (Nigg et al., 1999; Prochaska et al., 1994)

### *Screening History*

It appears that PCa screening efforts are not reaching the very men (AAM and at-risk men) who could get the most benefit from screening. PCa screening has increased over the past ten years due to public awareness and educational endeavors by dedicated health care professionals (ACS, 2007). Yet AAM utilize PCa screening at lower levels when compared to Caucasian men. Medicare data reveals that screening rates for AAM 65 years or older to be appropriately 25% less than that of Caucasian men of the same age group. Other researchers have reported that screening rates for AAM range between 2% and 10% based on the nationwide general population (Flower and Christie, 1997; Weinrich, Boyd, Weinrich et al., 1998; Weinrich, Greiner, Reis-Starr, Yoon, and

Weinrich, 1998). Low screening rates are further supported by Gwede and McDermott (2006) documenting in a study of (n=334) medically underserved AAM; 60% had not heard of a PSA and 28% had not heard of the DRE. Again, no relevant studies were found using the TTM, DB and prostate cancer screening.

### *Screening Intention*

Men who have had a recent physical exam were more likely to report having a PSA or DRE. Thus, having a recent check-up might be the pathway to screening (Agho and Lewis, 2001). However, the cost of the doctor visit may reduce access to screening among SES disadvantaged (Richardson, Webster and Fields, 2004).

Pendleton, Curry, Kasertian, Chang, Anai, Nakamura, Abdoush and Rosser (2008) report that the characteristics of men who indicated they would seek future screening intentions were Caucasian, highly educated, had received a PSA test in the past twelve months and had a usual source of care. Nivens, Herman, Weinrich and Weinrich (2001) reports in a study (n=1,867) with 72% of the sample being AAM, that intention to screen in a free community health setting was highly correlated with simultaneous educational sessions. These findings suggest that removing cost for screening and exposure to prostate cancer education makes a significance difference in decision-making for active screening.

One study on mammography screening using TTM and DB was found. Even though the focus of this dissertation is PCa screening, TTM and DB it was disappointing to learn that 20 of the sample (n=1,144) became less favorable toward mammograms over one year.

### *Insurance Coverage*

In 2006, approximately 23% of African-Americans were not covered by health insurance (US Census Report). Therefore, insurance status may be a salient factor as men consider PCa cancer screening. This is especially important for AAM, because a large percentage of AAM are socioeconomically disadvantaged and have higher incidence and mortality rates for prostate cancer. Twelve percent of the US population is made up of African-Americans and they account for one-third of the nation's poor (Clark-Tasker and Wade, 2002). Rimer (1996) reports the importance of insurance coverage in a study to determine factors of mammography and Pap testing (n=926). The sample was predominately low-income women between the ages of 18-80. A decisional balance scale with nine items was utilized. Rimer (1996) concluded that decisional balance and health insurance coverage were primary factors for obtaining a mammography.

Insurance status may play a significant role in decisional balance, especially, for socioeconomically disadvantaged men. Since low SES has been associated with late stage PCa and poor survival rates, nurses will need to advocate for low-cost or no-cost screenings to serve men in a

community setting who do not have health insurance coverage and/or the ability to pay out of pocket. The role of insurance status in this study of men participating in free screening will be analyzed.

To summarize, AAM continue to have high PCa morbidity and mortality rates. Despite advances in public awareness and PCa screening techniques, AAM continue to have lower screening rates when compared to Caucasians, which could be attributed to less knowledge about PCa screening (Taylor, et al., 2001; Weinrich, et al., 2003; Ford, et al., 2006). Due to the lack of studies of PCa screening utilizing DB based on the TTM, we have yet to learn if DB is a useful construct to measure the influence of demographic factors, structural and behavioral factors on participation in screening. While the men in this study are in the action SOC and received a PSA and a DRE, the findings from this study will suggest direction for future interventions for men, families, communities and healthcare providers in eliminating the disparities of PCa in AAM men and at-risk men. If DB is helpful in describing intention to be screened the following year, the next step will be to study actual future screening behavior. Subsequent studies would address DB in the precontemplation, contemplation and preparation stages. These descriptive studies would be accompanied by interventions that inform men in ways that are balanced and truthful, but encourage action either for or against screening, as part of men's participation in early detection for PCa and health promotion/early detection more generally.

## CONCEPTUAL FRAMEWORK

### *Conceptual Model*

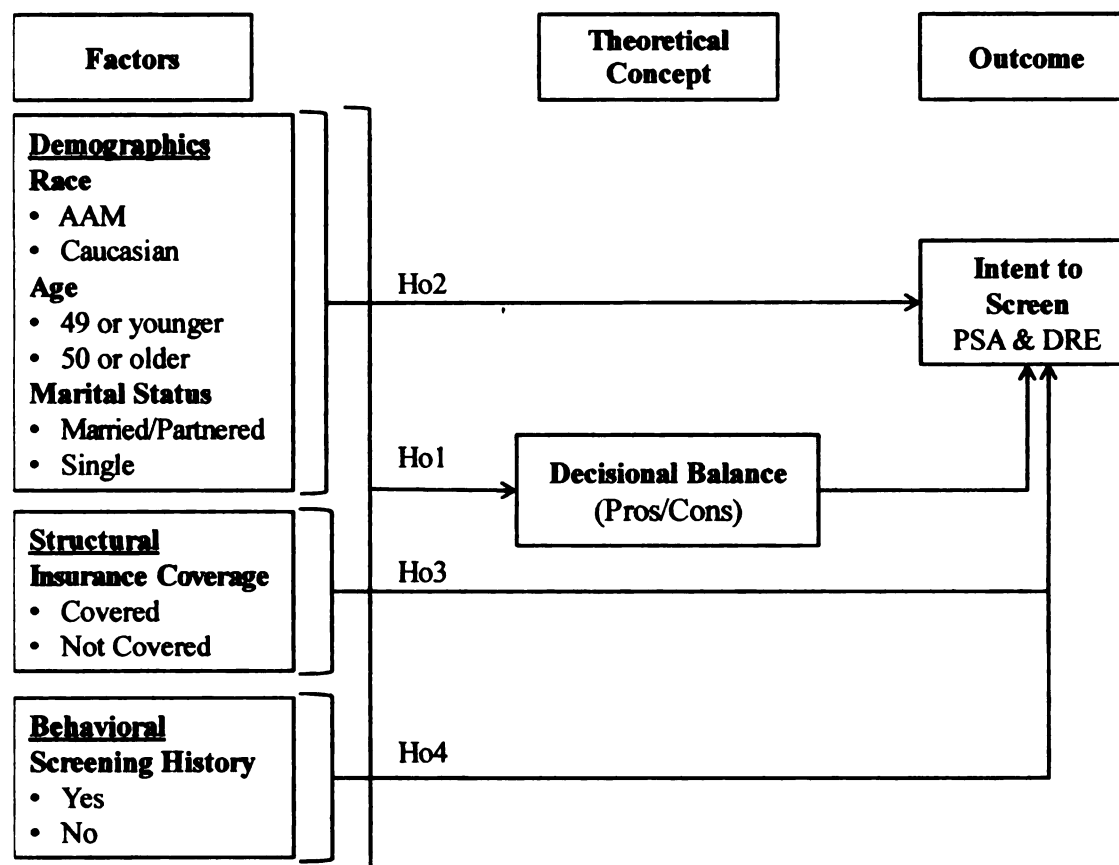
The original study “The Prostate Health Behaviors and Attitudes for the PSA and the DRE” was conducted in 2005 with a sample of men (n=324) participating in PCa screening. The focus of this dissertation is Decisional Balance (Janis and Mann, 1968, 1977) and its influence on the pros and cons for participation in PCa screening (See Table 1).

The section below is the researcher’s adaptation of decisional balance and the conceptual framework that will guide the study. The underlying concepts of the survey are the Transtheoretical Model (TTM) and Decisional Balance (DB). Decisional Balance is a central construct of the TTM.

The decisional balance concept based on the TTM (1983) will be used to examine the relationships between demographic factors, structural factors and behavioral factors within the current study. DB is the weighing of the pros (perceived benefits) and the cons (perceived risks) when an individual is considering making a decision for a positive behavior change. (See Figure 1).

**Figure 1**

**Conceptual Framework Model**



Conceptual Model Summary	
Ho1	(Prochaska's Model) There is a direct relationship to the factors, DB and intent to screen with the PSA and DRE
Ho2	Being older than 50, married and Caucasian race are associated with intent to screen with the PSA and DRE*
Ho3	Insurance coverage is directly associated with intent to screen with the PSA and DRE*
Ho4	Screening history is directly associated intent to screen with the PSA and DRE*

\* Alternative hypothesis generated from the literature

Conceptual Framework for Participating in Prostrate Cancer Screening

Adaptation from Janis & Mann (1968, 1977) and Transtheoretical Model (Prochaska, 1979)



The TTM is a model of intentional behavioral change and reported to have good psychometrics (Prochaska and DiClemente, 1983). The TTM also focuses on the development of interventions to promote behavior change (Prochaska and DiClemente, 1983). The model describes how a person modifies a problem behavior or acquires a positive behavior change considering the individual's emotions as well as cognitions (Velicer, Prochaska, Fave, Norman and Redding, 1998). The central organizing construct of the model is Stages of Changes (SOC) which consist of five stages: 1) Precontemplation; 2) Contemplation; 3) Preparation; 4) Action; and 5) Maintenance (Prochaska and DiClemente, 1983). The TTM includes the Processes of Change, and outcomes measures of Decisional Balance and the Temptation Scales. This descriptive study will address DB among men in the behavioral action stage of change.

Janis and Mann (1968) conceptualized decision-making as a conflict model that assumes that decision-making involves careful examination of all relevant considerations that enter into a decisional balance sheet of potential gains and losses (Mann, 1972). Anticipated gains/benefits are conceptualized as the pros of the decision and anticipated risks/losses are the cons of the decision (See Table 1). Janis and Mann's decisional balance construct (1977) includes four categories of pros and four categories of cons for behavior change. Categories for pros are: 1) gain for self, 2) gain for others, 3) approval for self and 4)

approval for others. Anticipated losses are conceptualized as the cons of the decision. There are also four categories of cons for behavior change: 1) costs to self, 2) cost to others, 3) disapproval from self and 4) disapproval from others. The DB scale involves weighing the importance of the pros and cons for decision making.

Smoking cessation was the first behavior change examining pros and cons in the TTM (Velicer, DiClemente, Prochaska and Brandeenburg, 1985). Longitudinal research (Prochaska et al., 1985; Prochaska and Velicer, 1991) verified the stages of change and DB relationships and established the predictive validity of pros and cons. These and other studies from a wide range of problem behaviors have found that the weighing of pros and cons have been consistent in behavior change.

#### *TTM in Context*

Other models of behavior change are similar to Prochaska and DiClemente's, Stages of Change Model (1984) such as the Health Belief Model (Rosenstock and Becker, 1974) and The Theory of Reasoned Action (Ajzen and Fishbein, 1980). Because this dissertation is a secondary data analysis of the original study, "Prostate Health Behaviors and Attitudes" based on Prochaska and DiClemente's (1984) stages of change model and DB, a detailed consideration of other models, such as the Health Belief Model would not contribute to developing the present conceptual framework, given the centralizing of the TTM to the present data set. The latter models have been used successfully as behavioral

change models but the original study has been developed from the Prochaska and DiClemente's (1984) TTM.

Researchers have applied the TTM to a wide variety of problem behaviors such as smoking cessation, exercise, alcohol abuse, weight control, organizational change and mammography screening. This list is not inclusive of all the behavioral problems to which the TTM has been applied, but they represent well-researched areas in which effective interventions have been successfully developed and evaluated.

Prochaska (2008) write that with sensitivity to perspectives of gender, SES, age and race, the underlying constructs of the TTM and DB have been instrumental in bringing positive changes to broad diverse groups with a broad diversity of problem behaviors.

In summary, the TTM is a popular and frequently utilized model to change behavior along a continuum. For this study, the potential importance of weighing the pros and cons to make a decision on screening makes the use of DB ideal. The use of DB allows the investigator to describe how personal determinants predict men's DB and subsequent decision process. Understanding this may enable health care professionals and researchers to better understand the demographic factors, behavioral factors and structural factors that predict men's behavior as they consider engaging in PCa screening, whether it be for the first time or for future screening.

## METHODOLOGY

### *Original Study Design*

The goal of the original study was to examine and analyze data from the sample to determine stage of change. Three surveys were used in the original study. They were: 1) The Prostate Health Behaviors and Attitudes Survey for the Prostate Specific Antigen; 2) The Prostate Health Behaviors for the Digital Rectal Exam; and 3) The Prostate Screening Event Items. George Rowan, Ph.D., Michigan State University Faculty and Ralph Levine, Ph.D., Michigan State University, Professor Emeritus developed these instruments in 2005. Drs. Rowan and Levine worked in consultation with Colleen Redding, Ph.D. and other faculty at the University of Rhode Island, Cancer Prevention Research Center (CPRC). The survey pertains to prostate health behaviors and attitudes of a population of community-dwelling men in a community screening program providing free PCa screening.

### *Current Study Design*

This exploratory study uses a descriptive co-relational design. This design will describe the study population from the original study. In doing a secondary analysis, the questions posed in this study were limited by the questions and data gathered in the original study. The current study will explore the association of the relationships between the factors utilizing Prochaska's model (1979) and the association of the relationships between the factors and a relevant literature review.

### *Data Analysis*

Levels of measurements are considered when analyzing categorical factors, continuous factors and dichotomous variables. To analyze association between categorical factors of race, age, MS, insurance, screening history and the dichotomous outcome of intent to screen, crosstabulation was be utilized. To analyze categorical factors and the continuous scores of DB Point Biserial Correlations were utilized. Point Biserial was also conducted to analyze the relationship between the continuous scores of DB and the dichotomous factor of intent to screen. The crosstabulation statistics computes two-way tables and are reported as Chi Square test or Fisher's Exact test. The Chi Square tests are reported when no more than one cell in the model has an expected count of less than five. When two or more cells in the model have an expected count of less than five, the Fisher's Exact test is reported (SPSS Version 17, 2008).

The specific aims for the dissertation are:

1. To determine the association between the factors, DB and intent to screen with the PSA and DRE.
2. To describe the characteristics of men who indicated intention to be screened for PCa the following year.

### *Sample of Current Study*

Study participants were a convenience sample of community-dwelling men between the ages of 40-75 who resided in Lansing, MI,

Muskegon, MI and the Detroit, MI metropolitan area. The sample included men who were unemployed, blue-collar workers and professionals. Data were to be collected on (N=324) men who were scheduled to participate in the PSA screenings in addition to being given a DRE.

### *Research Questions*

What is the relationship between the factors, DB and intent to screen with the PSA and the DRE?

**Ho1:** There is a relationship between factors, DB and intent to screen with the PSA and DRE.

**Analysis:** The analysis was done in three steps. First, crosstabulations was conducted to analyze the association between race, age, MS, insurance and screening history with the outcome variable of intent to screen with the PSA and the DRE. In the second step, Point Biserial correlations was conducted to examine the association between the factors and DB. For the third and final step, Point Biserial Correlations was conducted to examine the association between DB and intent to screen.

**Ho2:** Being age 50 or older, married and Caucasian vs. all others is associated with intent to screen with the PSA and the DRE.

**Analysis:** The analysis was done in three steps as they were in Ho:1. First, crosstabulations was conducted to analyze the association between race, age, MS, insurance and screening history with the

outcome variable of intent to screen with the PSA and the DRE. In the second step, Point Biserial correlations were conducted to examine the association between the factors and DB. For the third and final step, Point Biserial Correlations was conducted to examine the association between DB and intent to screen.

**Ho3:** Insurance coverage is directly associated with intent to screen with the PSA and the DRE.

Analysis: Crosstabulations and Point Biserial Correlations was conducted to determine if there is a significant association between insurance coverage and intent to screen with the PSA and the DRE.

**Ho4:** Screening history is directly associated intent to screen with the PSA and the DRE.

Analysis: Crosstabulations and Point Biserial Correlations will be conducted to determine if there is a significant association between screening history and intent to screen with the PSA and the DRE.

#### **Inclusion and Exclusion Criterion**

Men must read and speak English and provide their own transportation. Men under the age of 40 were excluded from the study due to the researchers' desire to comply with the age guidelines for PCa screening according to the ACS.

#### ***Instruments***

Four instruments were used in the study: 1) The Prostate Health Behaviors and Attitudes for Prostate Specific Antigen Screening, 2) The

Prostate Health Behaviors and Attitudes for the Digital Rectal Exam and 3) The Prostate Screening Event Items Survey and 4) Baseline demographics. No mention was made of psychometric properties for any of the instruments listed above. This is a limitation for the original study. Drs. Rowan and Levine and the collaborating researchers at University of Rhode Island designed these instruments. The Prostate Health Behaviors and Attitudes for Prostate Specific Antigen Screening measures DB using seven pro items and seven con items. There is a total of 14 items for PSA screening. The Prostate Health Behaviors and Attitudes for the Digital Rectal Exam used to measure DB also contain seven pro items and seven con items. Again, there is a total of 14 items.

Internal consistency of the current study was based on the SOC and DB studies across twelve problem behaviors. Those twelve problems behaviors are smoking cessation, quitting cocaine, weight control, high-fat diets, adolescent delinquent behavior, safer sex, condom use, radon gas exposure, exercise acquisition, sunscreen usage, mammography screening and physicians' interventions with smokers (Prochaska, et al., 1994). Based on principal-component analysis with varimax rotation on DB items for each of the 12 samples two orthogonal components were retained; the pros and the cons. Each analysis was based on the sample of participants who completed the questionnaires for a particular problem behavior. Internal consistency ranged from .75 to .95 in all twelve problem behaviors. Rakowski et al., (1997) report that the DB



measure has a high test-retest reliability and high predictive validity in a 24-item DB scale for mammography that was used in low-income and minority women. Though, Rakowski et al., (1997) does not report the coefficients for the reliability and predictive validity, the same claim is made by Rakowski, et al., (1997) in a study using a 24-item DB scale for mammography and Pap test combined.

According to Spencer (2005) in a comprehensive review of published studies applying the TTM and DB to cancer screenings and other health behaviors, construct validity for other types of cancer screening, besides mammography, does not exist. The majority of mammography studies that addressed the pros and cons of decisional balance used Rakowski et al., (1993b; 1997a) scales or researchers created their own scales that were not tested for construct validity. All of the mammography studies showed increases in pros and decreases in cons as subjects moved through the stages of change. Prochaska et al., (1994) suggest that pros outweigh cons on the DB scale just prior to the action SOC.

#### Prostate Health Behaviors and Attitudes for Prostate Specific Antigen Screening Survey

This survey is based on the formative work of (Prochaska and DiClemente, 1992; Spencer, Pagell, and Adams, 2005). The Prostate Health Behaviors and Attitudes for PSA survey is comprised of fourteen items that form “pros” (perceived benefits) and “cons” (perceived risks)

which are the decisional balance scale to participate in PCa screening.

The scale is an application of the TTM of individual behavior change to PSA screening. The participant circled their response:

“1” = Not important

“2” = Slightly important

“3” = Fairly important

“4” = Very important

The number circled reflects how important each item is to the participant in their decision to get tested or not. If an item does not apply to the participant, this indicates it is not a concern to the participant, or if the participant does not agree with the statement about personal importance of the blood test, they were instructed to circle “1” for “Not important”. Questions surrounding the survey contained the themes of anxiety, troublesomeness, discomfort, fear, stressfulness and feeling positive about getting the blood test (See Table 1). The responses were analyzed and a determination was made regarding DB for engaging in screening. There is no mention of psychometrics for this survey.

#### The Prostate Health Behaviors and Attitudes for the Digital Rectal Exam

This section of the survey is similar to the “Prostate Health Behaviors and Attitudes for Prostate Specific Antigen Screening Survey”. It is comprised of fourteen items that form a “pros” and “cons” (decisional balance) scale applied to DRE screening. Like the items for PSA screening, this survey was used to measure the pros and cons of getting

the DRE by a physician to screen for PCa. The participant will circle a number for the response:

“1” = Not important

“2” = Slightly important

“3” = Fairly important

“4” = Very important

The number circled reflects how important each item is to the participant in their decision to get tested or not. If an item does not apply to the participant, this indicates it is not a concern to the participant, or if the participant does not agree with the statement about personal importance of the blood test, they were instructed to circle “1” for “Not important”. Again, the DB pros and cons questions surrounding the survey contained the themes of anxiety, troublesomeness, discomfort, fear, stressfulness and feeling positive about getting the blood test (See Table 1). The responses were analyzed and a determination was made regarding DB for engaging in the screening. There is no mention of psychometrics for this survey.

#### The Prostate Screening Event Items Survey

This survey includes 8 close-ended items about the respondent’s past prostate cancer screening behaviors. The first question asked, “Have you ever had a PSA blood test?” The response may be “Yes”, “No” or “Don’t Know”. If the answer is “Yes,” the respondent is asked, “How long ago was the most recent PSA?” The response ranged from “1 to 7

years” or “Don’t Know.” Then the respondent is asked, “Have you had or are you planning to get a PSA this year?” The final question regarding PSA asked “Are you planning on getting a PSA every year from now on?” The response is “Yes” or “No”. The same questions using the same responses are asked regarding the DRE. This survey was reported to have good face validity. Other information regarding the psychometrics of the survey was not mentioned.

### *Baseline demographics*

Five general questions were asked regarding the respondents background, including race, age, language spoken at home, marital status and health insurance.

### *Operational Definitions*

For the purposes of this dissertation the researcher’s operational definitions of the study’s key factors are introduced below.

Background factors include age, race, marital status, screening history and future screening intention was obtained by self-report from the self- administered demographic survey. For purposes of this dissertation race was dichotomized as African-American or Caucasian. Age was dichotomized as younger and older. Younger men were age 49 or younger and older men were age 50 or older. Marital status was dichotomized as single and married/partner. The structural factor includes insurance coverage. The participant was asked to circle all types of insurance(s) that applied, choices being: “Medicaid”, “Medicare”,

“Private Pay” (e.g., BCBS), “No insurance” or “Don’t know”. Insurance was dichotomized into “Yes” or “No”. The response of “Don’t know” was included with “No” responses.

The behavioral factor of screening history asked if participants had ever had a PSA or a DRE. Question #1 for the PSA history asked, “Have you ever had a PSA?” The responses were: 1) Yes, 2) No or 3) Don’t know. If participants responded “No” or “Don’t know” for the PSA screening history, they were instructed to skip to question #3. Question #3 asked respondents if they were planning to get a PSA this year. The next question, question #4 asked participants “Are you planning on getting a PSA blood test every year from now on?” The participant’s response choices were “Yes” or “No”.

For the DRE history question, question # 5 asked, “Have you ever had a DRE?” The responses were: 1) Yes, 2) No or 3) Don’t know. If the participant’s response was “No” or “Don’t know” regarding their screening history for the DRE, they were instructed to skip to question #7. Question #7 asked if they were planning to get a DRE this year. The next question was question #8 asking, “Are you planning on getting a DRE test every year from now on?” For the question asking if they had ever had a PSA (question #1) and/or a DRE (question #3) the responses were dichotomized into “Yes” or “No” for this analysis. For the questions asking “Are you planning on getting a PSA or a DRE every year from now

on?” was also dichotomized into “Yes” or “No” for the purposes of this study.

The Decisional Balance Measure is a measure of the pros and cons of decisional balance. The DB measure itself was developed to measure the pros and cons for this dissertation. The pros and cons measure the importance of the items in the survey to determine the participant’s decision to get screened with the PSA and DRE. There are seven positive items and seven negative items in the survey. Responses range from “1 = Not important” to “4 = Very important.” To determine DB, all positive scores were added then divided by seven, with seven being the total number of positive items. This procedure yielded an average measure of the items on the scale. The same procedure was utilized to obtain the scores of the negative items on the survey for PSA and DRE. The results of the procedure determined decisional balance for the pros and cons scores.

Behavioral outcomes are decisional balance and the intention to participate in screening the following year. As stated earlier, men in this study have been screened and completed the survey at the end of the screening procedure. Men are therefore considered to be in the action stage of change.

## *Procedures*

### *Recruitment and Data Collection*

Men were recruited by Ingham Regional HealthWise University committee members for the September 18, 2005 free prostate cancer screening event which took place at Ingham Regional Hospital Greenlawn Campus in Lansing, MI. Muskegon, MI and the Detroit Metropolitan area utilized similar recruitment efforts and data collection processes. In addition, flyers were placed in community centers, barber shops, laundry mattes and churches. Ads were place in local and community newspapers. Respected community leaders secured spots on radio and TV to aid in the recruitment effort. Data was also collected in the Detroit metropolitan area and Muskegon using similar methods for recruitment and data collection.

Surveys were developed in consultation with faculty at the University of Rhode Island, Cancer Prevention Research Center (CPRC) that is geared toward SOC research with regard to PCa screening. These questions were administered during the designated prostate cancer screening days of September 14 and 21, 2005 at the Breslin Cancer Center. The consent form and description of the project was included in the registration packet along with information from Ingham Regional Medical Center (IRMC). Target participation rate was to be approximately 300 men. While waiting for screening, the men were asked to complete the stages of change form, if they so desired. One survey instrument

consisted of prostate cancer screening event items that focused on general questions regarding the PSA and DRE. Two additional survey items looked at the pros and cons of PSA screening and the pros and cons of DRE screening. The pros and cons for the PSA and DRE indicated when participants have reached a decisional balance. A decisional balance means that more pros are revealed to offset the cons of the PSA and DRE. Prochaska and his associates at the University of RI have used decisional balance data to develop interventions that successfully enabled participants to advance to higher level stages of change (Prochaska and DiClemente, 1983).

After completing the PSA and DRE surveys participants turned in the surveys to one of the two researchers or their designees before leaving the Breslin Cancer Center. The Breslin Cancer Center made appointments for screening participants prior to the September screening. As men entered the center, they were to go to a table and ask for the registration material. Upon completing that material, they were directed to a lobby where they began the screening process. During the waiting period each man was given a consent form and asked if they would participate in the study by completing the surveys. An explanation of the study was provided with the consent form. Participants who chose to be engaged in the study were first given an eight question algorithm about prostate screening event items. The next step was to complete the PSA and DRE instruments while waiting to be



called into a room for their procedures. Upon completion of the survey instrument, it was given to one of the researchers or their designees. After the instruments are collected from the Breslin Cancer Center they were sent to the CPRC for analysis. After analyzing the data and determining what change of stage men were in, interventions were to be developed to move people on to the next stage of change before screening for the next year. The CPRC has analyzed data on mammography screening, smoking cessation, skin cancer and cervical cancer screening.

#### *Data Management*

Data safety was the responsibility of George Rowan, Ph.D., Principal Investigator, and Ralph Levine, Ph.D., the Co-Investigator. At the end of the screening process, the Co-Investigator collected all data. The unique survey ID is independent and was unlinked from the respondent's name, address or any other potentially identifying information. All data collected for the study were entered into a secure MS-Access or MS-Excel database. All source documentation (e.g., paper surveys) was locked in cabinets accessible only to authorized research staff. Once entered into an electronic file, data was checked for entry errors. Survey data were used to conduct basic descriptive analyses to classify respondents' decisional balance.

#### *Protection of Human Subjects*

This study is a secondary data analysis of decisional balance and its influence on the pros and cons for participation in PCa screening.

The original study “The Prostate Health Behaviors and Attitudes for the PSA and DRE” was developed by George Rowan, Ph.D., Principal Investigator, Michigan State University and Ralph Levine, Ph.D., Co-Investigator, Professor Emeritus of Michigan State University. Drs. Rowan and Levine worked in consultation with other faculty at the University of Rhode Island, Cancer Prevention Research Center. “The Prostate Health Behaviors and Attitudes for the PSA and DRE” study had Institutional Review Board (IRB) approval through the University Committee on Research Involving Human Subjects (UCHRIS) of Michigan State University (MSU) and collaborating sites, including use of the measures being used in the study. Approval to conduct the original study was obtained July 25, 2005. The Principal Investigator for the study has adhered to all mechanisms for the protection of human subjects. Subjects were informed through the Informed Consent that their participation was voluntary, there would be no payment involved and anonymity would be maintained. In addition, subjects were informed that they could withdraw participation even after signing the consent.

#### *Treatment of missing data*

A common method for treating missing data is mean substitution, which replaces missing data with the average of valid data for the variable question (Graham and Hofer, 2000). Mean substitution was utilized to determine DB for the pros and cons score for participants with

missing data for the survey questions. Approximately 10% of responses were missing for this data set. The mean substituted for the pros score was 2.87 and the mean substituted for the cons score was 2.35. As mentioned earlier, the means to determine DB all positive scores were added than divided by seven, with seven being the total number of positive items. This procedure yielded an average measure of the items on the scale. The same procedure was utilized to obtain the scores of the negative items on the survey for PSA and DRE. The results of the procedure determined decisional balance for the pros and cons scores. Mean substitution was also calculated for participants who did not respond or were missing for age. The mean age was 53.6.

Absence of response was noted throughout the data set for the selected factors of race, age, MS, insurance, screening history, pros and cons, DB and especially for the outcome variable of intent to screen with the PSA and the DRE. Age and DB were utilized means scores to replace missing values. Graham and Hofer (2000) discuss various methods for imputation to minimize missing data. One such method is the maximum likelihood estimation. This method requires specification of a statistical method for each analysis but may be difficult for a novice researcher. The Expectation Maximization algorithm is another method that can be applied to missing data, but requires a sophisticated method to obtain standard errors using auxiliary techniques such as bootstrapping which goes beyond the skills and expertise of this novice researcher. One

acceptable method considered for utilization for this sample to decrease absence of response for the outcome variable of intent was using a regression process. The regression line would produce values that vary from one another. However, this attempt was aborted because it was complicated, confusing and this researcher felt this was more like uneducated guessing. Even though several methods exist on how to deal with missing data, this researcher will obtain knowledge and instruction to pursue and execute these techniques for future research projects.

#### *Support or No Support for the Research Hypotheses*

If the hypotheses expressing positive relationships for the research question are supported by the study findings, one could conclude that the selected factors are important. These factors influenced men to participate in PCa screening in this study as well as influence future screening intention. Even so, the factors related to positive relationships warrant further investigation to explore any latent variables that have yet to be uncovered. Latent variables are those variables that are not directly observed but may be inferred from variables that have been measured (Fain, 1999). For example, if age is a factor associated with positive intention for future screening is there an undiscovered variable that further explains this prediction? In other words, is older age a better proxy for better biological ability to survive?

If the hypotheses are not supported by the study findings, perhaps other factors, such as knowledge level, cultural factors or barriers to

healthcare access, should be considered in future studies to learn what influences the pros and cons of decision making for men to engage in PCa screening and future screening intention. The researcher is aware that finding from this convenience sample might not be comparable to men in the general population.

The next section will address the results of the research question and the hypothesis.

## RESULTS

### *Data Analysis*

Descriptive statistics for the demographic characteristics of the study population will be presented followed by the research question, hypothesis and the analysis used to address them.

In the current study, some participants opted not to respond to all questions. The results presented include all available data. The inclusion of all available data resulted in changes in the denominator for the different factors in the following section. All statistical analysis for the study was completed using the Statistical Package for Social Science (SPSS) version 17 for MS Windows.

### *Results*

Decisional Balance has claimed success with a wide variety of problem behaviors to include screening behavior for mammography, cervical and colorectal screening, it appears appropriate to use with PCa screening behavior. Decisional balance will assist concept development regarding how men weigh the pros and cons. The analysis will consider the determinants of decisions about PCa screening.

Two hundred and eighty seven men responded to the PSA Prostate Health Beliefs and Attitudes Survey measuring the pros and cons. Neutral scores were also measured. Neutral scores of 0.00 indicate that men have an equal score of pros and cons, and therefore, no decisional

balance was determined for or against screening with the PSA. For PSA cons score 3 (1%) of the participants responding indicated that cons outweighed the pros for PSA screening. Thirty (10%) of the participants indicated neutral scores indicating a balance between pros and cons scores and 254 (89%) indicated the pros outweighed the cons for PSA screening (See Table 2).

Two hundred and eighty seven men responded to the DRE Prostate Health Beliefs and Attitudes Survey measuring the pros and cons. Neutral scores were also measured. As stated earlier neutral scores of 0.00 indicate that men have an equal score of pros and cons, and therefore, no decisional balance was determined for or against screening with the DRE. For DRE cons score 8 (2%) of the participants responding indicated that cons outweighed the pros for DRE screening. Thirty-nine (14%) of the participants indicated neutral scores indicating a balance between pros and cons scores and 240 (84%) indicated the pros outweighed the cons for DRE screening (See Table 2).

**Table 2****Decisional Balance Survey Scores**

<b>Decisional Balance Negative, Neutral and Positive Scores for the PSA Prostate Health Behaviors &amp; Attitudes Survey</b>		
N=287		
<b>Scores</b>	<b>Ranges</b>	<b>Number Responding and Percentage</b>
Negative	-1.00 to -0.30	3 (1%)
	-0.29 to -0.01	0 (0%)
Neutral	0.00 to 0.00	30 (10%)
Positive	0.01 to 0.49	30 (11%)
	0.50 to 0.99	29 (11%)
	1.00 to 1.99	95 (38%)
	2.00 to 2.99	80 (31%)
	3.00 to 3.99	20 (9%)
<b>Decisional Balance Negative, Neutral and Positive Scores for the DRE Prostate Health Behaviors &amp; Attitudes Survey</b>		
N=287		
<b>Scores</b>	<b>Ranges</b>	<b>Number Responding and Percentage</b>
Negative	-2.00 to -0.15	8 (2%)
	-0.14 to -0.01	0 (0%)
Neutral	0.00 to 0.00	29 (14%)
Positive	0.01 to 0.49	25 (10%)
	0.50 to 0.99	20 (8%)
	1.00 to 1.99	100 (43%)
	2.00 to 2.99	80 (33%)
	3.00 to 3.99	15 (6%)



### *Sample Characteristics*

Participants in the study ranged in age from 40-75 with a mean age of 53.6.

There were more AAM than other races, 200 (74.1%) versus 124 (25.9%), respectively. There are equal numbers of married/partnered participants and those without partners, 162 (50%) versus 162 (50%). Participants were asked if they had health insurance. A lack of response to the question was tabulated in the analysis as a non-covered participant. There were more men with insurance coverage 187 (60%) than men without coverage 137 (40%). (See Table 3).

**Table 3****Demographic Characteristics of the Study Population (N = 324)**

<b>Variable</b>	<b>n*</b>	<b>%</b>	<b>M</b>	<b>SD</b>	<b>Range</b>
<b>Age</b>	<b>324</b>		<b>53.6</b>	<b>10.0</b>	<b>40-75</b>
<b>Race</b>					
African-American	200	74.1			
Caucasian	124	25.9			
<b>Marital Status</b>					
Married/Partnered	162	50.0			
Other	162	50.0			
<b>Insurance</b>					
Covered	187	60.0			
Not Covered	137	40.0			

***Research Question #1:*** What is the relationship between the factors, DB, and intent to screen with the PSA and the DRE?

Crosstabulations and Chi-Square Tests were the first steps in the analysis to determine a relationship between the factors of race, age, marital status, insurance and screening history and the outcome. Separate crosstabulations and Chi-Square Test or Fishers Exact Test was performed for the factors and PSA and DRE intent.

***Factors and PSA Intent to Screen***

***Race***

Race was categorized as Caucasian and AA. From a total sample of (N=324) results show 171 (52.8%) responding and 153 (47.2%) no response/missing. Of the 171 responding, 33 (19%) were Caucasian and 138 (81%) were AA. Of the 33 Caucasians responding, 3 (9.0%) of the participants had no intent to screen with the PSA; 30 participants (91.0%) indicated PSA intent. For AA, 4 (3%) of them had no intent to screen and 134 (97%) indicate intent. No significant relationship was reported for Pearson Chi Square Test between race and intent to screen with the PSA. (See Table 4)

**Table 4**

**Crosstabulations for Factors, Number of Participants Included and Number Missing for PSA Screening Intent and No Intent**

<b>Factors</b>	<b>n* (%)</b>	<b>n* missing (%)</b>	<b>Intent (%)</b>	<b>No Intent (%)</b>	<b>p-value</b>
<b>Race</b>	<b>171 (53)</b>	<b>153 (47)</b>			<b>0.107</b>
Caucasian	33 (19)		30 (91)	3 (9)	
AA	138 (81)		134 (97)	4 (4)	
<b>Age</b>	<b>196 (60)</b>	<b>128 (40)</b>			<b>0.325</b>
49 or younger	49 (25)		48 (98)	1 (2)	
50 or older	147 (75)		139 (95)	8 (5)	
<b>Marital Status</b>	<b>196 (60)</b>	<b>128 (40)</b>			<b>0.304</b>
Single	88 (45)		82 (93)	6 (7)	
Married/Partnered	108(55)		105 (97)	3 (3)	
<b>Insurance</b>	<b>154 (48)</b>	<b>170 (52)</b>			<b>0.627</b>
Coverage	111 (71)		107 (96)	4 (4)	
No Coverage	43 (28)		41 (95)	2 (5)	
<b>Screening Hx</b>	<b>147 (45)</b>	<b>177 (55)</b>			<b>0.623</b>
Yes	78 (53)		75 (96)	3 (4)	
No	69 (47)		68 (99)	1 (1)	

p = 0.05

\*=Valid responses from (N = 325)

### *Age*

Age was categorized as 49 years or younger and 50 years or older. From a total sample (N=324) results show 196 (60.4%) responses and 128 (39.5%) no responses/missing. Of 196 responding, 49 (25%) participants were age 49 or younger and 147 (75%) were 50 or older. Participants in the 49 or younger category report 1 (2.0%) participant indicted no intent to screen with the PSA and 48 (98%) indicated intent. For 50 years or older, results show 8 (5%) of the participants with no PSA intent and 139 (95%) report intent to screen. The Chi-Square Test does not show a significant relationship between age and intent to screen (See Table 4).

### *Marital Status*

Marital Status (MS) is categorized into single and married/partnered. From a total (N =324) results show 196 (60%) responding and 128 (39.5%) no response/missing. Of the 196 participants responding, 88 (45%) were single and 108 (55%) were married/partnered. Results for single participants show 6 (7%) have no intent to screen with the PSA and 82 (93%) with intent to screen. For married/partnered, the results show 3 (3%) participants have no intent to screen and 105 (97%) report intent. The Fisher's Exact Test reports no relationship between MS and intent to screen with the PSA (See Table 4).

### *Insurance*

Insurance is categorized into coverage and no coverage. From a total of (N=324) results show 154 (48%) participates responding and 170 (52%) no response/missing for insurance coverage. Results show 43 (28%) participants with no coverage and 111 (71%) with coverage. For participants with no coverage, 2 (5%) have no intent to screen and 41 (95%) indicated intent to screen with the PSA. For those with coverage, 4 (4%) report no intent and 107 (96%) report intent to screen. The Fisher's Exact Test indicated there is no relationship between insurance coverage and intent to screen (See Table 4).

### *PSA Screening History*

PSA screening history is categorized in "Yes" and No." From the total respondents (N=324), results show 147 (45%) participants responding and 177 (55%) no response/missing. Participants responding "No" to having a PSA were 69 (47%) and participants responding "Yes" were 78 (53%). For the 69 responding "No" to a screening history, 1 (1.5%) had no intent for future screening. The remaining 68 (98%) indicated intent to screen. Of the 78 who responded "Yes" to intent screening, 3 (4%) had a screening history but no intent for future screening and the remaining 75 (96%) indicated future intent to screen with the PSA. The Fisher Exact Test did not show a significant relationship for PSA screening history and intent to screen with the PSA (See Table 4).

To further explore the relationship of the factors, DB and intent to screen with the PSA a Point Biserial Correlation was conducted.

*Point Biserial Correlations with DB, Factors and PSA Intent*

Point Biserial Correlations did show a slightly negative significant association ( $p=0.003$ ) with AA race and DB. There was also a slightly positive significant relationship ( $p=0.005$ ) for DB and having insurance coverage. Finally, results show a slightly positive significant association ( $p=.005$ ) with DB and having had a PSA screening history. There was no significant association with age, MS or intent to screen with the PSA for DB (See Table 5).

**Table 5**

<b>Point Biserial Correlations for DB, Factors and PSA Intent</b>			
<b>DB PSA</b>	<b>N</b>	<b>r</b>	<b>p-value</b>
Race	287	-0.174	0.003*
Age	324	0.034	0.548
Marital Status	324	0.260	0.063
Insurance	260	0.175	0.005*
PSA Screening Hx	241	0.180	0.005*

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\*p=0.05



## *Factors and DRE Intent to Screen*

### *Race*

Race was categorized as Caucasian and AA. From a total sample of (N=324) results show 168 (52%) participants responding and 158 (48%) no response/missing. Of the 168 responding, 33 (19%) were Caucasian and 135 (81%) were AA. Of the 33 Caucasians responding, 5 (15%) had no intent to screen with the DRE and 28 (85%) indicated PSA intent. Of the 135 AA, 5 (4%) indicated no intent to screen and 130 (96%) indicated intent to screen with the DRE. The Pearson Chi-Square reports a significant relationship ( $p=0.013$ ) with AA race and intent to screen (See Table 6).

**Table 6**

**Crosstabulations for Factors, Number of Participants Included and Number Missing for DRE Screening Intent and No Intent**

<b>Factors</b>	<b>n* (%)</b>	<b>n* missing (%)</b>	<b>Intent (%)</b>	<b>No Intent (%)</b>	<b>p-value</b>
<b>Race</b>	<b>168 (52)</b>	<b>158 (48)</b>			<b>0.013**</b>
Caucasian	33 (19)		28 (85)	3 (9)	
AA	135 (81)		130 (96)	4 (4)	
<b>Age</b>	<b>192 (60)</b>	<b>132 (40)</b>			<b>0.031**</b>
49 or younger	49 (25)		48 (98)	1 (2)	
50 or older	144 (75)		131 (91)	13 (9)	
<b>Marital Status</b>	<b>192 (60)</b>	<b>128 (40)</b>			<b>0.834</b>
Single	94 (49)		88 (94)	6 (6)	
Married/Partnered	98 (51)		92 (93)	7 (7)	
<b>Insurance</b>	<b>156 (48)</b>	<b>168 (52)</b>			<b>0.399</b>
Coverage	106 (68)		98 (93)	8 (7)	
No Coverage	50 (32)		48 (96)	2 (4)	
<b>Screening Hx</b>	<b>139 (43)</b>	<b>185 (57)</b>			<b>0.411</b>
Yes	59 (41)		54 (92)	5 (8)	
No	80 (58)		76 (95)	4 (5)	

p=0.05

\*=Valid responses from (N = 325)

\*\*=Chi Square Test

### *Age*

Age was categorized as 49 years or younger and 50 years or older. From a total sample (N=324) results show 192 (60%) participants responded and 132 (40%) no responses/missing. Of 192 participants responding, 48 (25%) were age 49 or younger and 144 (75%) were 50 or older. Participants in the 49 or younger category reported none of them had had a DRE and all 48 indicated intent to get a DRE screening. For 50 years or older, results show 13 (9%) participants had not had a DRE and they did not indicate intent to get screened. Of the 131 (91%) participants who had had a DRE, all of them indicated future intent to get a DRE screening. The Chi-Square Test does show a significant relationship ( $p=0.031$ ) between age and intent to screen (See Table 7).

### *Marital Status (MS)*

MS is categorized into single and married/partnered. From the total (N =324), results show 192 (60%) participants responding and 128 (40%) no response/missing. Of the 192 responding, 94 (49%) participants were single and 98 (51%) were married/partnered. Results for single participants show 6 (6%) have no intent to screen and 88 (94%) with intent to screen with the DRE. For married/partnered participants the results show 7 (7%) have no intent to screen and 91 participants (93%) report intent to screen with the DRE. The Fisher's Exact Test reports no significant relationship between MS and intent to screen (See Table 7).

### *Insurance*

Insurance is categorized into coverage and no coverage. From the total (N=324), results show 156 (48.1%) participants responding and 168 (51.9%) no response/missing. Results show 50 (32%) with no coverage and 106 (68%) have coverage. For participants with no coverage, 2 (4%) have no intent to screen with the DRE and 48 (96%) indicated intent to screen. For those with coverage, 8 (7%) participants report no intent while 98 (93%) report intent to screen with the DRE. The Chi Square Test indicated there is no significant relationship between insurance coverage and intent to screen with the DRE (See Table 7).

### *DRE Screening History*

DRE screening history is categorized in “No” and “Yes”. From the total (N=324), results show 139 (43%) participants responding and 185 (57%) no response/missing. Participants responding “No” to having had a DRE were 80 (58%) and participants responding “Yes” were 59 (41%). Of the 80 responding “No” to a DRE screening history, 4 (5%) indicated no intent to screen and the remaining 76 (95%) indicated intent. Of the 59 who responded, “Yes” to intent to screen with the DRE, 5 (8.5%) who had had a DRE screening indicated no future intent to screen and the remaining 54 (91.5%) indicated they would participate in a future DRE screening. The Pearson Chi-Square Test does not show a significant relationship with DRE screening history and intent to get screened with the DRE (See Table 7).

To further explore the relationship of the factors, DB and intent to screen with the DRE a Point Biserial Correlation will be conducted.

*Point Biserial Correlations with DB, Factors and DRE Intent*

Point Biserial Correlations did show a slightly positive significant association ( $p=0.005$ ) with DB and having insurance coverage. Point Biserial Correlations also show a slightly positive significant association ( $p=0.003$ ) with DB and DRE screening history. DB did not show a significant association with intent to screen with the DRE, age, race, or MS (See Table 7).

**Table 7**

<b>Point Biserial Correlations for DB, Factors and DRE Intent</b>			
<b>DB DRE</b>	<b>N</b>	<b>r</b>	<b>p-value</b>
Race	287	-0.060	0.314
Age	324	0.021	0.711
Marital Status	324	0.009	0.867
Insurance	260	0.175	0.005*
DRE Screening Hx	237	0.191	0.003*

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\*p=0.05

## *Hypotheses*

The following section will show the results Hypotheses #1, #2, #3 and #4.

**Ho 1:** There is a relationship between the factors, DB and intent to screen with the PSA and the DRE (See Table 8).

Crosstabulations of race, age, MS, insurance coverage and PSA screening history with PSA screening intent does not show a significant association between the factors and intent to screen with the PSA. Point Biserial correlation does show a slight negative association with DB and AA race and a slight positive association between DB and having insurance coverage and DB and having had a PSA screening.

**Ho 2:** Being 50 or older, married and Caucasian vs. all others are associated with intent to screen with the PSA and DRE (See Table 8).

Crosstabulations of factors and intent to screen with the PSA does not support Hypothesis #2. Crosstabulations for the DRE does not support Hypothesis #2. Age 50 or older was significant ( $p=0.031$ ) as was race ( $p=0.013$ ) for DRE intent. DRE intent for screening pertained to AAM race ( $p=0.013$ ); not Caucasian race as hypothesized. However, age 50 or older was significant ( $p=0.031$ ) for DRE screening intent.

**Ho 3:** Insurance coverage is directly associated with intent to screen with the PSA and DRE (See Table 8).

### *Insurance Coverage and PSA intent*

Crosstabulations for insurance and PSA intent show 154 (48%) of participants responding and 170 (53%) did not respond/missing regarding insurance coverage and intent to screen. One-hundred eleven participants (72%) reported having insurance and 43 (28%) reported not having insurance. The results did not show a positive relationship for insurance and PSA intent to screen (See Table 8). To further explore a relationship between insurance and intent to screen with the PSA, the results of a Point Biserial Correlation does not show a significant relationship with insurance and PSA intent to screen (See Table 8).

### *Insurance Coverage and DRE intent*

Crosstabulation for insurance and DRE intent show 156 (48.1%) participants responding and 168 (51.9%) did not respond/missing in reference to insurance coverage and intent to screen. One hundred six (67.9%) participants reported having insurance and 50 (32.1%) report not having insurance. The results did not show a relationship for insurance and DRE intend to screen (See Table 8). To further explore a relationship between insurance and intent to screen with the DRE, the results of a Point Biserial Correlation does not show a significant relationship with insurance and DRE intent to screen (See Table 8).

**Ho 4:** Screening history is directly associated with intent to screen with the PSA and the DRE (See Table 8).



### *PSA Screening History and Intent*

Crosstabulation for PSA screening history and intent to screen with the PSA show 147 (45%) participants responding and 177 (55%) with no response/missing from a total (N=324). The results do not show a significant relationship for PSA screening history and intent to screen with the PSA (See Table 8). To further explore a relationship between PSA screening history and intent to screen with the PSA, the results of Point Biserial Correlation supports the previous crosstabulation results and does not show a significant relationship with PSA screening history and intent to screen (See Table 8).

### *DRE Screening History and Intent*

Crosstabulation for DRE screening history and intent to screen with the DRE reports 139 (43%) participants responding and 185 (57%) no response/missing from the total (N=324). The results do not show a significant relationship with DRE screening history and intent to get screened with the DRE (See Table 8). To further explore a relationship between DRE screening history and intent to screen with the DRE, the Point Biserial Correlation supports the previous crosstabulation results and does not show a significant relationship with DRE screening history and intent to screen (See Table 8).

**Table 8****Summary Results of Hypotheses**

<b>Summary Results of Hypotheses #1, #2, #3, &amp; #4 for PSA</b>		
<b>Hypothesis Table</b>	<b>Support/No Support</b>	<b>Reference</b>
#1: There is a relationship between factors, DB and PSA intent to screen	<b>Partial Support</b> DB & AA race DB & having insurance DB & PSA screening Hx	3
#2: Being 50 or older, married and Caucasian influence PSA intent	<b>No Support</b> (Being 50 or older)	2
#3: Insurance coverage is directly associated with PSA intent	<b>No Support</b>	2
#4: PSA Screening Hx is directly associated with PSA intent	<b>No Support</b>	2

<b>Summary Results of Hypotheses #1, #2, #3, &amp; #4 for DRE</b>		
<b>Hypothesis Table</b>	<b>Support/No Support</b>	<b>Reference</b>
#1: There is a relationship between factors, DB and DRE intent to screen	<b>Partial Support</b> DB & having insurance DB & DRE screening Hx	5
#2: Being 50 or older, married and Caucasian influence DRE intent	<b>Partial Support</b> (Being 50 or older)	4
#3: Insurance coverage is directly associated with DRE intent	<b>No Support</b>	4
#4: PSA Screening Hx is directly associated with DRE intent	<b>No Support</b>	4

In summary, crosstabulations and Chi-Square Test were utilized to analyze the relationships between the factors and the outcome in separate models for the PSA and the DRE. No significant relationships were found for the factors and outcome for PSA intent to screen. However, intent to screen with the DRE did show a significant relationship with the factors of race (AA) and age (being 50 or older). Further analysis utilizing Point Biserial Correlations for DB, factors and intent to screen with the PSA shows a result of a slightly negative association between AA race and DB. A slightly positive association was found for DB and having insurance and for DB and having had a previous PSA. For DB, factors and DRE intent resulted in a slightly positive association with having insurance coverage and having had a previous DRE screening.

The next section was focus on the discussion of the results, followed by nursing implications, nursing interventions and limitations of the study.

## DISCUSSION

### *Interpretation of Findings*

PCa is a major health problem in the US and more prevalent in AAM than other ethnic group in this country (Pendleton, et al., 2008). Screening for PCa is the most common method used in early detection of PCa. However, it is unclear how men make decisions for or against screening.

The purpose of this exploratory descriptive study was to examine factors that influence men's perceived decisional balance of pros and cons for men that participated and completed surveys in a free PCa screening program in three Michigan communities. The secondary purpose of the study is to develop the groundwork for future interventions to support at-risk men, including AAM, to develop the health habit of getting screened every year with a PSA and DRE.

Decisional Balance has considerable promise in describing, assessing and indicating behavior in various contexts of the basis on the perceived pros and cons of intent or no intent to screen with the PSA and DRE. The cons reflect men's concerns regarding the risk of PCa screening such as fear of the screening, feelings of embarrassment and fear of the screening. The pros reflect men's concerns regarding the benefits of getting screened such feeling good about practicing the behavior and decreasing anxiety about individual health.

The majority of the participants reported that the pro scores outweighed the neutral and cons scores in this sample of men for screening with the PSA. This indicates that of the 287 men responding, two hundred and fifty men had positive attitudes and beliefs for getting screened with the PSA. Thirty of the 287 men had neutral scores indicating that pros and cons were equal and 3 of the 287 participants indicated that the cons outweighed the pros for screening with the PSA. Perhaps further development of reliable and valid culturally component instruments to measure perceived risks and benefits that would include a prior education intervention could provide more in sight into the neutral and con scores of this population for screening with the PSA.

The majority of the participants reported that the pro scores outweighed the neutral and cons scores in this sample of men for screening with the DRE. This indicates that of the 287 men responding, two hundred and forty men had positive attitudes and beliefs regarding screened with the DRE. Thirty-nine of the 287 men had neutral scores indicating that pros and cons were equal and 8 of the 287 participants indicated that the cons outweighed the pros for screening with the DRE. Perhaps further development of reliable and valid culturally component instruments to measure perceived risks and benefits that would include a prior education intervention could provide more in sight into the neutral and con scores of this population for screening with the PSA.

## *Factors and PSA Intent*

### *Race*

Race was not significantly related to intent to screen with the PSA. One hundred and seventy one men responded out of the total sample (N=324). This included 33 Caucasians and 138 AAM. This leaves 153 participants who did not respond to the intent to screen with PSA. There may be several hypotheses for why men did not respond to “Will you get a PSA test every year from now on?” This may limit the statistical power, to show differences in AAM and Caucasians in the sample of men who responded. In actuality, this is a heavily loaded question: “...every year from now on?” The question may not appear to be “loaded” by researchers and HCP, but that is because we are knowledgeable and know that good health practices should be practiced as recommended and not sporadically. Yet, for laypersons making healthcare decisions of this magnitude, it may have been overwhelming to answer the question. After all, it remains unclear how patients make healthcare decisions. There is no way of knowing what other thoughts occurred to these men as they read “...every year from now on?”

First of all, are they aware that screenings are recommended yearly? Do they desire to be screened every year regardless of recommendations? The participants may have questioned where and if free future screenings would occur. If not, could/would they get screened elsewhere? Would screening be free or would cost be involved?

Another thought regarding the great number of missing responses, may have some association with trust issues surrounding the researchers and the HCP who performed the exam. There is an abundant amount of literature regarding the lack of trust many AA people have of the healthcare system. In a recent conversation with a Caucasian physician it was stated that AAM were too scared to participate in research efforts that could be of great benefit to the AA community. When the trust issue was mentioned as a reason why some AA people do not become involved in research and the Tuskegee Syphilis study was given as an example, the reply was that all AA's could not know about Tuskegee's "mishap" and that past experience had little to do with current problems of getting AA's to participate in any type of research study. The HCP may have been correct that some AA's are unaware of the Tuskegee Syphilis study, but most AA's are aware that historically in the US, they have been mistreated and abused in almost every facet of daily living.

### *Age*

Age was not a significant factor for PSA intent to screen. The majority (64%) of the participants was 50 years or older and 36% was 49 years or younger. The average age of men in the study was 53.6.

Age not being significantly related to intent is cause for concern, especially since recommendations for PCa screening suggest starting at age 50 for men with a life expectancy of ten years and age 40 for AAM

and other at-risk men (ASC, 2007). In addition, literature reports that the lifetime risk of developing and dying from PCa rises substantially among men after age 50 (Papatsoris and Anagnostopoulos, 2008) plus, a two-fold increase of risk exists for AAM and at-risk men.

There may be several reasons why age did not show a relationship with intent to screen with PSA. First, there may be a lack of knowledge regarding PCa in this study population. One could argue that since the men did accept the invitation to get screened, they at least had some minimum knowledge that screening was an appropriate health behavior. However, what may have been lacking in their knowledge is recommended screening guidelines pertaining to age, prevalence of PCa in AAM and that AAM are more likely to be diagnosed at younger ages with more advanced stages when compared to Caucasians of the same age group.

Men in this study may also be unaware that family history is a risk factor for development of PCa, and finally, risk of developing PCa increases with age. Perhaps this finding may be an indication of previous studies. Chiu, et al., (2005) reported that men 50 years or older decreased participation in PCa screening. Lambert et al., (2002) suggest that as men age they may lack the ability to navigate the health care system to seek care and obtain information on health promotion and disease prevention. In addition, Myers, Hyslop, Jennifer-Dozier and Wolf (2000) report in a study of AAM (N=548) that men who were 50 years or



older were significantly less likely than younger men to report intent to screen with the PSA. While these findings may be supported, it is unsettling to perceive that at age 54, these men have already started to decline in participation in health promotion activities. Yet, maybe the larger concern is that they have had little, if any, participation in early detection and health promotion as indicated by 47% (n=147) of the men reporting that they had not had a PSA screening. Even though 53% reported having had a PSA, the number of men who had not had a PSA screening is almost equal.

### *Marital Status*

Marital status for PSA intent to screen was found not to be significant. Single men and married/partnered were approximately equal in the sample for this study. While two cancer screening studies pertaining to sunscreen and mammography were found using the TTM and DB, MS was not included as a variable. However, other research relating to marriage and PCa screening (Tudiver and Talbot, 1999; Weinrich, 2001; Pierce, et al., 2003) reports that married men were more likely to participate in PCa screening than men who were not married. However, Niven et al., (2001) report contradicting results and did not find interpersonal interactions with family and friends to be significant in influencing screening behavior.

Wolf and Schorling (1998) report that marital status may have a different type of association with knowledge about PCa screening. These

researchers report that when an informational intervention was used to increase PCa knowledge there was decreasing interest in screening by married men (Wolf and Schorling, 1998). They do not say why/what the reason was for this finding, but one could speculate the decrease in screening interest for married men was that they did not desire knowledge about PCa or did not like the design of the information intervention. Other possibilities regarding the decrease in screening interest for married men is that the intervention information may have been frightening or the information made them uncomfortable to the point that they decided against screening with the PSA.

### *Insurance*

Insurance was not significantly associated with PSA intent to screen. There were 154 men who responded to having/not having insurance coverage. One-hundred eleven (71%) men reported having insurance and 43 (28%) reported not having insurance. Rimer (1996) concludes in a mammography study (N=926) of predominately low-income women using a nine item DB scale that DB and health insurance coverage were primary factors for obtaining a mammography.

Even though men involved in this study are participants in a free community PCa screening program, aspects of SES, such as not having insurance coverage may limit access to care and may also be considered a barrier to care to include participation in screening. Not having

insurance has been suggested as an explanation for lack of PCa knowledge, low screening rate and advanced stage at diagnosis.

In a study of screening practices in older men, Steel et al., (2000) do not use insurance coverage as a factor but do report that while controlling for all other demographic variables only income predicted having had a PSA or a DRE. Men who earned \$25,000 or more per year were more likely than men who earned less than \$25,000 annually to get a PSA or DRE.

#### *PSA Screening History*

PSA screening history was found not to be significant with PSA intent to screen. Slightly more men, 78, had had a PSA screening compared to 68 that had not had a PSA screening (n=147). One study, Rimer (1995), reports in a sample (N=1,144) that only 20 women became less favorable toward mammograms over one year indicating that screening history was a factor to continue mammograms. Several studies (Blocker, et al., 2006; Ford, et al., 2006) suggest that future screening intent is positively associated with having had a recent PSA and DRE. However, these studies included a usual source of care with the HCP sharing information about the benefits/risk of screening and/or recommending screening.

This current exploratory study did not offer questions regarding a usual source of care even though more of the participants were insured when compared to those who were not insured. In one community where

this researcher was involved in this study effort, several men did voluntarily report that they had had a PSA and a DRE and were using this free screening to validate the physicians report. In other words it seems that the men were was using this free screening as a “second opinion” and could be considered as what the literature refers to as the “worried well” (Consedine et al., 2006). Characteristics of the worried well are being white, older than 50 and having a usual source of care (Consedine, et al., 2006). These characteristics were very similar to men in the free screening that reported they had had a recent PCa screening and just wanted to be sure previous information was still valid.

On the other hand, one study did report being older and having had a PSA or DRE in the past were negatively associated with intention to get screened in the future due to perceived PCa susceptibility and fatalism about PCa screening. In addition, skepticism regarding the motivations of the researchers involved in the study, test accuracy and worry about PCa diagnoses were also suggested as reasons for the negative association with intent (Papatsoris and Anagnostopoulos, 2008).

In summary, the factors of race, age, MS, insurance coverage and screening history were not significantly associated with PSA intent to screen. Yet, the literature does report that Caucasians are more likely to participate in PCa screening when compared to AA's. Even though the literature reports conflicting information on the influence of age on

participation in screening activity, younger men nor older men were significantly associated with PSA screening in this study.

#### *Factors and DRE intent to screen*

##### *Race*

African-American race was found to be positively associated with DRE intent to screen. This is an unexpected finding due to studies that report the number of AAM poor perception, knowledge and myths surrounding the DRE (Myers, et al., 2000; Richardson, et al., 2004). For a number of men, especially AAM, being screened with the DRE is associated with homosexuality and a threat to manhood (Sanchez, et al., 2007; Richardson, et al., 2004; Clarke-Tasker, et al., 2002). Men's attitude regarding the DRE were more negative for younger, less educated and having a low income compared to being older, more educated and having a higher income. Other reasons that the finding is unexpected, are that many men express embarrassment and discomfort with the DRE and tend to avoid the exam (Clark-Tasker and Wade).

While volunteering in the local free PCa screening program, this researcher was witness to several men expressing that getting the DRE was the most unpleasant part of the screening. Several men referred to the DRE as the "gold finger" test and reported experiencing less discomfort when a female performed the exam because women's fingers tended to be smaller.

The best method for detecting PCa currently involves screening with both the PSA and DRE (Gwede, 2006). Either test alone is insufficient; yet, several studies focus only on PSA screening. Men in a focus group were knowledgeable about getting both the PSA and DRE and stated they did not feel that the DRE was a thorough exam if not accompanied by the PSA. (Sanchez,et al., 2007).

### *Age*

Even though 132 (40%) men did not respond to age, 192 (60%) did respond. None of the men age 49 or younger had had a DRE and but more than 90% of men 50 or older had had a DRE. All the participants except 13 men in the 50 or older age group indicated future intent to screen. This is encouraging, yet it is realized that we do not know if the men indicating they would get a DRE will actually do so. Hopefully these participants will follow through on future screening with the DRE. This is why follow-up studies are important as well as continuity of care. With respect to laws of confidentiality, nurses and other HCP could keep track of clinic visits, reinforce health education, introduce and disseminate new information on PCa screening and other health promotion and health matters. This could also allow nurses and other HCP to develop interventions to promote screening practices and could facilitate work toward gaining additional insight on the TTM and SOC for PCa screening activity.

Being age 50 or older was found to be positively associated with DRE intent to screen. This is contradictory to studies (Lambert, et al., 2002, Hyslop, et al., 2000) that report that men age 50 or older decrease participation in screening practice. Yet, this finding does support studies that suggest that as men age, they increase participation in PCa screening behavior (Chiu, et al., 2005) Logically, this would seem more due to age recommendations for PCa screening suggesting that men not a risk for PCa begin screening at age 50, and this is stage in life when men may experience other health issues with the genital-urinary system such as Benign Prostatic Hyperplasia. Age might also be significant because this is the age group that is concerned about developing PCa and the impact the disease would have on sexual health and functioning (Lambert, et al., 2002).

#### *Marital Status*

Marital status was not associated with intent to screen with the DRE. Perhaps the men in this sample did not perceive they were influenced by wives/partners. While every wife is not knowledgeable regarding the importance of early detection and may/may not encourage and/or influence men's screening behavior, women, including wives, mothers, daughters and sisters should also be included in health education sessions that provide information regarding PCa screening benefits/risks. Many women in the local community who have lost husbands and loved ones due to PCa diagnosis have become community

activists/leaders “in getting the word out” to inform community members on health issues, including PCa and screening. They also work to bring HCP to local churches, barber shops and community centers to make health care available for those who lack a usual source of care or for those who tend to ignore their health. While wives/partners may not show significance within this sample population, they are certainly significant in the community to promote health and well-being for others.

### *Insurance*

Insurance is not associated with DRE intent to screen. This is not surprising because it was also not associated with PSA intent to screen and the tests are given simultaneously. Even though more men have insurance than those who do not have coverage in this study, because this is a free screening program, cost is not a barrier. As an afterthought, it may have been in the best interest of the study to use another variable that is perceived as a barrier to screening. At the time the insurance variable was selected, it was to serve as a proxy for access to participate in screening.

### *DRE Screening History*

There is no association between DRE screening history and intent to screen; 139 men responded and 185 men did not respond. This is very similar to the large non-response rate for the PSA screening with 177 participants not responding. However, of the 139 men who did respond, 80 participants indicated they had never had a DRE and 59



indicated they been screened with the DRE. Yet, of the 80 who had not had a DRE, 76 indicated intent and of the 59 who had had the DRE, 5 did not intent to get one in the future. While 76% of the men who had not had a DRE and approximately 90% of those who had had the DRE indicated future intent is hopeful, the unsettling issue is the 185 men who did not respond. We have no way of knowing if they had or had not been screened with the DRE. Why is the non-response rate so high and why is it that 80 out of 139 had not had a DRE? Perhaps the literature is correct that this test is embarrassing for men or their perception of the technique is the reason they do not obtain it. In future studies or the continuation of this current study, analysis could show the results of the characteristics of men who had not been screened which could be compared to findings in the literature that suggest that younger age, lower income and less educated men are the characteristics for those who avoid the DRE vs. older age, higher income and better educated men who accept and utilize the test.

#### *Decisional Balance, Factors and PSA intent*

There is a slightly negative association for DB and AA race. This indicates that DB scores decreased for AA's in the sample as Caucasians DB scores increased. This finding is supported by the literature. (Plowden, et al., 2000; Weinrich, et al., 2003; Pendleton 2008) posit that AA's have less favorable behaviors and attitudes regarding PCa screening when compared to Caucasians. On second thought, it could be possible

that this population of AA participants is aware of the screening controversy surrounding the risks vs. the benefits of screening and/or they may be skeptical of the PSA efficacy.

There is a slightly positive association for PSA DB and having insurance coverage. This indicates that having insurance coverage has positive impact on DB to participate in PCa screening. Even though the association is slightly positive ( $p=0.005$ ) between having insurance and DB for intent to get screened with the PSA having insurance appears to give these men the security and satisfaction of knowing that health care costs are covered. While insurance type is unknown as insurance is categorized as, coverage/no coverage, men perceive they could receive health care (e.g., PCa screening) with minimal or no out-of-pocket costs. Since this is a free community screening program, cost for the participants is not relevant, yet, this is not to say that even with insurance coverage some out-of-pocket cost may occur, such as co-pays for office visits, possible out-of-network costs or lab fees for a blood draw for the PSA.

There is also a slightly positive association for DB and PSA screening history. This supports the findings of Blocker et al., (2006) who suggest that future screening is positively associated with having had a recent PSA or DRE screening. This might also indicate that once men have made the initial decision to get a PCa screening and receive the test, the procedure is now demystified and men may decide to continue

to repeat the practice of participating in health behavior. However, this is not to say that men who participate will not discontinue screening, but that once they have made this a health habit, it is more likely that they will continue to get screened with the PSA.

There is no association for DB and age, MS or intent to screen. Therefore, age does not have an impact on DB. This is interesting because it would seem logical that considering the average age of these participants, 53.6, and they volunteered to attend a free PCa screening program, at some point they decided they should be involved in health promotion activities however, this does not appear to be the case for this population. MS is also not associated with DB. Perhaps this is a private individualized decision and the participant alone decides for or against screening. DB has no association with PSA intent to screen. One rationale for the lack of association between PSA DB and intent is that men who have a regular source of care may visit their HCP for a yearly physical without cognitively considering he has made a decision for intent to screen. Or some men may go for a routine exam and simply follow the plan of care the HCP implements. On the other hand, men without a usual source of care may have intent to be screened but may perceive barriers that make this a difficult task.

#### *Decisional Balance, Factors and DRE intent*

There is a slightly positive association ( $p=0.005$ ) for DRE DB and having insurance coverage. This indicates that having insurance has a

positive impact on DB to participate in PCa screening. The same results were found with PSA DB and having insurance coverage. While the same rationale applies here to what has already been written for PSA DB, one other rationale for the association may be that men perceive the screening as a unit; PSA and the DRE. This may also indicate that having insurance coverage has a positive impact on DB to engage in PSA screening and that having insurance coverage gives men the security of knowing that health care cost are covered

There is also a slightly positive association for DRE DB and screening history. This supports the findings of Blocker et al., (2006) who suggest that future screening is positively associated with having had a recent PSA or DRE screening. This is similar to the findings of the positive association between PSA DB and screening history. Again, this could indicate that once men have knowledge about PCa screening and received the test, the procedure is now demystified and men continue with the practice of positive health behavior. In addition, this finding could indicate that men are aware of the need to get screened with both the PSA and DRE for complete PCa screening effectiveness.

### *Hypotheses Results*

**Ho 1:** There is a relationship between the factors, DB and intent to screen with the PSA and the DRE.

The hypothesis is not supported. There is no relationship with the factors and PSA intent to screen. However, AA race is positively

associated with DRE intent to screen as well as age of being 50 years and older. DRE intent to screen is not associated with the factors of MS, insurance coverage or DRE screening history. For DB, factors and PSA intent there is a slight negative association for DB and AA race. Results also show a slight positive association with PSA DB and having insurance coverage and PSA DB and PSA screening history. For DRE DB there is a slight positive association with having insurance coverage and a slight positive association with having had a DRE screening history. There is not association for DRE DB with age, race, MS or intent to screen with the DRE (See Table 8).

**Ho 2:** Being 50 or older, married and Caucasian vs. all others is associated with intent to screen with the PSA and DRE.

The hypothesis is not supported. Being age 50 or older is significant, MS is not significant and AA race, not Caucasian race, is significantly associated with intent to screen with the PSA or DRE (See Table 8).

**Ho 3:** Insurance coverage is directly associated with intent to screen with the PSA and the DRE.

The hypothesis is not supported. Insurance coverage does not show an association with intent to screen with the PSA or the DRE (See Table 8).

**Ho4:** Screening history is directly associated intent to screen with the PSA and the DRE.

The hypothesis is not supported. Screening history does not show an association with the PSA or the DRE (See Table 8).

To summarize, none of the factors were associated with PSA intent to screen. For the factors and DRE intent to screen, race (AA), and age (being 50 or older) were the only significant factors. For DB, factors and PSA intent there was a slightly negative association for DB and Caucasian race. There was a slightly positive association with having insurance coverage and a PSA screening history. There is no association for DB PSA and age, MS or intent to screen. For DB, factors and DRE intent there is a slightly positive association for DRE DB and having insurance coverage and DRE DB and having a DRE screening history. There is no association for DB DRE and, race, age, MS or intent to screen.

There is a large amount of missing data in this data set that is unexplained. The greatest percentage of missing information was on the outcome variable of intent to screen with the PSA and the DRE. Perhaps redesigning the questions or giving men a choice of "Don't Know" as opposed to a "Yes" or "No". While this study focused on the factors of race, age, MS, insurance coverage, screening history and DB with intent to screen other factors such as cultural beliefs, religion, trust of the healthcare system/HCP's may also help provide some new information regarding factors that influence/not influence screening intent with the PSA and DRE.

### *Nursing Implications*

Findings from the current investigations have implications for clinical practice and future research for factors that influence intent to screen with the PSA and DRE. Despite the limitations related to the exploratory focus of the study, the results provide both new information and suggestions to improve research goals.

### *Nursing Research Implications*

The PSA controversy continues even after the first reports of two large randomized trials. In the US Prostate, Lung, Colorectal and Ovarian (PLCO) Cancer Screening Trial, Andriole, Grubb and Buys (2009) report no mortality benefit from PSA and DRE screening after a median eleven year follow-up. The European Randomized Study of Screening for Prostate Cancer (ERSPC) Trial report that PSA with the DRE was associated with a 20% relative reduction in the morbidity from PCa after a median follow-up of nine years (Schroder, Hugosson and Roobol, 2009).

The hope had been that the findings from these studies would solve the controversy surrounding the benefit of screening to decrease the PCa death rate. However, there continues to be a lack of evidence that screening reduces death due to prostate cancer and as well as the suggestion that screening may cause unnecessary treatment. The controversy continues as well as the research regarding screening does/does not save lives. While we wait for additional studies and the

development and verification of new test benefits/harms, a critical role for nursing is research. Yet, nurses must be cognizant about factors that contribute to disparate outcomes among minority populations, including AAM's, and the relationship of those factors to recruitment of AAM in research efforts.

Three major factors that could explain difficulties in recruitment of AAM's are social, economic and cultural factors (Knobf, Juarez, Lee, Sun, Sun, & Haozous, 2007). These three factors might also provide some understanding of common barriers to participating in research. Social aspects include fear and mistrust that are prevalent attitudes among AA's as a result of oppression, slavery, forced acculturation and unethical treatment. Low SES is associated with less education, low literacy, lower-paying jobs, negative experiences with the health care system and low/no health insurance coverage. Lack of knowledge about PCa, PCa screening, fatalism regarding PCa diagnosis, myths, limited resources, financial concerns and competing day-to-day life demands are related to low SES (Knobf, et al., 2007). Low literacy and language barriers raise issues for recruitment into research because of informed consent.

While the factors of SES and culture are considered large barriers to AAM's participating in research, it is not impossible to gain AAM into research for PCa and PCa screening. Several strategies are necessary for successful research with this population. First, trust should be



established. Nurse researchers must network and “get to know” or “do time” in the community. This networking process begins with establishing positive working relationships with key community leaders/members and other sources of support. Networking includes the nurse researcher volunteering in community health fairs, providing educational presentations and disseminating relevant health-related information to the community. Nurses partnerships with the community can aide in the prerecruitment phase as well as to recruit and train ethnic research team members who should be adequately compensated (Knofb, et al., 2007). Second, develop and tailor multiple strategies for recruitment of the target population and also tailor materials for the target population. Finally, nurse researchers should make strong attempts to establish mentorship roles with other nurses in the community. These “good faith acts” may add to a sense of ownership in the research project and empowerment for nurses in that particular community thus reinforcing positive relationships for the nurse researcher and community. In addition, nurse researchers may serve as role models for other nurses in the community who may not be at the educational level of the nurse researcher.

Another role for the nurse researcher is to: 1) develop reliable and valid assessment survey questions for measuring patient knowledge, attitudes and beliefs that can identify variations in individual’s decision making processes and benefits/risks perception; 2) develop decision

aids, such as pamphlets and videos that promote informed decision making to participate/not participate in PCa screening; and 3)develop techniques to keep men informed regarding evolving PCa screenings (Weinrich, 2001).

Finally, the nurse as researcher is in an ideal position to develop and evaluate educational interventions designed to increase PCa awareness and screening. While the nurse researcher is well aware that there is no single, best way to educate, reach and impact men efforts to change negative behaviors should be innovative, client-driven and customized to reflect the uniqueness of men.

#### *Clinical Nursing Implications*

Despite the limitations of this study, the results provide both new information and suggestions to improve research goals. A moderate amount of men in the study had favorable attitudes toward PCa screening. Nevertheless, more than half of the sample failed to respond to the outcome of intent to screen. This is disappointing but not discouraging.

Results from free community-based PCa screening studies report that 61% of AAM are screened as a result of educational interventions on PCa (Gwede, 2006). While free screening programs are an excellent way to reach men who may not have the opportunity to facilitate screening, health education should occur at each clinic visit or in various health programs in a community setting. Annual, free, community-based screening should

continue to be offered for those without a usual source of care and without insurance coverage. Use of mobile services for those without transportation can be implemented. Also, use of mobile services would allow the nurse researcher and other HCP's to go into the community of the population they seek to service as opposed to having the community come to them.

Nurses in a clinical setting have the opportunity to address negative perceptions toward prostate cancer screening. Lack of discussion about screening decisions and lack of culturally appropriate communication with the nurse may create apathy, a poor patient-nurse relationship and increase the likelihood of men not participating in PCa screening. In addition, it is essential that nurses stay current regarding PCa screening trials, screening recommendations and new screening test/techniques to ensure that they are providing the most useful and up to date PCa screening information to educate patients, families, and communities.

In addition, nurses in a clinical setting can learn first hand what men perceive as needed educational resources in the community to provide information about PCa and PCa screening. This is an opportunity for nurses in the clinical setting to establish meaningful relationships outside of the clinical setting to coordinate continuing community health education programs, in addition to, providing men with obtaining culturally relevant information on the latest PCa screening techniques.

In conclusion, clinical implications for nurses should address several of the IOM's (2003) aims for improving quality health care. The first aim to

be addressed is effective care. The provision of effective nursing care relies on the development and use of nursing evidence (IOM, 2003). Effective care is based on evidence derived from four type of research: 1) laboratory experiments, clinical trials, epidemiological research and outcomes research. Outcomes research, critical to improving care quality, shares information on how well interventions work on a generalizable scale. Yet, there is a lack of research to show the application of many nursing interventions, so therefore, it is imperative that nurses systematically and continually review the outcomes of the care they provide to further develop and adhere to an evidence based care delivery and care quality (IOM, 2003). A second aim to address for clinical nurse implications is the aim of patient-centered care. Patient-centered includes respect for patients' values, preferences and expressed needs; coordination and integration of care; information, communication and education; physical comfort; emotional support; and involvement of family and friends (IOM, 2003). Much work is needed in this area to better delineate the this aims outline of the concept as well as strategies for addressing it. The last aim to be addressed for clinical nurse implications is that of equitable care. Equity refers to universal access to receive health care services (IOM, 2003). Equity is a challenge for populations that are uninsured/underinsured and also reflect disparities in health care by ethnicity and SES. Nurses in a clinical setting are at the front line to observe disparities in populations as evidenced by caring for clients that lack insurance coverage and clients that are subjected to institutional

racism. Nurses in a clinical setting and nurses in research are obliged to develop practice models and other strategies to share with policymakers, insurers and others to insure that efforts toward equity continue until the goal has been achieved. Even after achievement, measurable equity indicators must be in place to prevent a relapse in access to health services for individuals and families.

### *Potential Nursing Interventions*

Several nursing interventions could result from findings and build on the current study to increase the awareness of PCa and PCa screening. While all men should be given information about screening benefits and risk, allowing them to make an informed decision, the very men who should get the PCa screening message may not be getting the message at all. Below are several nursing interventions that could increase the message of early detection.

The first intervention is to provide information on location and availability of free or low-cost screening. This information could be placed or posted in various locations such as the worksite, churches, barbershops, pharmacy areas (e.g., Meijer, Walmart), auto repair shops and/or other places where men are likely to frequent. Ideally, these postings are placed where men are more likely to observe them they might also be seen by wives/partners, or significant others who could pass the information along to family and community.

The second nursing intervention involves the use of an interdisciplinary team of nurses, social workers, physicians, lab technicians and laypersons. Using the resources of this team, use a mobile unit twice yearly to offer free PCa screening as well as other health services, such as immunizations, to target men who are unemployed, lack access to health care and men who lack insurance coverage. After the screening provide the participants with information on when and where they can get the results of their screening or get information on where they can receive results via mail. Develop a plan with the professionals of the interdisciplinary team prior to any screening activity for appropriate measures to treat men who may have positive screening results. By having an action plan in place care is continuous and unfragmented, which could improve quality of care as well as quality of life for men with positive results.

A third nursing intervention is to develop an acronym to increase awareness of PCa and PCa screening. For example, the acronym "KEY" could serve this purpose. KEY would mean, "know every year". This means know every year the results of your PSA and DRE. But to know every year you would need to get screened every year. Therefore, KEY would serve as a cue to get screened. Suggest KEY times to engage in screening such as Father's Day, participant's birthday or any other day that has personal significance. Use billboards through out the city, especially in areas of the target population. On the billboard feature a

local prostate cancer survivor, a former sports figure or athlete to share the KEY message for early detection. Since September of every year is PCa awareness month, increase the frequency of KEY messages on radio and TV ads. Radio and TV are two important media devices to disseminate health information to men with low SES and low educational status compared to men with higher SES and higher educational status. However, print media and the internet should also be used to disseminate screening information. The use of T-shirts, hand fans and print material in the shape of a key could provide PCa facts and frequently asked questions (FAQ's) about PCa and screening.

The final nursing intervention involves DB and the TTM and stages of change. As mentioned earlier SOC was not the focus of this dissertation. The focus was on the decision making component of the TTM which was DB. However, as a refresher there are five SOC (Prochaska, 1979). The five stages of change are: 1) Precontemplation- this is the stage where the person is not intending to take action within the foreseeable future which is measured as 6 months; 2) Contemplation – the stage where a person intends to take action for positive change within 6 months; 3) Preparation – is the stage in which the person intends to take immediate action within the coming month; 4) Action – is the stage where the person has made specific modifications in behavior within the preceding 6 months and 5) Maintenance – is a stage in which

the person works to prevent a relapse and is confident that s/he can remain motivated to continue to practice the adopted positive behavior.

Outside of making decisions for changes in employment the TTM, SOC and DB are used as integrated components to change negative behaviors (Prochaska, 2008). Because TTM, SOC and DB has been used in more than 50 health behaviors such as mammography screening, colorectal screening, smoking cessation, diet and partner violence, it is possible that nurses can help patients to change behaviors using reliable and valid pros and cons instruments to change a particular behavior (e.g., PCa screening). For this nursing intervention to be successful, the nurse must first help patients to set realistic goals for the SOC the patient is currently in. In other words, design interventions to meet patients where they are. Nurse interventions may include proactive print media, telephone calls, internet or personal counseling and decision-making procedures that allow patients to make effective and informed decisions regarding participation in PCa screening. Prochaska (2008) suggest effective interventions should use a database to compare patients' pros and cons with that of other patients who have successfully moved through the SOC. The database can be shared with patients to show their individual increase of pros and decrease of cons that may motivate them along the SOC continuum.

To summarize, several potential nursing interventions have been discussed to increase patient decision-making to engage in PCa



screening. The interventions range from dissemination of information in various forms to various locations; free PCa screening using a mobile unit in a target population in addition to the development of reliable and valid measurements for pros and cons to change behavior. While these nursing interventions are not all-inclusive and need additional work and research to deem them effective, nurses can master change programs through interventions that will produce positive results with PCa screening behaviors.

### *Limitations*

This study extends the science by providing data that are not currently available showing a relationship between the factors of race, age, MS, insurance coverage, screening history, DB and intent to screen with the PSA and DRE. However, the findings of the study should be considered in context with the study limitations.

The first limitation of the study is the large amount of missing responses. Even though absence of response is noted throughout the data set, missing responses are severe for the outcome variable of intent to screen. Due to the large amount of missing responses, this places limitations on the analysis and interpretations of the results. Therefore, the study findings cannot be readily generalized to a larger population of men with a focus on PCa screening. It is possible that redesigning the survey questions might result in more significant relationships in this

target population. Suggestions for redesigning and improving the study include:

- 1) The presence of an interviewer to increase cooperation rates. Interviewers should be highly trained and avoid influencing or biasing responses
- 2) Pretest the questionnaire using small-scale pilot studies which would assist in learning if all parts of the survey connect
- 3) Question-by-question checking while the survey is being conducted to detect omissions
- 4) Reconstruct the questions
- 5) Recruit equal numbers for AA and Caucasians for race
- 6) Conduct the study and services within the community of the target population as opposed to a hospital or clinical setting. This places emphasis on bringing services to the community.

Second, in terms of data collection, information on income and education were omitted. Adding these two factors could have allowed additional analysis to determine if income and education influenced/did not influence intent to screen. There was also no data collected for usual source of care. It would be important to determine the number of men who utilized the free screening as the only option to engage in screening activity vs. men who may a usual source of care. Literature reports that men with a usual source of care are more likely to participate in PCa

screening due to recommendations or health education regarding PCa and the benefits/risks of screening from the nurse or the HCP.

Third, due to limited existing knowledge using the TTM and DB concept for PCa in a free community screening program more work is needed to determine other factors that research participants may consider and how those factors influence/not influence participation in PCA screening (e.g., family history of PCa). This may also help to determine the influence/no influence of the new variable by race, education and income.

Finally, the sample size of Caucasians participating in the study was not equal to that of AAM. Factors for participation in PCa screening have been shown to be different between AAM and Caucasians.

To summarize, none of the factors were associated with PSA intent to screen. For the factors and DRE intent to screen race (AA), and age (being 50 or older) were the only significant factors. For DB, factors and PSA intent there was a slightly negative association for DB and Caucasian race. There was a slightly positive association with having insurance coverage and a PSA screening history. There is no association for DB PSA and age, MS or intent to screen. For DB, factors and DRE intent there is a slightly positive association for DRE DB and having insurance coverage and DRE DB and having a DRE screening history. There is no association for DB DRE and, race, age, MS or intent to screen. In conclusion, no mediation modeling was conducted for the

slightly associations for PSA DB or for DRE DB as it is doubtful that such slightly associations would yield a mediation effect for DB.

Intention to get screened the following year with the PSA and DRE was the outcome variable for the study. It is disappointing to report that 39.5% of the total sample of 324 did not respond to this question for the PSA. Similarly, 41% did not respond to intent to screen with the DRE. What is intriguing is that the PSA and DRE surveys contained fourteen items for each screening method, a total of 28 questions that required reading and selecting an answer from a four-point Likert scale. Yet, more than 90% of the participants answered the survey questions for both the PSA and DRE. The responses for the pro questions in the surveys were high scores (positive) and the con questions were low. The pros outweighed the cons, which is the definition of DB (Prochaska, 1979). As the pros increase and cons decrease, a person moves ahead to practice positive health behavior, but, maybe for this populations DB is not enough or perhaps there are some underlying assumptions with DB that is not met with these participants. The reading and choosing from a scale seems more time consuming than responding to a “Yes” or “No” question of “Will you get screening the following year?” Then perhaps, it is not about reading and answering questions on the survey that may have been the less difficult piece for these men. The difficulty appears to have been making a decision regarding future screening. Numerous hypotheses might help explain why large percentages of the sample did

not respond to intent to screen. First, perhaps a choice of “Don’t know” should have been included with the “Yes” or “No” response. A “Don’t know” response might have been a more acceptable response in that men really did not know if they would participate in screening the following year.

A “don’t know” response could be used for analyses to provide possible insight to a population that is potentially hard to reach. Thus, if these men are part of a hard to reach population nurses should develop interventions and strategies so that this population would have the opportunity to become knowledgeable about PCa and PCa screening benefits and risks in order to make an informed decision for or against PCa screening.

Factors, such as, would they participate in another free screening campaign or would they seek the services of a HCP might have occurred to them as they considered the question. Perhaps planning and/or making a decision a year ahead of time was not what these men were accustomed to doing for health practices or any other kinds of task of daily living. In addition, “Yes/No” answers might work better when you have more knowledge about a topic

A second hypothesis is that the lack of response meant “No” to intent to get screened suggesting that subjects may have been uncomfortable giving a “No” answer. After all, men had received a free screening but, did not want the researcher to feel they did not appreciate

the services or disappoint the researcher by responding with “No” which could indicate social desirability for a portion of the men (Crowne & Marlowe, 1960). Plus, men may have come only for screening and lacked a desire to fully participate in the study even if they did sign a consent form.

A third hypothesis is that men were unwilling to commit to a “Yes” or “No” response. Commitment implies a promise or an agreement. Alone with a promise or an agreement, one becomes accountable. Perhaps these participants did not want such an obligation. In addition, if participants responded “No” there may also have been a perceived threat of future contact from the nurse/HCP “nagging” them to get screened. Other hypotheses might include community leaders/organizers involvement in the study and the cohesiveness of the study’s implementation. “Does the right hand know what the left hand is doing?” In other words, were all persons involved (i.e., community leaders/organizers, nurses/HCP’s, lab staff and volunteers) all on one accord with a clear plan in how to make this a quality study as well as provide participants a quality service? Research projects are time consuming requiring great amounts of time, continuity, consistency and effort to ensure those assisting and involved in the study receive proper instruction and training. An added thought is that there are advantages/disadvantages of using different study sites. Concerns regarding: 1) consistency of procedures at screening site; 2) training of

volunteers; 3) practice of HCP administering the screening exams and; 4) is there an orderly plan by which everyone must abide are important in the design of the study to so that all sites follow one procedure for the best results.

While it is known to be unethical to coerce participants into a research study or demand they continue once they are involved, a PCa education session may have spurred more interest in the topic and raised awareness to decrease some of the non-responses to the outcome of intent to screen. At least, if they did not respond to future intent, there is the possibility that some of the education session would come to have meaning over time and at least they could seek more health information and/or make an informed decision regarding screening.

In conclusion, it could be assumed that these participants were apathetic or basically unable to commit to future screening with the PSA and DRE. But we have no way of knowing what the participants experienced as they participated in the screening program. Were there long waiting lines, long wait times, confusion, disorganization and/or chaos? Plus, we do not know how participants perceived their screening experience. Did participants perceive they were treated with respect, was simple professional courtesy extended (i.e., did the staff, nurse/HCP introduce themselves), did the nurse/HCP share information regarding the what/why of the exam/procedure and did any health education occur, such as, the risk and benefits of the exam? Furthermore, was it

shared with the participants when or how they would learn the results of the exam and in case of positive results, what was the follow-up procedure?

As stated earlier, all these thoughts are exploratory, but they are important issues to consider for the sake of the participants, researchers and the community if successfully future research is to continue.

### *Closing*

This study is unique in that, to our knowledge, there has been no research that focused on factors of race, age, Marital status, insurance coverage and screening history measured with DB for PCa screening intent with the PSA and DRE. The findings indicate the factors were not significantly associated with PSA screening intent alone, but when DB was measured with the factors and PSA intent, there was a slight negative association with AA race suggesting that has DB increased for Caucasians it decreased for AA's in the study. There was also a slight positive association with having insurance coverage and PSA screening history that is supported in previous studies. This could mean that having insurance lessens concerns for paying for screening and having a prior screening increases the likelihood of participation in future screenings. The study also revealed that AA race and DRE intent to screen was significantly positively associated. This was a surprise finding because previous research has shown that AA's were reluctant to utilize the DRE due to lack of knowledge and myths that the DRE could



compromise their manhood. Being age 50 or older was also positively significantly associated with DRE screening intent even though the literature does conflict regarding older vs. younger men's participation in PCa screening. Then the study goes on to affirm that having insurance coverage and screening history with the DRE did influence intent to screen likely due to men not having to worry about paying for screening.

Important findings for this study for future nursing research and clinical practice include the need for nurses to stay current regarding the on-going PCa screening controversy and a need for recruitment, especially of AA's and other ethnic minorities, into PCa screening studies. This research is needed to address knowledge levels, cultural attitudes and beliefs with valid and reliable cultural competence instruments to develop interventions to reduce PCa disparities. Nurses involvement in community outreach efforts are salient to promote PCa awareness through education and practice interventions so that men can make informed decisions for or against screening based on evidence from research and clinical practice.

In conclusion, this study has the potential for nurses to take the first step toward expanding the utilization of the TTM, stages of change and DB to learn what men perceive as benefits and risks as they move/not move from precontemplation to maintenance to make getting PCa screening a yearly health habit.

## APPENDIX A

### SURVEY SAMPLES

#### SURVEY: DEMOGRAPHIC

Survey ID: D \_\_\_\_\_ INTERVIEWER SELF-ADMIN

#### **Anonymous Survey - Prostate Health Behaviors and Attitudes**

**Part 4 - Demographics.** The following questions ask for some general information about your background,

1. What is your age? \_\_\_\_\_ (years)

2. How do you identify your race? (circle all that apply)

(1) White

(2) Asian

(3) Black or African-American

(4) Latino or Hispanic

(5) American Indian or Alaskan Native

(6) Native Hawaiian or other Pacific Islander

(7) More than one race

(8) Other: \_\_\_\_\_

3. What is the language you speak at home most of the time? (select one)

(1) English

(2) Spanish

(3) French

(6) Other: \_\_\_\_\_

(4) Arabic

(5) Creole

4. What is your current main marital or commitment status? (please select one)

(1) Single

(2) Married/Live with Partner

(3) Separated

(4) Divorced

(5) Widowed

(6) Other: \_\_\_\_\_

5. What type of health insurance do you have now? (circle all that apply)

(1) Medicaid fee-for-service (regular)

(2) Medicaid managed care

(3) Medicare (regular)

(99) Don't Know

(4) Medicare (managed care plan)

(5) Private 3<sup>rd</sup> party (e.g., BC/BS)

(6) Currently uninsured (no insurance)

## SURVEY: DIGITAL RECTAL EXAM

### Anonymous Survey - Prostate Health Behaviors and Attitudes

**Part 3 - Pros and Cons of DIGITAL RECTAL EXAM Screening.** Here are some advantages and disadvantages of getting the Digital Rectal Exam (ORE) by a physician to screen for prostate cancer or why some people choose to get screened or not. Circle the number next to each item that reflects YOUR AGREEMENT OR DISAGREEMENT with each item.

**Response choices:** "1" = Strongly disagree "2" = Slightly disagree "3" = Slightly agree "4" = Strongly agree

**How much do I disagree or agree that. . . ?**

1.	Getting the DIGITAL RECTAL EXAM test reduces my anxiety	1	2	3	4
2.	The DIGITAL RECTAL EXAM test is a hassle for me	1	2	3	4
3.	Getting the DIGITAL RECTAL EXAM test makes me feel responsible	1	2	3	4
4.	Getting the DIGITAL RECTAL EXAM test is too much trouble for me	1	2	3	4
5.	Getting the DIGITAL RECTAL EXAM test done gets rid of one worry about my health	1	2	3	4
6.	Getting the DIGITAL RECTAL EXAM makes me uncomfortable	1	2	3	4
7.	Getting the DIGITAL RECTAL EXAM test would reduce my friends and family member's anxiety about my health	1	2	3	4
8.	Getting the DIGITAL RECTAL EXAM scares me	1	2	3	4
9.	Getting the DIGITAL RECTAL EXAM is an easy way to protect my health	1	2	3	4
10.	Waiting for DIGITAL RECTAL EXAM test results would be stressful	1	2	3	4
11.	The DIGITAL RECTAL EXAM would be over very quickly	1	2	3	4
12.	The DIGITAL RECTAL EXAM test hurts	1	2	3	4
13.	Getting the DIGITAL RECTAL EXAM test done this year makes me feel good	1	2	3	4
14.	Possible bad news about the DIGITAL RECTAL EXAM scares me	1	2	3	4

## SURVEY: PROSTATE SPECIFIC ANTIGEN

### Anonymous Survey - Prostate Health Behaviors and Attitudes

#### Part 2 - Pros and Cons of PROSTATE SPECIFIC ANTIGEN Screening.

Here are some advantages and disadvantages of getting the Prostate Specific Antigen blood test (PSA) or why some people choose to get tested or not. Circle the number next to each item that reflects YOUR AGREEMENT OR DISAGREEMENT with each item.

**Response choices:** "1" = Strongly disagree "2" = Slightly disagree "3" = Slightly Agree "4" = Strongly Agree

**How much do I disagree or agree that. . . ?**

1.	Getting the PROSTATE SPECIFIC ANTIGEN test reduces my anxiety	1	2	3	4
2.	Drawing blood for the PROSTATE SPECIFIC ANTIGEN test is a hassle for me	1	2	3	4
3.	Getting the PROSTATE SPECIFIC ANTIGEN test makes me feel responsible	1	2	3	4
4.	Getting blood drawn for the PROSTATE SPECIFIC ANTIGEN test is too much trouble for	1	2	3	4
5.	Getting the PROSTATE SPECIFIC ANTIGEN test done gets rid of one worry about my health	1	2	3	4
6.	Getting blood drawn makes me uncomfortable	1	2	3	4
7.	Getting the PROSTATE SPECIFIC ANTIGEN test would reduce my friends' and family member's anxiety about my health	1	2	3	4
8.	Getting the PROSTATE SPECIFIC ANTIGEN test scares me	1	2	3	4
9.	Getting the PROSTATE SPECIFIC ANTIGEN test is an easy way to protect my health	1	2	3	4
10.	Waiting for PROSTATE SPECIFIC ANTIGEN test results would be stressful	1	2	3	4
11.	Drawing blood for the PROSTATE SPECIFIC ANTIGEN would be over very quickly	1	2	3	4
12.	Drawing blood for the PROSTATE SPECIFIC ANTIGEN test hurts	1	2	3	4
13.	Getting the PROSTATE SPECIFIC ANTIGEN test done this year makes me feel good	1	2	3	4
14.	Possible bad news about the PROSTATE SPECIFIC ANTIGEN test scares me	1	2	3	4

## APPENDIX B

### FORMS: PATIENT CONSENT

#### STAGES OF CHANGE PROSTATE SCREENING STUDY CONSENT FORM

September 2005

*We* are researchers in the Department of Community, Agriculture, Recreation and Resource Studies at Michigan State University in collaboration with researchers at the University of Rhode Island. We are conducting a study to determine which items best reflect men's readiness for and attitudes towards screenings for prostate cancer.

Your participation is entirely voluntary and you may choose to refuse certain questions or discontinue at any time without penalty or loss of benefits to which you may be otherwise entitled. You will be asked to complete a short survey, which takes approximately seven minutes, regarding items that describe your feelings about the importance of prostate cancer screening. Please rate how each item applies to you.

The information you provide will be treated confidentially and no one will be able to link it to you. Your name will not be included in any of the information that is obtained on the form. You will not be punished or penalized for refusing to participate in the study or because of any information you provide.

If you have any questions about this study, please contact George T. Rowan, Ph.D., 311 Natural Resources Building, Michigan State University. E-mail is [Rowan@msu.edu](mailto:Rowan@msu.edu) or you may contact Ralph Levine, Ph.D., 323 Natural Resources Building, Michigan State University. E-mail is [leviner.msu.edu](mailto:leviner.msu.edu). Our telephone number is 517.353.1740. If you have questions or concerns regarding your rights as a study participant, or are dissatisfied at any time with any aspect of (his) study, you may contact-anonymously, if you wish—Peter Vasilenko, Ph.D. Chair of the University Committee on Research Involving Human Subjects (UCRIHS) by phone: 517.355.2180., fax: 517.432.4503, e-mail: [ucrihs@msu.edu](mailto:ucrihs@msu.edu) or regular mail; 202 Olds Hall, East Lansing, MI 48824.

Thank-you for your cooperation.

George T. Rowan, Ph.D.

Ralph Levine, Ph.D

#### CONSENT

I have read the above seeking my permission to be included in the Stages of Change Prostate Cancer Research Survey. I realize that my participation is entirely voluntary and that I may decline at any time from the data collection procedures. I am also aware that all information I provide in this study will be kept confidential and that my name will not be included in the obtained information.

Signed

Date

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