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Prostate Cancer Screening among High-Risk Black Men

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Abstract

We explored potential barriers and facilitators for prostate cancer screening choices among high-risk Black men. In our sample of 264 Black men over 45 years of age living in the U.S. who met the American Cancer Society criteria for screening, we found that only 49.6% had ever been screened. We investigated potential barriers including screening intention, access to care, medical mistrust, and fatalism. Potential facilitating factors investigated were provider-patient conversations encompassing the pros and cons of screening, ethnicity taken into account, insurance, and previous prostate cancer screening. Recommendations and resources are suggested to increase screening of high-risk Black men.

Keywords

Prostate Cancer screening; barriers and facilitators; Black men; high risk; shared informed decision-making

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INTRODUCTION

Prostate cancer (PCa) is the most commonly diagnosed cancer among men in the U.S. and Europe (excluding skin cancer)¹⁻³. In fact, one in five new cancers diagnosed among men is PCa¹. In the U.S., estimates indicated 161,360 new PCa cases and 26,730 PCa deaths in 2017³. Age, PCa history in the family (paternal or maternal side), and African ancestry are well-known risk factors². Compared to all other ethnicities, Black men have the highest incidence of PCa globally, and are frequently diagnosed at higher grade and stage, and younger age^{1,4}. The most recent report from the American Cancer Society states the risk of PCa is 74% higher for Black men compared to Caucasians, possibly due to inherited susceptibility³. Black men in the U.S. are two-fold more likely to die of PCa, compared to all other groups; making this their second highest cause of cancer-related death^{3,4}. This racial disparity is associated with unequal access to care, particularly high-quality care, including prevention and early detection of cancer and evidence-based treatment⁴. Still, while accounting for such factors, prostate cancer progresses more quickly in Black men with three times the rate of distant metastasis in comparison to Caucasian men^{1,4,5}.

Screening Recommendations

Standard screening practices for PCa are Prostate-specific antigen (PSA) testing and digital rectal examination (DRE). However, following concerns raised in 2008 about the costs and the value of PSA screening, the U.S. Preventive Services Task Force (USPSTF) analyzed the results of screening trials. They recommended against PSA for men of any age in 2012⁶, despite the underrepresentation of Black men in the screening trials that were the basis for the recommendation⁷. In contrast, recommendations from the American Urologic Association, American Cancer Society, and the National Comprehensive Cancer Network advise individualized screening choices for high-risk men, specifically including Black men⁸⁻¹⁰. Given the disparity for Black men, more frequent and early PSA and DRE are suggested in an effort to reduce disparities in PCa survival⁵. The ACS recommends that high risk men who screened and whose PSA results were < 2.5 ng/mL, should rescreen every two years, whereas those with PSA ≥ 2.5 ng/mL should screen annually¹⁰.

Shared Informed Decision-making

The ACS also encourages shared informed decision-making (SIDM)^{3,10,11} which has been defined as the process of health care decisions being made by the patient and provider in partnership, using available evidence of the highest rating, and considering personal factors, rather than providers making decisions *for* patients¹². Of note, the pros of PCa screening include earlier detection and treatment of PCa with potential for increased survival rate. The cons of screening include potential false positive or negative results, potential overuse of therapeutic modalities affecting quality of life when the majority of PCa is slow developing, and possible lack of mortality reduction. Thus, knowing more about how to overcome potential barriers for testing is critical.¹¹

Researchers have explored compliance with SIDM and its impact on patient knowledge about risk and pros and cons of screening by actual PSA and/or screening intention^{13,14}.

Potential barriers to screening include lack of PCa knowledge or risk perception, cancer fatalism, fear, embarrassment, mistrust of healthcare providers or systems, perceived lack of understanding from medical professionals, healthcare access, healthcare literacy and/or communication, and self-efficacy, although these have been inconsistently associated with PCa screening behaviors for Black men of various ages^{7,14–22}. Although nurse practitioners (NPs) may be familiar with the new PCa screening guidelines, they may lack sufficient knowledge regarding barriers to implementing SIDM. SIDM may be hampered for Black men by these barriers⁷ although most studies were conducted predominantly with Black men who did not have health insurance.

Impact of Change in USPSTF Guidelines

The 2012 USPSTF recommendation against screening men of any age for PCa decreased primary care provider use of PSA testing by 3–10% in the U.S., disproportionately affecting Black populations which observed decreases in PSA testing by 18.4–25%^{23–25}.

Additionally, resulting in an overall decrease in DRE by 64%, likely having a particularly negative impact on Black men who have historically been more reticent about the DRE than White men have. Most importantly, in just five years the new USPSTF recommendations resulted in more advanced PCa upon detection (5.4% higher rate of high-grade tumors), and was anticipated to result in twice as many cases of related metastases and a 13–20% increase in deaths^{16,25–27}. These findings generated discussion resulting in a recent change in USPSTF recommendations, which now encourages individualized decisions regarding PSA screening for men 55–69 years old. The screening guideline is to be applied to all men, with no distinction made between men of average risk or those at increased risk, such as Black men^{28,29}.

Purpose

The purpose of this quantitative study is to identify barriers to PCa screening and facilitating factors that increase screening likelihood among high-risk Black men according to ACS guidelines, to provide recommendations such as SIDM for providers to address these disparities.

METHODS

This nested cross-sectional study included men 45 years old from a larger cross-sectional study, Project C.H.A.N.G.E. (Changing Health for Adult Men with New and Great Experiences). The Project C.H.A.N.G.E. study aimed to examine perceived stress and health risks, including PCa risk. Institutional Review Board approval was received from the university. We recruited participants from churches and by community outreach. Self-identifying Black men (African American, Caribbean Black, or of African origin), 18 years old, in two bi-coastal states participated. After informed consent, participants chose to complete a 141-item health survey, provide a blood sample, or both. This paper focuses on men who completed the survey and gave a blood sample, and were in the age range to conduct SIDM. The USPTF had no clear age guidelines for screening at the time of data collection; therefore, we used the ACS age cut-off of 45 years old. The ACS recommends PSA with or without DRE for:

- Men 50 years old with at minimum a life expectancy of 10 years
- Men 45 years old at increased risk for PCa (Black men and/or men with a first degree relative who had PCa before age 65),
- Men 40 years old if at even higher risk (men with more than one first-degree relative who had PCa before age 65).

Survey items included demographics, validated scales, and questions drawn from current literature. The Center for Epidemiological Studies (CES-D) scale 11-item version was used with a cut-off score of nine indicating depressive symptoms^{30,31}. Participants' trust in providers and health care organizations was measured with an 18-item adaptation of the Medical Mistrust Index³², with Likert scale response options ranging from 1 (strongly disagree) to 4 (strongly agree) resulting in higher scores representing greater mistrust. We measured fatalism using the Powe Fatalism Index, a 15-item summed scale with dichotomous yes/no response options, and higher scores indicating more fatalistic views regarding cancer³³. The PCa screening intention 13-item scale was adapted from the 18-item Cancer Screening Intention Scale-Prostate (CSIS-P)³⁴. Higher scores indicate greater intention for PCa screening. Cronbach's alphas ranging from .74 to .87 in our sample of Black men indicated high internal consistency for these scales.

Additionally, to measure SIDM, we asked participants if a provider had talked about PCa screening pros and cons with them, encouraged screening, and whether or not the provider (noting increased risk for Black men) took race/ethnicity into account. We included questions about whether the men had previously had PSA and/or DRE, and if it had been within the last 12 months, and they were given the option to provide a blood sample. We performed standard PSA testing on blood samples.

Sample size calculation utilizing G*Power software, version 3.1, for an odds ratio of 2.5, alpha .05, and power .80 required a sample size of 196. We exceeded the minimum sample size, with a total sample size of 264 and a sample size of 215 in the final analysis. Data were analyzed using IBM SPSS version 24. We performed descriptive analysis to explore distributions and describe the sample (frequencies, mean, and standard deviation). We used bivariate analysis to understand the relationship of demographics and other independent variables with PCa screening behavior (defined as a history of previous PCa screening with PSA and/or DRE) as the dependent variable. We used significant bivariates for model building and logistic regression.

RESULTS

Sample.

This sample of self-identifying Black men, ranged in age from 45–85 years, were well educated (73.1% with some college or degrees), currently in a relationship, working and mostly (71.8%) medically insured (Table 1). Most reported at least 1–2 routine medical visits per year, and perceived themselves to be in good to excellent health. Almost 10% had a history of PCa or other cancer (6.1% and 3.3% respectively). Approximately 1 in 6 had a blood relative with a history of PCa. Approximately half of the men reported ever having

been tested for PCa, however, 14 (5.3%) were unsure if they had ever been tested, and more reported having had PSA testing than DRE. Less than half of the men reported a health care provider having encouraged them to have PCa screening (PSA or DRE or both), yet more than half reported having talked about screening pros and cons with a health care provider. Twenty participants (7.6%) reported having been discouraged from screening, and of these only three (1.4%) reported that it was due to age. In the discussion regarding PCa screening, the majority did not feel that the provider had taken ethnicity into account (see Table 1).

Univariate descriptive results.

The average CES-D score of 10.37 was over the recommended cut-off of nine, indicating depressive symptoms. The PCa Fatalism score mean of 2.91 indicates low fatalism with a possible score of zero to 15.0. The Medical Mistrust Index average was at the midpoint of the 1–4 possible index score, indicating neutrality. PCa screening intentions score on the CSIS-P averaged 43.18, falling in the 43–85 range indicating low intention³⁴. The overall average PSA ELISA result of 3.14 was higher than the ACS recommended 2.5 ng/mL cut-off for annual screening. See Table 1 for further details.

Bivariate analyses.

Demographic and independent variables were bivariably explored with our dependent variable, ever had PCa screening, a dichotomous yes/no variable to indicate history of PCa screening behavior. Currently working, insured, routine medical visits, personal history of PCa, prior PSA test, PSA test within the last 12 months, prior DRE, provider encouragement to consider PSA/DRE, provider discussion regarding pros and cons of screening, provider consideration of ethnicity, age, and PCa screening intention were significantly correlated with ever had PCa screening (Table 1).

Binary logistic regression.

All significant correlates of prior PCa screening were explored using logistic regression in one block, assumptions having been met (Table 2). Ever had PSA test, ever had DRE, and provider discussed pros and cons of PCa screening were significantly related ($p < .001$, $p < .01$, and $p < .05$ respectively) with past PCa screening. Age and PCa screening intention trended towards significance. The likelihood ratio test indicates that this model was more effective and the inferential goodness-of-fit test indicates that the model was a good fit to the data. The odds of ever having had PCa screening increased by 4.1 % for every 1-year increase in age, but only approached significance for contributing to the model. Provider discussion regarding PCa screening pros and cons increased the odds of having had PCa screening 2.6-fold.

DISCUSSION

While 100% of our sample of high risk Black men met the ACS criteria for screening¹⁰, only about half reported *ever* having been screened and less than 30% had been screened within the last year. Other studies have also found Black men have low PCa screening rates, in fact, lower rates than men of other ethnicities, despite higher risk—a very concerning, worsening trend following the 2012 change in USPTF guidelines^{5,16,24,26,27,35,36}. Bivariate

analyses revealed twelve independent variables with significant correlation to ever having had PCa screening. While the model overall was significant in describing past screening, only three variables remained as significant predictors of PCa screening behavior in our multi-variate model: previous PSA test, previous DRE, and provider discussion regarding the pros and cons of screening.

The well-known maxim that “the best predictor of future behavior is past behavior”³⁷ would appear to be true for this sample of Black men, therefore providers should encourage their Black male patients 45 years old to consider PCa screening. While provider encouragement to consider PCa screening did not remain significantly related to screening behavior, provider discussion (SIDM) was a significant predictor of behavior. This suggests that merely encouraging screening is not sufficient and that SIDM with a discussion of the pros and cons of screening tailored to patients and their barriers is essential.^{20,21} Nurse practitioners and other providers make important contributions to initiating SIDM for PCa screening.

We did not find that employment, insurance status, or routine medical visits were significantly related to PCa screening behavior. This differs from the literature suggesting that access to health care and insurance are major barriers^{1,38}, a finding that is likely due to our sample consisting of well-educated, mostly working and insured men. In addition, our findings indicated that these structural factors, at least for some Black men at risk, do not explain their lack of screening despite their elevated risk. Similar to other studies^{17,39}, we also found that other potential barriers to screening such as Fatalism or Medical Mistrust were low and neutral, and not significant predictors of screening behaviors, suggesting they have minimal influence on PCa screening in this cohort of men. It is plausible that well-educated, insured men have more regular interaction with health care providers, which may have decreased Fatalism and Medical Mistrust.

PCa screening intentions were also low in our study, likely a negative influence on the decision to undergo screening. This is especially relevant as our mean PSA screening results were in a range that at least warrants SIDM, an important provider patient conversation around risk and follow up testing, and monitoring for men who fall into the age range for testing and have many barriers to testing. Indeed, healthcare provider recommendation for screening is a strong predictor of PCa screening¹⁷.

Limitations of the study include the fact that it was cross-sectional, and used self-reported measures that are vulnerable to recall bias. Additionally, we recruited participants mostly from churches, which may limit generalizability, though non-church going men were recruited from the community. Nonetheless, this study adds to the literature, as Black men are typically underrepresented in general studies, and likewise, most PCa studies have very limited (<4%) participation by Black men^{6,7,15,40}. Exploring PCa testing among this generally well-educated group of men with access to health care lends even more gravitas to our findings of low PCa testing despite objective reasons for concern. Barriers to Black men participating in research studies have been identified as mistrust of researchers, lack of knowledge or understanding regarding research processes, and preference for herbal medicine⁴⁰. However, we successfully recruited a good-sized cohort of Black men and were

able to document persistent low PCa testing with only provider discussions about testing and a history of testing remaining significant predictors of testing behavior. This clearly points to the importance of the role of provider-initiated discussions regarding screening.

PRACTICAL APPLICATIONS

PCa screening (PSA testing and DRE) are the basis for detection of prostate abnormalities and referral for further evaluation by a urologist. Nurse Practitioners can use the following ACS guidelines for screening: If initial screening led to biopsy and no PCa is found, future screening is guided by PSA results (i.e. for men with a PSA < 2.5 ng/mL retesting every two years is reasonable, but annual screening should be done if the PSA level is ≥ 2.5 ng/mL)¹⁰. The ACS Guidelines for PCa screening are expected to be updated in 2018^{11,25}.

Of note, final recommendations of the USPSTF guidelines can be found at <https://www.uspreventiveservicestaskforce.org/Page/Document/RecommendationStatementFinal/prostate-cancer-screening1#consider>. Clinicians are referred to Clinical Consideration for screening of high-risk populations, including Black men and men with PCa history in the family. However, despite acknowledging greater lifetime risk of PCa mortality among Black men in an earlier section of the document, the Clinical Considerations for screening Black men includes a statement the USPSTF could not make a separate, specific recommendation for this high-risk group. The guidelines include beginning screening at age 55 and SIDM with discussion including pros and cons, and no PCa screening after age 70.

NPs can play an important role in overcoming potential barriers to PCa screening through educating patients regarding PCa screening pros and cons in one-on-one discussions. Simply encouraging patients to consider testing is not enough. Thus, supporting informed SIDM, NPs can proceed with screening and making referrals as appropriate. For Black men, SIDM and screening should begin at age 45, and for Black men with even higher risk (positive family history of PCa) SIDM and screening should begin at age 40^{3,5}. Only if providers support the continued screening for Black men as a high-risk group can the current trend toward increasing later disease presentation be reversed and current health disparities addressed.

SIDM tools and other resources are readily available, including some specifically designed for PCa screening SIDM discussions. These include the American Cancer Society decision making aids available with print and video versions available at <https://www.cancer.org/health-care-professionals/prostate-md.html>, the American Society of Clinical Oncology (ASCO) Decision Aid Tool available at https://www.instituteforquality.org/sites/...org/files/psa_pco_decision_aid_71612.pdf, the Prostate Cancer Screening Decision Aid (PCSDA) tool²⁰, and a new USPSTF infographic available at https://screeningforprostatecancer.org/wp-content/uploads/2018/05/USPSTF_ProstateCancer_Infographic_FINAL-5-4.pdf.

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Highlights

- Recent USPSTF PCa screening guideline changes have negatively affected Black men
- To encourage screening is not enough for high-risk Black men.
- Provider discussion of pros/cons increases screening behavior
- Shared informed decision-making (SIDM) is encouraged between providers and patients
- Black men with PCa family history require SIDM and screening beginning at age 40

Table 1.

Sample description of self-identified black men age 45 and older, and bivariate correlation of demographic and independent variables with previous PCa testing. ($N = 264$)

Characteristic	All participants	Correlation with behavior (ever had PCa screening)
	<i>n</i> (%)	<i>r</i>
Education		-.043
High school or less	71 (26.9)	
Some college or AA degree	108 (40.9)	
BA and above	85 (32.2)	
Currently married or living with significant other	184 (69.7)	-.060
Currently working	153 (63.8)	.140*
Insured	173 (71.8)	.201**
Routine medical visits		-.134*
Never	26 (10.8)	
1–2 times a year	158 (65.6)	
More than twice a year	47 (23.6)	
Overall perceived health		.005
Good to excellent	195 (81.6)	
Fair to poor	44 (18.4)	
Personal history of PCa	19 (7.8)	.227**
Ever screened for PCa	131 (49.6)	
Ever had PSA test	127 (48.1)	.518**
PSA test in the last 12 mo.	77 (29.2)	.332**
Ever had DRE	106 (40.2)	.475**
Any blood relative with a history of PCa	41 (15.5)	-.055
Provider encouraged PSA/DRE	100 (44.2)	.363**
Provider discussed pros/cons of screening	152 (64.4)	.306**
Provider took ethnicity into account	76 (38.0)	.167*
Variable (range)	<i>M</i> (<i>SD</i>)	
Age (45–85 years)	58.04 (9.32)	-.288**
CES-D (0–33)	10.37 (5.19)	.092
PCa Fatalism (0–15)	2.91 (3.07)	-.124
Medical Mistrust Index (1–4)	2.47 (0.35)	-.014
CSIS-P (19–76)	43.18 (14.61)	-.163*
PSA ELISA at time of survey	3.4 (9.99)	

Note:

* $p < 0.05$,

** $p < 0.01$ (two-tailed)

Table 2.

Logistic Regression analysis of 215 Black men for PCa screening behavior

Predictor	β	SE β	Wald	df	Sig.	e ^{β} (odds ratio)
Constant (Ever screened for PCa)	-5.987	2.053	8.506	1	.004	NA
Age	0.040	0.022	3.355	1	.067	1.041
Currently working	-0.009	0.016	0.315	1	.574	0.991
Insured	-0.130	0.111	1.382	1	.240	0.878
Routine medical visits	0.327	0.714	0.210	1	.647	1.387
Personal history of PCa	-0.037	0.170	0.048	1	.827	0.964
Ever had PSA test	1.862	0.407	20.942	1	.000	6.434
PSA test in the last 12 months	0.155	0.236	0.435	1	.510	1.168
Ever had DRE	1.199	0.429	7.830	1	.005	3.317
Provider encouraged PCa testing	0.111	0.449	0.061	1	.805	1.117
Provider discussed pros/cons	0.942	0.447	4.443	1	.035	2.564
Ethnicity taken into account	0.006	0.450	0.000	1	.989	0.994
PCa screening intention	0.041	0.025	2.677	1	.102	0.922
Test			χ^2	df	Sig.	
Overall model evaluation						
Likelihood ratio test			114.468	12	.000	
Goodness-of-fit test						
Hosmer & Lemeshow			6.581	8	.582	

Note: Dependent variable, Ever screened for PCa, was coded as 1 for *yes* and 0 for *no*. Cox & Snell $R^2 = .413$, Nagelkerke $R^2 = .551$.