

A STUDY TO COMPARE A CHW-LED VERSUS PHYSICIAN-LED INTERVENTION FOR PROSTATE CANCER SCREENING DECISION-MAKING AMONG BLACK MEN

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Introduction: Prostate cancer is the second leading cause of cancer deaths among men in the United States and harms Black men disproportionately. Most US men are uninformed about many key facts important to make an informed decision about prostate cancer. Most experts agree that it is important for men to learn about these problems as early as possible in their lifetime.

Objectives: To compare the effect of a community health worker (CHW)-led educational session with a physician-led educational session that counsels Black men about the risks and benefits of prostate-specific antigen (PSA) screening.

Methods: One hundred eighteen Black men recruited in 8 community-based settings attended a prostate cancer screening education session led by either a CHW or a physician. Participants completed surveys before and after the session to assess knowledge, decisional conflict, and perceptions about the intervention. Both arms used a decision aid that explains the benefits, risks, and controversies of PSA screening and decision coaching.

Results: There was no significant difference in decisional conflict change by group: 24.31 physician led versus 30.64 CHW led ($P=.31$). The CHW-led group showed significantly greater improvement on knowledge after intervention, change (SD): 2.6 (2.81) versus 5.1 (3.19), $P<.001$). However, those in the physician-led group were more likely to agree that the speaker knew a lot about PSA testing ($P<.001$) and were more likely to trust the speaker ($P<.001$).

Conclusions: CHW-led interventions can effectively assist Black men with complex health decision-making in community-based settings. This approach may improve prostate cancer knowledge and equally minimize decisional conflict compared with a physician-led inter-

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INTRODUCTION

Prostate cancer is the second leading cause of cancer deaths among men in the United States¹ and harms Black men disproportionately.² Black men experience 70% higher prostate cancer incidence and 2 to 3 times higher mortality than other groups.² Prostate cancer comprises nearly a third of all new cancers in Black men, affecting almost 30,000 men per year.² This disparity persists even after accounting for income, education, and poverty, which each independently are associated with worse prostate cancer outcomes, including mortality.³ Thus, low-income Black men are at particular risk of harm from prostate cancer.

Physicians have relied on the prostate-specific antigen (PSA) test and digital rectal exam as early markers for the development of prostate cancer. However, PSA testing as a screening mechanism is controversial because of its associated risks of overdiagnosis and overtreatment of clinically insignificant disease. As a result, in 2012, the US Preventive Services Task Force (USPSTF) recommended against PSA-based screening in all men, without any special consideration for high-risk groups like Black men. After significant pushback from the numerous stakeholders and new research suggesting that the risks of overtreatment were becoming lower as active surveillance of low-risk disease became increasingly common, USPSTF changed its recommendations in 2018 from recommending against screening to a shared decision-making (SDM) approach to PSA screening for all men.⁴

The new USPSTF recommendation represents an ideal for counseling and decision-making, but this ideal is rarely achieved in clinical practice. A nationally representative study of 3,010 randomly selected men demonstrated that only half were even asked about screening preferences before a PSA test was drawn.⁵ Even among those who did discuss PSA screening,

only 32% discussed both the PSA test's pros and cons; most men were only ever told of its benefits.⁶ These studies suggest that most prostate cancer screening decisions in clinical practice do not actually meet the criteria for SDM due to a lack of a balanced discussion on decision consequences and preference clarification. There is an important need to align clinical practice with the USPSTF recommendation for best practices around PSA screening decisions by promoting SDM in a feasible and sustainable way.

Community health workers (CHWs) with similar cultural and educational backgrounds to the patients they serve have been demonstrated to improve communication between physicians and patients. The CHW model's strength is derived from the multitheoretical roots of community organizing, social support, social networks, self-efficacy, and peer models.^{7,8} This model proved to be successful within communities requiring a culturally sensitive, contextualized framework for health promotion and intervention.^{7,9,10} This type of counseling may also help to overcome the doctor-patient power dynamic and better align the patient's decision with their preference. The CHW model has been effective in creating liaisons between the health care system and the community that it serves to facilitate and improve quality of services.¹¹

We sought to determine whether CHWs could help counsel Black men about the risks and benefits of PSA screening. To accomplish this, we compared the effect of a CHW-led educational session with a physician-led educational session on prostate cancer screening knowledge, screening decisional conflict, and participant's perceptions of the intervention in nonclinical settings (i.e., churches and Masons' Lodges). If the results were similar between CHWs and

physicians or if CHWs were better than physicians, this would suggest a scalable, efficient path forward to disseminate PSA education, and potentially SDM, to high-risk vulnerable communities.

METHODS

All procedures were in accordance with the ethical standards of the NYU institutional review board and with the Helsinki Declaration of 1975, as revised in 2000. Informed consent was obtained from all participants included in the study.

One hundred eighteen Black men were recruited at faith-based organizations and all-male fraternal religious organizations (also known as "Masons' Lodges") in the New York City region. Five sites received physician-led and 3 sites received CHW-led counseling sessions. The 8 locations were recruited using contacts established by the principal investigator in previous community outreach studies.^{12,13} Participants were recruited through pulpit announcements and flyers distributed throughout the church; participants were offered a nominal financial reward to compensate for lost time. The first study arm used a trained CHW to deliver a seminar based on the American Cancer Society (ACS) decision aid for PSA screening at 3 sites. The second study arm involved a physician educator who delivered the same intervention at 5 additional sites.

Sessions were conducted at each community site at a time that was convenient for the participants. Informed consent was obtained from each participant by members of the study team before completing a baseline questionnaire and the educational session on PSA screening. Participants then completed a posttest questionnaire on the same day and were given a copy of the ACS decision aid to take home. The decision aid explains the

benefits, risks, and controversies of screening for PSA, demonstrates prostate cancer rates, explains the incidence of false-positive and false-negative tests, and provides decision coaching.¹⁴⁻¹⁶ The decision aid developed by the ACS is well accepted among Black men and has demonstrated effectiveness in increasing knowledge and lowering decisional conflict.^{17,18}

Definition of Variables

Dependent Decisional Conflict

Uncertainty about which course of action to take when choosing between competing options that challenge their personal life values.¹⁹ This variable was calculated by summing the responses for each of 10 items (0=yes, 2=unsure, 4=no). The scores ranged from 0 to 100 (with higher scores indicating greater conflict). This was the validated low literacy Decisional Conflict Scale (DCS) modified from the original version, which used a 5-point Likert scale.^{20,21} It is reliable (α ranged from 0.78 to 0.92), and its test-retest reliability coefficient is 0.81.

Independent Variable of Interest

Physician versus CHW (MD versus CHW). We constructed a binary variable that indicated whether an individual patient had been counseled by the physician or the CHW.

Covariates

We additionally collected self-reported data on past experiences with prostate cancer screening, communication with physicians, and prostate cancer knowledge. Participants were asked to recall whether they ever had during their lifetime any prostate cancer screening and any discussion with a physician about screening and what the contents of the discussion were if one had taken place. Knowledge was calculated by summing the

Table 1. Mean decisional conflict scale and knowledge scores

	All participants, mean (SD)	CHW-led group, mean (SD)	Physician-led group, mean (SD)	Comparison between groups (P)
Pretest DCS score	39.95 (25.05)	46.41 (24.28)	36.41 (24.93)	.03 ^a
Posttest DCS score	14.27 (18.61)	16.5 (20.04)	13.00 (17.76)	.3745
DCS change	-26.68 (23.15)	-30.64 (25.65)	-24.31 (21.36)	.31
Pretest knowledge	4.31 (3.09)	3.67 (3.10)	4.66 (3.04)	.11
Posttest knowledge	7.54 (2.65)	8.40 (1.90)	7.11 (2.87)	.02 ^a
Knowledge change	3.43 (3.17)	5.09 (3.19)	2.57 (2.81)	.0001 ^a

DCS, decisional conflict scale

^a Significant values

total number of correct responses to 11 knowledge items in true-false format adapted from the PROCASE index (Cronbach $\alpha=0.68$).^{22,23} A higher number of correct responses indicates greater prostate cancer screening knowledge.

Statistical Analysis

Data were analyzed using the Fisher exact or χ^2 test. For decisional conflict, we used the Wilcoxon signed-rank test to compare differences from pretest to posttest in all participants. We then ran the Wilcoxon rank-sum test to compare differences between the physician-led and CHW-led groups. The PSA knowledge test was scored by the total number of correct responses to 11 questions. Pretest and posttest scores in PSA knowledge, decisional conflict, and decisional quality were compared using a paired *t* test or nonparametric Wilcoxon test. Analysis of variance was conducted to evaluate for potential site-specific differences in participant pretest and posttest knowledge and decisional conflict scores.

RESULTS

The mean (SD) pretest DCS score among all participants was 39.95 (25.05). The difference of pretest DCS scores among all 8 sites was not significant ($P=.244$). However, the mean pretest DCS score among the CHW-led group of 46.41 (24.28) was

found to be significantly greater than the physician-led group score of 36.41 (24.93), $P=.03$. The mean posttest DCS score of all participants was 14.27 (18.61). There was no significant difference in mean posttest DCS scores between the CHW-led group, 16.5 (20.04), and the physician-led group, 13.00 (17.76), $P=.3745$. Overall, there was a significant change among all participants between pretest and posttest scores of -26.68 (23.15), $P=6.71 \times 10^{-16}$. However, there was no significant difference in change in DCS by group: 24.31 physician led versus 30.64 CHW led, $P=.31$ (Table 1).

The mean (SD, range) pretest knowledge score was 4.31 (3.09, 0.0–11.0), and the mean posttest knowledge score was 7.54 (2.65, 0.0–11.0). On average, the change between pretest and posttest scores was +3.4 (3.17). The CHW-led group showed significantly greater improvement in knowledge postintervention: change of 2.6 (2.81) versus 5.1 (3.19), $P<.001$ (Table 1). The difference of the mean pretest knowledge scores among the 8 sites was found to be significant ($P=.024$), but comparison of the CHW-led group and physician-led group was not significant: 3.67 (3.10) versus 4.66 (3.04), $P=.11$. However, those in the physician-led group were more likely to agree that the speaker knew a lot about PSA testing ($P<.001$) and were more likely to trust the speaker ($P<.001$) (Table 2).

Most participants (74%) had discussed prostate cancer screening with their doctors, but only 64% had discussed the benefits of screening, and only 42.1% had discussed the risks at all. Even fewer (24%) had doctors who informed them that experts disagree about whether men should have a PSA test (Table 3).

In our samples, only 9.3% of participants made an income below \$20,000, near the federal poverty level, while nearly 50% disclosed incomes over \$50,000. A total of 40% of participants had college degrees, which is well above the national rate. Only 6.8% of participants were unemployed, far below the national unemployment level, while 89% were insured, and 89% had a regular doctor (Table 4).

DISCUSSION

In our study comparing decision quality outcomes between groups of Black men attending a PSA screening decision counseling session led either by a physician or a CHW, the CHW-led groups showed significantly greater improvement in knowledge postintervention: change of 2.6 (2.81) versus 5.1 (3.19), $P<.001$. Decisional conflict was reduced similarly in CHW-led versus physician-led groups. CHWs are seen as peers and thus overcome the power dynamic between doctors and patients that may influ-

Table 2. Individual perceptions of the education session

Item	Physician led ^a	CHW led ^a	P value ^b
I understand the benefits of PSA screening better after the talk.	3.82 (0.48)	3.75 (0.49)	.323
I understand the risk of PSA screening better after the session.	3.71 (0.68)	3.72 (0.51)	.641
I feel like I could talk to my doctor about PSA screening.	3.81 (0.49)	3.90 (0.30)	.340
The message of the talk encouraged PSA testing.	3.52 (0.77)	3.38 (0.94)	.599
The message of the session discouraged PSA testing.	1.49 (0.91)	1.83 (1.06)	.101
The message of the session was that PSA testing is my choice.	3.61 (0.76)	3.47 (0.88)	.351
The speaker knew a lot about PSA testing.	3.93 (0.30)	3.70 (0.65)	.007
I trust the speaker	3.82 (0.42)	3.58 (0.64)	.013
I would like to talk more with a doctor about PSA testing.	3.68 (0.62)	3.70 (0.61)	.902

PSA, prostate-specific antigen

^a Individual perceptions about the education session were measured on a scale from 1 to 4, where 1=*disagree*, 2=*somewhat disagree*, 3=*somewhat agree*, and 4=*agree*

^b P values were calculated using the Wilcoxon rank-sum test; bold values are significant for trust in the speaker CHW versus physician

ence patients’ decisions. The physician-patient power dynamic may explain the significantly higher pretest DCS scores among the CHW-led group than among the physician-led group. Participants in the CHW-led group may have felt more comfortable expressing their concerns to a peer than to a physician. However, the physician-led group was more likely to trust the speaker than the CHW-led group (P<.013). This study assessed the feasibility and fidelity of implementing a community-based prostate cancer screening decision aid within an African American church community. The physician and CHW educators were both Black men similar in age. Its design estimated the effect of a prostate cancer screening decision aid administered in a community-based setting on prostate cancer knowledge,

decision-making related to screening, and screening behavior. We compared the decision aid administered by a physician with the aid administered by a lay CHW on prostate cancer knowledge, decision-making related to screening, and screening behavior to also inform a larger study.

Numerous studies demonstrate that CHW-led or community-based interventions improve awareness, knowledge, support, and efficacy in reducing the effect of chronic disease and cancer in underserved populations.^{24–28} Despite a proven increased risk of prostate cancer and aggressive disease, Black men demonstrate less knowledge about prostate cancer and are less likely to be screened than white men.^{1–3,29} Addressing this gap among African American men presents several unique challenges, including racial

disparities in health care access and mistrust in the health care system. Many studies have investigated the effect of decision aids, which promote informed decision-making, yet very few have focused on African American men in nonclinical settings.

Our findings along with the works of others suggest that it is feasible to develop and implement an intervention to promote informed decision-making and increase knowledge in community settings to community residents outside of a clinical setting. Community-based intervention using “promotores” among Hispanic men have shown to improve decision-making for prostate cancer screening.³⁰ Focus groups lead by both lay and physician advisory panels examined how health educator-lead educational seminars can improve prostate

Table 3. Patient PSA discussions with providers

Participants	Total (%)	Physician led	CHW led	χ ² value	Significance
Discussed prostate cancer screening with their doctors	73.9	59	26	2.527	.112
Discussed benefits of screening with their doctors	64.3	52	22	2.336	.126
Discussed the risks of screening	42.1	34	14	1.276	.259
Doctors informed that experts disagree about whether men should have a PSA test	23.5	22	5	4.114	.043

PSA, prostate-specific antigen

Table 4. Participant characteristics

	All participants, n (%)	CHW-led group, n (%)	Physician-led group, n (%)
Age			
Mean (SD, range), y	55.5 (12.3, 29.0-86.0)	51.7 (11.1, 30.0-86.0)	57.6 (12.5, 29.0-81.0)
Education			
High school or less	24 (20.4)	11 (28.2)	13 (18.5)
Some college, did not finish	38 (32.2)	18 (46.2)	20 (28.6)
College or higher	47 (39.8)	10 (25.6)	37 (52.9)
Employment			
Employed or self-employed	60 (50.8)	24 (60.0)	36 (46.2)
Unemployed	8 (6.8)	5 (12.5)	3 (3.9)
Retired	41 (34.7)	10 (25.0)	31 (39.7)
Income			
Less than \$20,000	11 (9.3)	7 (17.5)	4 (5.1)
\$20,000 to \$50,000	32 (27.1)	7 (17.5)	25 (32.1)
\$50,000 to \$75,000	30 (25.4)	10 (25.0)	20 (25.6)
>\$75,000	29 (24.6)	12 (30.0)	17 (21.8)
Insured			
Yes	105 (88.9)	36 (90.0)	69 (88.5)
No	10 (8.4)	4 (10)	6 (7.7)
Has regular doctor			
Yes	105 (88.9)	34 (85.0)	71 (91)
No	10 (8.4)	6 (15)	4 (5.1)

cancer awareness and knowledge for African American men.³¹ Prostate cancer survivor peer educators significantly increased decision-making self-efficacy and overall knowledge scores from pretest to posttest in community settings (community centers, churches, and health fairs) when presenting a prostate cancer curricula created from formative interviews of doctors (surgeon, radiologists, and nurses) and prostate cancer survivors.³² The feasibility and influence of addressing prostate cancer concerns at a community level increase community engagement and allow for investigating factors associated with PSA screening behavior among African American men.

Increasing patient knowledge and preventive care often translate to improvements in care outcomes. Other studies have also uncovered significant influence of racial disparities and implicit bias in care provision.³³ Language such as “racial disparities in health care outcomes” places the burden of care outcomes on the populations affected. Providers may

instead focus on “racial disparities in health care provider practices” to account for disparities where socioeconomic factors are controlled for, such as income, education, and poverty.³³ Racially motivated disparities and implicit bias must be addressed as health workers pursue culturally sensitive interventions in minority communities. Our attempt to control for implicit bias involved working with African American institutions, such as Black churches, and having representation on the front lines of the intervention.

While on the surface, a physician may seem to be a better communicator of information to all patients, CHWs may be significant contributors to the health care team especially when social determinants of health create a barrier to effective care.^{7,9,10,34} High provider burden and limited time available to spend with patients restricts the ability to have in-depth discussions about decisions on screening.³⁵⁻³⁷ Discussions about pros and cons often do not happen in doctors' offices. Only 32% of men reported having a discussion

about the pros and cons of prostate cancer screening with their doctors.⁶ CHWs can decrease provider burden and meet the need for a balanced discussion about screening. Those most at risk are often individuals from low-income or minority groups, and it is for these patients, in particular, where the unique communication skills of the CHWs may be key.

There are many benefits to performing our study within a predominantly Black church. Black members of congregations and church leaders are a direct representation of their administration and leadership. They create access to the community and build trust and rapport. Their support is a key facilitator to integrate health care in a church setting. Within this platform, we found that several patrons who are doctors and nurses increase cultural sensitivity and have access to an aging population, which is the targeted demographic. Culturally appropriate intervention strategies can bridge medicine and the importance of health care into community-based settings.^{26,38-40} However, collaborat-

ing with community partners requires understanding and addressing their concerns as a community, potentially creating additional hurdles to conducting research. This goes in hand with providing information and creating access to deconstruct preconceived notions of mistrust in the health care system and addressing reasons for personal health care neglect.

Limitations

There were some limitations to this study. The number of sites was relatively small to compare two approaches head to head. Additionally, there was no randomization and no control group, two important safeguards against bias that can influence our results. The lack of a control makes it particularly difficult to assess the potential interaction of the decision aid and the messenger (physician versus CHW) and the effect of the messenger over and above the decision aid. Lastly, there was no long-term follow-up for participants to find out how the intervention may have influenced decision-making about screening over time.

Strengths

In spite of this, our study has a great number of strengths. The most important strength is our relationship with the Black churches, which allowed us access to their congregations because of a long-standing history of mutual respect. The program fostered trust and confidence when discussing sensitive health issues within a community-based setting, such as faith-based organizations and Mason's Lodges. New York City has the greatest number (3,014,385) of Black Americans in the United States according to the 2000 Census.⁴¹

Conclusions

The results of our study demonstrate that CHWs can effectively assist Black men with complex health decision-making in community-based set-

tings. Future studies should address questions of efficacy, effectiveness, and cost-effectiveness of CHW-led approaches to improving SDM and decision quality related to prostate cancer screening.

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AUTHOR CONTRIBUTIONS

Research concept and design: Makarov, Cole, Loeb, Ravenell; Acquisition of data: Martinez-Lopez, Hickman, Ravenell; Data analysis and interpretation: Makarov, Thomas, Ciprut, Fenstermaker, Gold, Loeb, Ravenell; Manuscript draft: Martinez-Lopez, Makarov, Thomas, Ciprut, Cole, Fenstermaker, Gold, Loeb, Ravenell; Acquisition of funding: Ravenell; Administrative: Martinez-Lopez, Makarov, Thomas, Ciprut, Cole, Fenstermaker, Gold, Loeb, Ravenell; Supervision: Makarov, Loeb, Ravenell

CONFLICT OF INTEREST

No conflicts of interest reported by authors.

ADDITIONAL INFORMATION

Coauthor Theodore Hickman, CHW, died September 9, 2016.

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