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A church-based intervention to promote informed decision-making for prostate cancer screening among African-American men

Bettina F. Drake, PhD, MPH,

Washington University School of Medicine; Department of Surgery; 660 S. Euclid, Campus Box 8100, St. Louis, MO 63110; Phone: 314-747-4534; Fax: 314-454-7941

Rachel Shelton, ScD,

Mount Sinai School of Medicine; Department of Oncological Sciences; 1425 Madison Ave, Box 1130, New York, NY 10029; Phone: 617-582-7458

Timothy Gilligan, MD, and

Cleveland Clinic Taussig Cancer Center; 9500 Euclid Ave, Cleveland, OH 44195; Phone: 216-444-0391

Jennifer D. Allen, ScD

Center for Community-Based Research and Cantor Center, Dana-Farber Cancer Institute; Department of Medicine, Harvard Medical School, 44 Binney St. LW703, Boston, MA 02115; Phone: 617-632-2269

Bettina F. Drake: drakeb@wudosis.wustl.edu; Rachel Shelton: rshelton@post.harvard.edu; Timothy Gilligan: gilligt@ccf.org; Jennifer D. Allen: Jennifer_Allen@dfci.harvard.edu

Abstract

Objectives—This feasibility study developed and pilot tested an intervention to: (1) increase knowledge about prostate cancer (CaP) screening; and (2) promote self-efficacy to participate in the informed decision-making (IDM) process.

Setting—African-American (AA) men are a priority audience for CaP screening interventions to promote IDM, and faith-based settings have been shown to be an effective venue to reach this population. Therefore we used predominantly AA churches to develop and test our intervention.

Participants—Participants (N=73) were recruited and the intervention was administered by an AA health educator.

Intervention—We developed and pre-tested a CaP screening IDM intervention based on the Ottawa Decision Support Framework and the Health Belief Model. The intervention included a tool called the ‘Road Map’ that depicts the potential consequences of a decision to undergo, or to forgo screening. A quasi-experimental design was used to test the intervention.

Main Outcome Measures—The main outcome measures were change in knowledge and self-efficacy post intervention.

Results—CaP knowledge ($p<0.0001$) and self-efficacy ($p=0.025$) significantly increased.

Conclusions—A church-based intervention delivered by an AA health educator is a promising strategy for promoting IDM among AA men.

Correspondence to: Bettina F. Drake, drakeb@wudosis.wustl.edu.

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Keywords

prostate cancer screening; informed decision-making; faith-based intervention; disparities; African-American

Introduction

Prostate cancer is the most common cancer and second leading cause of cancer death among all men in the United States.¹ However, substantial racial/ethnic disparities exist, with incidence rates for prostate cancer that are 60% higher for African-American (AA) men than for White men and mortality rates that are 2.4 times more likely among AA men than White men.¹ Methods for primary prevention of prostate cancer are not well established. Therefore, cancer prevention and control efforts have primarily focused on early detection of the disease. While screening methods (prostate-specific antigen test (PSA) and the digital rectal exam (DRE)) are widely available, there is currently insufficient evidence to warrant population-based screening for prostate cancer among average-risk men.² While there are no race-specific recommendations for prostate cancer screening, some organizations, including the American Cancer Society and NCI, suggest that higher-risk populations, such as men of African descent and those with a family history of the disease, be counseled about prostate cancer screening beginning at 40 or 45 years of age.^{1, 3}

In light of existing disparities in prostate cancer incidence and mortality, AA men are a priority audience for interventions. There have been a number of trials specifically focused on decision-aids for prostate cancer screening, most of which have used videotaped presentation or print material modalities.⁴⁻⁸ While most of these studies report significant short-term improvements in knowledge,^{4-6, 9, 10} relatively few trials have evaluated the impact of interventions on other theoretically-informed outcomes relevant to informed decision-making (IDM), including decision self-efficacy¹⁰ and decisional conflict.^{6, 10} Furthermore, few of these studies have included significant numbers of African-American men.¹¹ Additional studies are needed to understand how to counsel high risk men, such as AAs, to make informed decisions about prostate cancer screening.

Prior studies have shown that faith-based settings are a feasible and acceptable venue in which to provide health information to AA audiences.¹² Churches play a prominent role in many AA communities and represent a trusted, credible institution that addresses both spiritual and physical health.¹² Faith-based organizations represent a promising community setting in which to implement IDM interventions targeting AA men.¹²⁻¹⁴ Efforts to promote prostate cancer screening IDM can build upon the existing programs in many AA churches who are already providing health outreach to their congregations.¹² The paucity of research in this area highlights the need for additional information about decision-making processes among AA men, so as to improve the delivery of cancer screening interventions among this priority audience.

We present the feasibility of designing and implementing a prostate cancer screening IDM intervention in a faith-based setting, and assess initial changes in knowledge, self-efficacy and decisional conflict. The intervention was conducted in churches by an experienced, AA male health educator in a small group setting. Consistent with the definition of 'informed decision-making' described in the US Preventive Services Task Force,¹⁵ the objectives of the intervention were to: (1) increase knowledge about the benefits, risks and limitations of prostate cancer screening; and (2) promote confidence in men's ability to participate in the decision making process at a level that is personally desired (decision self-efficacy). Additionally, we assessed whether the intervention induced uncertainty (decisional conflict)

about prostate cancer screening, and the extent to which men's desire for control in decision-making (control preferences) was affected by the intervention.

Methods

Intervention Development

In developing the intervention, we drew upon published reports and expert opinion on information necessary for men to make informed decisions about prostate cancer screening.¹⁶ In crafting educational messages associated with this content, we sought to address the unique concerns and information needs of AA men identified through our own formative research,¹⁷ as well as, research conducted by others.^{18, 19}

The intervention was guided by the Ottawa Decision Support Framework²⁰ and the Health Belief Model²¹. In the Health Belief Model, individuals who consider themselves to be susceptible to a health condition, view that health condition as being severe, see benefits, and are more likely to take action. In this case, 'action' refers to making a decision about screening. According to the Ottawa Decision Support Framework²⁰, individuals use information about the pros and cons of each potential course of action, the probabilities associated with the pros and cons of those courses, and receive guidance in clarifying their values relevant to the options available to them.

The qualitative gathering technique of focus groups was used to assist in the development of the intervention. Focus groups are a valuable tool for the design of culturally relevant intervention strategies,^{22, 23} specifically for exploring sensitive topics among 'vulnerable' populations.^{24, 25}

Intervention Content

The intervention was a one-time, small group education session that lasted approximately 30 minutes to 1 hour. During these sessions, a male, AA health educator delivered essential information to help men clarify their own preferences and values as they relate to the pros and cons of prostate cancer screening. During the sessions, we explained the potential benefits and harms of prostate cancer screening, basic facts about prostate cancer, as well as, the understanding that the risk of harm had been proven but the potential for benefit remained putative. The discussion on benefits and harms included the benefits of screening for the early detection and treatment of aggressive cancer, and the possibility that early detection could lead to a less aggressive form of treatment. Some of the potential harms for screening discussed included the risk of unnecessary biopsies when no cancer is present, unnecessary treatment of indolent cancers, as well as the side effects of treatment, whether necessary or not, may result in erectile dysfunction, urinary incontinence, rectal bleeding and other complications. To assist in the delivery of the information, we created an educational tool called the 'Road Map' that graphically depicted the potential consequences of a decision to undergo, or to forgo screening, much like a 'decision tree' (See Figure 1). The road map was designed to graphically represent the uncertainties of prostate cancer screening and the fact that decisions need to be made that could have negative or positive consequences that were determined by information that would only become available after the decision-making. The health educator described that a variety of decisions could be viable, based on individual circumstances and provided tangible examples of what decisions men would be asked to make at various 'forks' in the road. Following this exercise, men were asked to examine their own values and preferences related to these decisions, and to 'chart their own course' on the map. Prior to implementation of the intervention, the Road Map was pre-tested among men in 2 additional focus groups (total n=15).

The intervention was designed to influence self-efficacy through observational learning, role playing, and vicarious experience (people sharing their 'stories' and the stories presented in the Road Map). Control preferences was enhanced by dispelling the myth that medical providers have the 'right answer' for every man and therefore, men have to be involved in personalized decision making. Decreasing decisional conflict was addressed in the intervention by helping men to think about their values vis-à-vis the decision, as well as, what was most important to them.

Study Design

A quasi-experimental, pretest-posttest design was used to assess the impact of the intervention. Participants completed self-administered surveys immediately prior to and following participation in a small group education session. Change in pre- and post-test scores were assessed using chi-square p-values at a significance level of less than or equal to 0.05. Outcomes included prostate cancer knowledge, decision self-efficacy, decisional conflict, and control preferences.

Population and Sample

A convenience sample of participants were recruited through seven different churches in the Greater Boston and Cambridge area, by pastors and other leaders within the church. Pastors made announcements at services inviting men to participate. In addition, we posted fliers and included information in church bulletins. Men eligible to participate in the intervention were 1) self-identified as African-American; 2) between the ages of 40 and 70; and 3) had never been diagnosed with prostate cancer. Seven sessions were held (each with 10 to 12 men), resulting in a total of 73 men. The study was approved by the Dana-Farber/Harvard Cancer Center Institutional Review Board and signed informed consent was obtained from all participants.

Data Collection

All data were collected through self-administered surveys immediately before and after the intervention was administered. Surveys documented the study outcomes, including prostate cancer knowledge and decision self-efficacy, decisional conflict and control preferences. Sociodemographic characteristics (race, age, marital status, education and income) and prostate cancer screening history (Have you ever been screened for prostate cancer?) were also collected. The definition for screening includes both prostate-specific antigen and digital rectal exam. To reduce potential participant burden, given the amount of time required to complete the surveys for each outcome, each participant was randomly assigned to complete three of the four outcome measures. Therefore, a representative sample of the study population responded to questions for each outcome.

Measures

Questions for pre-and post-test surveys were taken from valid and reliable measures published in the literature.^{7, 26, 27} We assessed prostate cancer knowledge using 17 items taken from prior studies^{7, 28} (see Table 2). A 0-100% score was computed for each participant, based on the number of questions answered correctly, with higher scores indicating higher knowledge.

The Decision Self-Efficacy Scale²⁷ was used to assess confidence in one's ability to participate in decision-making at a level personally desired. The 11 items required participants to reflect on how confident they felt about various aspects of the decision-making process. Responses were measured on a likert scale that ranges from 0=not at all confident to 4=very confident. Scores were summed, divided by 11 and multiplied by 25, to

arrive at a score of self-efficacy that ranges from 0 (low self-efficacy) to 100 (high self-efficacy).²⁷ This scale has demonstrated high reliability, with reported Cronbach's alpha coefficient values ranging from 0.84 to 0.89.²⁷

The Decisional Conflict Scale²⁹ was used to evaluate the potential negative consequences of the intervention. This scale assessed uncertainty about decision-making, the degree to which an individual felt informed, and the extent to which he perceived that he can make a decision that is consistent with his values. This scale has been found to distinguish between those who make a decision versus those who delay a decision. This 9-item scale used a four-level likert scale ranging from 1=strongly agree to 4=strongly disagree. Scoring is such that 0 represents no conflict; 100 reflects the highest level of conflict. This scale previously been used among an AA sample with adequate reliability (Cronbach's alpha= 0.76).⁶

Preference for control in the decision-making process was assessed with the Control Preference Scale.³⁰ Individuals were asked "Who should make medical decisions?" Response options included: (a) "I make the final make decision on my own"; (b) "I make the decision after seriously considering my doctor's opinion"; (c) "my doctor and I share responsibility for the decision"; (d) "I prefer that the doctor make the decision after seriously considering my opinion"; and (e) "I prefer that the doctor make the decision." Responses were collapsed and categorized into three categories: active decision-making styles (options a and b), collaborative styles (option c), and passive styles (options d and e).³⁰

Data Analysis

Descriptive statistics, including chi-square and t-test statistics were conducted, along with their corresponding p-values at alpha less than or equal to 0.05. The reliability of the scales were tested using Cronbach's alpha. Demographic characteristics were assessed for each outcome to determine homogeneity in characteristics across outcome variables. Pearson's chi-square test was used to detect the correlation between men who have been screened and men who have not been screened for each demographic variable. The t-test for equal variances was used to assess significant changes in main and secondary outcome variables (knowledge, decision self-efficacy, decisional conflict and control preference) from pre- to post-test. SAS (Version 9.1; SAS Institute Inc, Cary, NC) was used in all analyses.

Results

Demographics

Characteristics of the complete study sample are listed in Table 1. About half of the men (54.8%) were 50 years of age or older (mean age 51) and married (52.1%). A majority of the men had some college education or greater (61.1%). About two-thirds (64.4%) had undergone prostate cancer screening in the past. We examined demographic characteristics across each of the survey version; there were no significant differences across groups (data not shown).

The majority of the participants have been screened (64.4%) by either DRE or PSA. Among the men who had been screened, a large majority was found to be 50 years of age or older (84.2%), married (81.1%), and made less than \$20,000 per year (90.0%). There was no difference in educational levels between men who reported previous screening and those who had not been screened.

Primary Outcomes

Prostate Cancer Knowledge—The percentage of participants responding correctly to the knowledge questions increased post-intervention for all items (see Table 2). Prostate

cancer knowledge scores significantly increased from pre- to post-intervention ($p<0.001$) by an average of 25.7 percentage points (see Table 3). The mean percentage of correct responses increased from 22.5% to 48.2%.

Decision Self-Efficacy—Significant increases were observed in decision self-efficacy between pre-and post-tests. The average increase was 8.9 points ($p=0.025$). Following the intervention, average self-efficacy scores were 92.5 (out of 100) compared to 83.6 at baseline. The average score per item (total score divided by the number of items) increased by 0.5 or more for 13 (27%) participants and did not increase at all for 19 (40%) participants. Fifteen of the 19 participants showing no increase had the maximum possible self-efficacy score on the pre-test and thus could not increase their score at post-test (latter results not shown).

Secondary Outcomes

Decisional Conflict—Although the average score for decisional conflict declined post-intervention, this change was not statistically significant (47.7 pre-test vs. 42.3 post-test; $p=0.097$).

Control Preferences—At post-test, men generally reported a desire to become more involved in decision making. For example, at pre-test, 59.7% preferred an active role. At post-test, 76.1% reported this to be the case. In addition, the collaborative decision-makers were more likely to move to active decision-makers ($p<0.0001$).

Discussion

Prior studies have reported that AA men have lower levels of prostate cancer knowledge^{31, 32} and AA men with a family history of prostate cancer are less likely to be screened than white men with a family history of prostate cancer.³³ In order for AA men to meaningfully participate in decisions about screening, they must have a basic understanding of prostate cancer risk factors, the risks, benefits and limitations of available screening modalities so that their individual values and preferences are taken into account. This feasibility study is the first published report of an IDM intervention for AA men in a church-based setting which has been shown to be effective for health studies in this population.¹²

This report describes promising results from the pilot testing of a new prostate cancer screening decision aid for AA men. After participating in the intervention, men demonstrated slightly improved prostate cancer knowledge and significantly increased self-efficacy in the ability to participate in decision-making. Moreover, men had higher levels of self-efficacy and their overall levels of decisional conflict in making an informed decision on prostate cancer screening declined. Although the change in decisional conflict was not statistically significant, the downward trend is important, as interventions that are designed to promote awareness about screening controversies have the potential to increase internal conflict and uncertainty over the ‘right’ decision for an individual man.

Our results are consistent with other decision aid interventions that demonstrate improved knowledge and increased desire for taking an active role in decision-making.^{11, 34, 35} The results from this feasibility study are encouraging that faith-based interventions may enhance self-efficacy, an outcome that to date, has not received adequate attention in IDM studies for prostate cancer.^{34, 36}

We found that faith-based organizations were a feasible venue in which to engage men in discussions about decision making. Other researchers^{34, 37} have similarly intervened in churches to promote education on screening, finding this an effective setting from which to

recruit participants. Our study extends these faith-based studies by focusing on IDM for prostate cancer screening in order to increase knowledge about prostate cancer screening and self-efficacy in making an informed decision about whether or not to be screened.

Limitations of this research must be acknowledged. This feasibility study used a quasi-experimental design which has limitations in the interpretations of results; however this design is an appropriate approach for this type of study. There have been few randomized controlled trials on prostate cancer informed decision-making and this feasibility study will inform future trials on prostate cancer screening IDM, specifically in the African-American, faith-based community. Due to logistical constraints and in an effort to reduce respondent burden among a community sample, we did not administer all surveys to everyone. The length of time to administer all of the surveys to all participants was burdensome; therefore, we randomly rotated who received each survey. However, we were able to administer the Decision Self-Efficacy and Decisional Conflict Scales to the same 48 participants. We used non-probability sampling methods to achieve our sample which could introduce selection bias. In terms of generalizability of findings, our sample may be slightly more educated and have higher incomes than the general AA population in Massachusetts.³⁸ It would have been ideal to have a larger sample size to test this intervention, however our sample size provides adequate power (80% or higher) to detect significant differences in knowledge and self-efficacy but not for decisional conflict. The power to detect significant differences at an alpha of 0.05 for decisional conflict is 63%. These analytical limitations may contribute to the lack of significance for this outcome. However, we did observe a decline in decisional conflict post-intervention which may have proven significant with a larger sample size. Future research should consider evaluating these outcomes at longer post-intervention endpoints to assess whether these changes were maintained over time.

Despite these limitations, our results contribute to the literature on IDM interventions for prostate cancer among AA men. As noted, to date there has been a dearth of prostate cancer screening intervention research that has included large proportions of AA men and has focused on decision-making. Empowering men to participate in decision-making in the face of uncertainty about prostate screening represents a major challenge. This issue becomes especially challenging when intervening among a group with an elevated risk of prostate cancer.

Conclusions

Though preliminary, the findings presented here suggest that a community-based intervention delivered by a male, African-American health educator in a church setting is a feasible strategy for promoting IDM among African-American men. More rigorous study designs (e.g. longitudinal studies, RCT's) are needed to further test this intervention strategy. More research is needed to examine the extent to which gains in IDM outcomes are maintained, and to assess psychosocial factors that may mediate decisional processes (e.g., spiritual or religious beliefs) in this high risk population.

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Table 1

Participant Characteristics and previous screening for prostate cancer. (N=73)

	All Men [†] n (%)	Screened [†] n (%)	Not Screened n (%)
Age [*]			
under 50	33 (45.2)	15 (45.5)	18 (54.5)
50 and above	40 (54.8)	32 (84.2)	8 (15.8)
Marital status [*]			
Married	38 (52.1)	30 (81.1)	8 (18.9)
Not married	35 (48.0)	17 (50.0)	18 (50.0)
Income [*]			
< \$20,000	22 (33.3)	18 (90.0)	4 (10.0)
\$20,000 to \$44,999	31 (47.0)	18 (58.1)	13 (41.9)
\$45,000 or more	13 (19.7)	4 (30.8)	9 (69.2)
Missing	7		
Education			
High School degree or less	28 (38.9)	19 (67.9)	9 (32.1)
Some college	24 (33.3)	12 (50.0)	12 (50.0)
College degree or more	20 (27.8)	15 (83.3)	5 (16.7)
Missing	1		
Ever screened [~]			
Yes	47 (64.4)		
No	24 (32.9)		
Unsure	2 (2.7)		

* p<0.0001 by chi-square analysis comparing men who have been screened vs. men who have not been screened for each demographic variable

[~] Screening includes both prostate-specific antigen and digital rectal exam

[†] due to rounding, the percentages do not always equal 100

Table 2

Percent correct responses on Pre- and Post-test Knowledge Questions

Knowledge Questions	Percent Correct	
	Pre-test	Post-test
	N (%)	N (%)
1. Is it possible to have CaP even if a man does not have any symptoms? *Yes; No; Don't know	22 (64.7)	31 (88.6)
2. CaP is more common in 50-year-old men than in 70-year-old men? True; *False; Don't know	11 (31.4)	12 (34.3)
3. Will screening reduce a man's risk of dying of CaP? *Doctor's are unsure; Yes; No; Don't know	3 (8.6)	13 (37.1)
4. Do men live longer if they undergo screening for CaP? *Doctor's are unsure; Yes; No; Don't know	3 (8.8)	22 (35.3)
5. Which is the best method for detecting CaP? Rectal examination; Rectal examination and Prostate ultrasound; *Rectal examination and PSA; PSA and Prostate ultrasound; Don't know	14 (41.2)	19 (55.9)
6. Which of the following statements is correct for a man with early stage CaP? *Watchful waiting may be equal to surgery or radiation treatment; Surgery or radiation treatment cures very few patients; Surgery or radiation treatment cures all patients; Surgery causes cancer cells to spread; Don't know	1 (3.0)	21 (63.6)
7. Which of the following statements is true? Screening is recommended; Screening is not recommended; *Screening is controversial	0 (0)	8 (24.2)
8. Compared to CaPs detected without screening, the CaPs detected by screening are: *More likely to be curable; Less likely to be curable; Just as likely to be curable; Don't know	12 (36.4)	22 (64.7)
9. Which of the following statements is correct for a man with CaP who undergoes surgery to remove the prostate? Impotence occurs in all patients; Permanent incontinence always occurs; *Most men develop erectile dysfunction; Additional treatment is never needed; Don't know	6 (60.0)	17 (54.8)
10. How many untreated men with early stage CaP will die from it? Most or all; about half; *most of them with not die; Don't know	1 (2.9)	18 (51.4)
11. Compared to younger men: *Older men are more likely to have CaP; Older men are equally likely to have CaP; Older men are less likely to have CaP; Don't know	21 (61.8)	27 (77.1)
12. A high PSA level usually means: Cancer of the prostate; *An enlarged prostate associated with aging; An infection of the prostate; Don't know	8 (24.2)	16 (45.7)

Knowledge Questions	Percent Correct	
	Pre-test	Post-test
13. Which group of men is more likely to have a high PSA level? Men in their 50s; Men in their 60s; *Men in their 70s; Don't know	3 (8.8)	10 (28.6)
14. If found at an early stage, how often is CaP curable? *Almost all of the time; About half the time; Less than half the time; Don't know	15 (44.1)	24 (38.6)
15. How many men with a high PSA level will have CaP? Most or all; about half; *most will not have CaP; Don't know	2 (6.1)	6 (17.1)
16. Which one of the following statements is a possible advantage of having the PSA test? *Feeling some reassurance that you do not have cancer if the test is normal; Predicting which patients are most likely to die of CaP; Detecting CaP than can be treated with less risky procedures; Don't know	5 (15.2)	16 (45.7)
17. Which one of the following statements is a possible disadvantage of having a PSA test? The PSA test detects only advanced CaP; *A positive test may cause anxiety and unnecessary tests in patients who do not have cancer; It is not effective as a DRE for detecting CaP; Don't know	7 (21.2)	15 (42.9)

* denotes the correct response

Table 3

Change in main outcome variables

Outcomes	Pre-test		Post-test		Change	* p-value
	Mean (sd)		Mean (sd)		Mean (sd)	
Prostate cancer knowledge score (n=35) (range: 0-100)	22.5 (13.3)		48.2 (19.9)		25.7 (16.9)	<0.0001
Decision self-efficacy score (n=48) (range: 0-100)	83.6 (23.2)		92.5 (15.5)		8.9 (19.6)	0.025
Decisional conflict score (n=48) (range: 0-100)	47.7 (14.3)		42.3 (17.8)		-5.5 (16.2)	0.097
Control preference (n=67)		N (%)		N (%)		
% active	40 (59.7)		54 (76.1)		14 points	<0.0001
% collaborative	23 (34.3)		12 (16.9)		-11 points	
% passive	4 (5.9)		5 (7.0)		1 points	

* p-value for Pooled t-test for equal variances

~ Only a subset of participants completed each questionnaire; the same 48 participants completed Decision self-efficacy and Decisional conflict scales.