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Men's Knowledge and Beliefs about Prostate Cancer: Education, Race, and Screening Status

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Abstract

Objective—African-American men die from prostate cancer at higher rates than white men, a health disparity that may result from differences in knowledge and beliefs about prostate cancer and screening. Studies conflict on whether race or socioeconomic status affects knowledge of prostate cancer and screening. This study compared education, race, and screening status to determine how each factor alone or together shape men's knowledge of prostate cancer and screening.

Methods—In-depth interviews were conducted with 65 African-American and white men with diverse education backgrounds, aged 40–64.

Results—Education, not race or screening status, was associated with knowledge about the prostate gland, prostate cancer symptoms and screening tests, and fear of prostate cancer. The exception was knowledge about the prostate specific antigen blood test which was associated with education and screening status.

Conclusion—Education, not race, is associated with prostate cancer and screening knowledge. Interventions should focus on all men with low education to correct their misinformation about prostate cancer and to engage them in shared decision making about screening.

Keywords

prostate cancer; prostate cancer screening; health disparities; African-American

Prostate cancer is the most prevalent non-cutaneous cancer among men in the United States, and is the second leading cancer-related cause of death. The American Cancer Society (ACS) [1] estimates that 186,320 new cases of prostate cancer will be diagnosed in 2008 with 28,660 deaths. Health disparities persist with higher incidence and mortality rates among African-American men compared to white men.[2–4] Despite abundant research, inconclusive findings remain about why prostate cancer disparities persist, and how best to decrease them.[5] The ACS recommends annual screening at age 45 for African-American men and those at high risk, and at 50 for all others.[1] However, efficacy of screening for detecting early prostate cancer and

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reducing mortality is controversial.[6] Consequently, the American Urological Association and the United States Preventive Services Task Force recommend that physicians explain the risks and benefits of screening, and assist men in making screening decisions.[6,7]

Understanding men's knowledge and beliefs about prostate cancer is important so that physicians can add to existing knowledge or correct misinformation. Past research provides conflicting findings about whether race or socioeconomic background influences men's knowledge and beliefs about prostate cancer and screening.[6, 7, 12, 13] Inconsistent results undermine physicians' ability to anticipate the types of educational materials diverse men need to make informed decisions about prostate cancer screening.

This study examined the roles of education, race, and screening status for men's beliefs and knowledge about prostate cancer. Our goal **was** to clarify how educational attainment, race, and screening status influence men's knowledge and beliefs. This research can inform how physicians can promote shared decision-making with diverse groups of men. To accomplish this goal, we analyzed qualitative data based on in-depth interviews with 65 African-American and white men from diverse educational attainment backgrounds with similar numbers of those who have been screened and those who have not.

BACKGROUND

Benefits and Limits of Prostate Cancer Screening

Physicians use prostate cancer screening to detect cancer in men who do not have symptoms. The screening consists of two exams: the digital rectal exam (DRE) and the prostate specific antigen (PSA) blood test.[1] The DRE can determine the prostate's approximate size and any unusual growths. The DRE is beneficial because it can detect large masses when they are present, has a low cost when incorporated into routine screening exams, and is quick (the exam lasts about 15 seconds). However, the exam can miss small prostate tumors, has relatively poor specificity for prostate cancer, and can only evaluate the posterior most aspect of the gland. Further, the exam's effectiveness depends on the physician's skill and experience.[14]

PSA is a serine protease produced by prostate epithelial cells that can be detected in the serum. The main benefit of the PSA is that, with the DRE, it is the best screening to detect prostate cancer. The limits are that the blood test may identify slow growing tumors that may not adversely affect a man's life if left untreated. The diagnosis of cancer can cause unnecessary worry and treatments that could lead to incontinence and erectile dysfunction.[1] Also, only 25 to 30 percent of men who have a biopsy as a follow-up to an elevated PSA have prostate cancer.[16] The emotional toll and financial costs can burden these men.[1] Despite the exams' limitations, they can provide important information for physicians to determine whether more testing is necessary.

Racial Differences in Prostate Cancer Knowledge and Beliefs

Studies reported inconsistent findings about racial differences in beliefs and knowledge about prostate cancer and screening.[6–13] These inconsistent findings could result from three issues. The first was that racial differences cannot be determined with samples based on one racial group.[e.g., 8–11] Some studies reported that many African-American men lack knowledge about the prostate [9,11] and medical recommendations about prostate cancer screening.[8, 10, 11] One study found that despite African-American's low levels of knowledge regarding the PSA and the DRE, those who were unscreened had even less knowledge. [8] Overall, much of this literature found that men's reluctance toward screening was connected to cultural issues within African-American communities, such as lack of trust of the medical system because of racist experiences with health care providers, and a lack of health messages tailored to African-American men[8, 9, 11]

The second issue was that many studies based on African-American samples and educational attainment did not separate race and education. [e.g., 8–10] For example, one study reported that most African-American men in their sample had knowledge about prostate screening tests,[9] but their sample consisted of relatively highly educated men with mostly post secondary education. Two exceptions compared by education but reported different findings about the roles of race and education. One found that education level was associated with prostate cancer knowledge[17] while the other reported that race, not education, was the main factor in men's concerns about communication issues with doctors.[11] Even though these two studies compared race and education, they were both based on samples of African-American men so it is unclear whether these findings are unique to African-American men.

The third issue was that research that compared racial and ethnic groups and reported differences by educational attainment still found conflicting results about the role of race or education in men's knowledge about prostate cancer and screening.[6, 7, 12, 13] Some research found general racial and ethnic differences in knowledge, even when education was controlled[12] as well as ethnic differences in knowledge of the PSA.[13] In contrast, one study reported no racial or ethnic differences7 and another found just socioeconomic differences.[6] Given the mixed findings about the roles of race and socioeconomic background, we compared beliefs and knowledge across education, race, and screening status to analyze how each characteristic alone or together influences men's beliefs and knowledge.

METHODS

Study Design: Sample and Interviews

In-depth interview data were collected from 65 men, aged 40–64, from diverse socioeconomic backgrounds. None of the respondents had ever been diagnosed with prostate cancer. The project was framed by Kleinman's explanatory model of illness. Explanatory models (EMs) are the ideas individuals use to make sense of a condition or illness and to evaluate possible treatment or prevention strategies.[18, 19] EMs provide information on six aspects of illness: (a) naming the condition, (b) etiology, (c) precipitating circumstances and mode of onset of symptoms, (d) an explanation of pathophysiology, (e) course of sickness and appropriate patient behavior, and (f) available treatments. People vary in the content of their EMs, which are usually only partly articulated and may be inconsistent or even self-contradictory. Individual models share common features to the extent that persons share a common cultural and social orientation [20].

This study is part of a larger project on African-American and white men's beliefs, knowledge, and screening for prostate and colorectal cancer. The larger study consisted of two in-depth interviews for each man for a total of 130 interviews. During the first interview, topics on beliefs about health, illness, cancer, and general cancer screening tests were discussed. The first meeting allowed the interviewer to develop rapport for the second one, which covered potentially sensitive topics on men's beliefs, knowledge, and screening practices for prostate and colorectal cancer. In this paper, we focus on data collected from the second interview.

We received approval from the Wake Forest University Health Science Institutional Review Board before conducting interviews. Two male researchers conducted the interviews and gave men a choice of locations to meet. Some men preferred their own homes, while others chose conference rooms in churches or in the department where the researchers work; all interviews were private to help ensure participant privacy and to encourage open discussion. Each interview ranged from one to two hours, was tape-recorded, and transcribed. Based on a semi-structured interview guide, men were asked what they know about the prostate, prostate cancer, prostate cancer prevention and screening, DREs, PSA blood tests, and barriers to screening. Prior to questions on specific screening tests, a description of prostate screening from the ACS

was read to each man, regardless of their level of knowledge. As is standard in qualitative interviews, follow-up questions were used to clarify vague responses. We assigned each man an identification number to preserve anonymity.

The sample was recruited from counties in North Carolina including small and medium towns, and urban areas. Interviewers worked with groups in each area such as churches, social services, and men's groups, to locate and recruit men between the ages of 40 and 64 who had not had prostate cancer. The goal in recruitment was to obtain a balance of screened and unscreened African-American and white men from rural and urban areas across three educational attainment levels: low education, defined as high school and under; medium educational attainment, defined as some college; and high educational attainment, defined as college graduate and higher.

The initial goal of sample recruitment was to obtain a balance between men who never had a DRE and those who had. However, most men had the DRE when they enrolled in the military or in their youth as part of an exam. Therefore, we focused on recruiting men who had not had the DRE specifically for cancer screening. We defined screened as those respondents who had the DRE and PSA for prostate cancer screening. We defined unscreened as those men who had not had a DRE for prostate cancer screening, and had not had a PSA. Overall, the sample consisted of 65 men, 35 are African-American men and 30 are white men. The race, educational attainment, and screening status of the recruited sample are described in Table 1

Data Analysis—Through discussion and consensus, the research team developed a coding dictionary. Each transcript was first coded and then second coded by a different investigator. Discrepancies between the first and second coding were discussed and resolved at team meetings. As new issues arose, the team collectively agreed to add or collapse codes. ATLAS.ti, a qualitative analysis software program, was used to code and to analyze the data. Data analysis consisted of sorting the men into three educational attainment groups, and by race and screening status within each group, and running analysis reports based on prostate codes. The prostate codes covered discussions about prostate gland; prostate cancer causes; symptoms; what they believe other men fear about prostate cancer; and knowledge about screening exams. Summaries were generated for each educational attainment group and for screening status and racial groups within each educational attainment group, and then distributed to the team for identification of salient themes. Through consensus, the team established themes about men's beliefs and knowledge about the prostate, prostate cancer, and screening.

RESULTS

We found differences by educational attainment but not race or screening status in men's discussions about most topics including the prostate gland, causes of prostate cancer, fears about prostate cancer, and prostate cancer screening. We found two exceptions. First, knowledge of prostate cancer symptoms was not associated with education. Second, men's knowledge about the PSA blood test differed by screening status within each education group.

PROSTATE GLAND

Overall, very few knew the prostate's function, but many knew its location. The low educational attainment group had the least knowledge; most did not know anything about the prostate while a few knew its general location. Their responses ranged from "I ain't really familiar with that" (#45, white, unscreened) to "I think the prostate is something like a…walnut shaped thing…up in your rectum" (#51, African-American, screened). Most men with medium educational attainment had some knowledge about what the prostate is and where it is located, such as "it's a gland" (#6, African-American, screened) or "it's around the urethra" (#27, white,

unscreened). Most in the high educational attainment knew that the prostate is a gland and knew its location. A few also explained its function: “It’s a small gland in the pelvic area that basically is responsible for the production of semen” (#2, African-American, unscreened).

PROSTATE CANCER CAUSES

Overall, as education increased so did men’s knowledge about prostate cancer causes. All men with low educational attainment did not know what causes prostate cancer, but some guessed such as “like all cancers, it’s just something that randomly occurs (#1, white, screened). Most with medium educational attainment provided at least one cause with aging as the most common: “From what I understand, if you live long enough, every male’s going to get some form of prostate cancer” (#57, African-American, screened). Two men also identified family history: “could be genetics” (#27, white unscreened). Other causes given were pesticides, infection, diet, and unsafe sexual practices.

Most men with high educational attainment named aging or aging and genetics as the most common prostate cancer causes. The only man who explicitly said that race is a risk factor is a screened, white man (#39): “I think there’s a racial factor….if you’re African-American, you’re more likely to get it.” Like the other groups, some men did not know and others believed that high fat diet, toxins, and infections can **cause** prostate cancer.

PROSTATE CANCER SYMPTOMS

This theme **was** the only one that men across educational attainment groups discussed similarly. The most common symptoms identified were sexual and bladder problems. For example, a man with low educational attainment said: “I know it mess with (a man’s) urine (and) probably having sex” (#13, African-American, unscreened). Similarly, “(Prostate cancer) makes you not be able to empty your bladder because the gland swells up around the urethra” (#6, African-American, screened, medium educational attainment) and “Seems like it would mess up the reproductive organs first” (#29, white, unscreened, high educational attainment).

PROSTATE CANCER FEAR

The two most prevalent fears about prostate cancer that men believed that other men held were sexual problems and death, with men from the low educational attainment group only naming those two fears. As education increased, men cited more fears. Men with medium educational attainment discussed cancer spreading and fear of treating the rectum: “[My fear would that the cancer] could have the potential for spread,” (#61, white, unscreened) and “I think they would have to go up through your rectal area to do it (treat the cancer), that would be my biggest fear there,” (#7, white, screened). In addition to sexual problems and death, most with high education discussed other fears including castration, masculine vulnerability, and knowing they have cancer. Two African-American and one white man, all screened, said that “castration” is men’s biggest fear. Fear related to masculine vulnerability was illustrated by an unscreened, white man’s (#16) explanation that “men don’t like to think about themselves as being vulnerable and the…fact that it is locating close to the rectum.” Those who fear cancer itself were represented by an unscreened, African-American man (#37) who said: “The knowledge of having cancer…worrying yourself and your family.”

SCREENING KNOWLEDGE

Men’s knowledge about the DRE and PSA increased with education, similar to other topics. However, men’s knowledge about the PSA blood test was also affected by their screening status within each educational attainment group. Men across all groups knew more about the DRE than the PSA.

Digital Rectal Exam

Men with low educational attainment were least likely to know any screening tests. Those who knew something about the DRE called it a "finger test" or "rectum test;" many were confused by the word "digital." Some with medium education did not know any screening exams, but most had some knowledge, and those who had the most knew why doctors use the DRE: "A doctor…probes your anus…(to) see if he feels any abnormalities, lumps" (#38, white man, screened). Most with high education identified the DRE as a screening exam, provided the most detailed descriptions, and some even explained that the DRE is not definitive in itself: "I know that the (DRE)…is the initial check-point to see if there may be a problem…and there's further exams that need to be done " (#55, African-American man, unscreened).

Prostate Specific Antigen Blood Test

While most with low education did not know about the PSA, those who knew it is a screening exam were all screened. They knew it is a blood test, but did not know the term "PSA." The one exception **was** a screened, white man (#44): "PSA (is) a blood test for a certain antigen." Most men with medium and high educational attainment knew that doctors use PSA for screening, but those who did not were almost all unscreened. Some screened men explained the blood test's purpose: "To see if you have antigens in your blood that signify…something's wrong" (#10, African-American, screened, medium educational). Others knew that the PSA test is not definitive: "The specific antigen in the blood is a marker…for cancer….It's not 100 percent accurate but it can indicate the possibility of problems" (#36, white, screened, high educational attainment).

DISCUSSION AND CONCLUSION

Understanding men's knowledge and beliefs about prostate cancer and screening is important for physicians to engage men in shared decision-making about screening.[6, 7] Yet past literature presents conflicting findings about whether race [e.g., 12] or educational level [e.g., 17] influences men's knowledge and beliefs about prostate cancer and screening. This qualitative study compared education, race, and screening status across a broad range of topics. Our results indicate that men's explanatory models of prostate cancer varied by education but not race or screening status except for prostate cancer symptoms; men across educational attainment levels similarly believed that urinary and sexual problems are prostate cancer symptoms. Similar to past research,[8] education and screening status influenced men's knowledge about the PSA.

Our study indicates that men with low education need comprehensive education about prostate cancer risks. Overall, knowledge of the prostate's function is very low, similar to past research on African-American men.[9, 11] In contrast to that research, our study found that as education increased, so did men's knowledge about the prostate, regardless of race. Knowledge about prostate cancer causes also increased with education across racial groups. None of the men with low education knew any risk factors, unlike the other groups, which correctly identified age and genetics. Only two men identified race as a risk factor, unlike past research in which most African-Americans named race as risk factor.[7] This difference in finding likely represents sampling differences. Our study **used** a community sample while the previous used a clinical sample in which two-thirds of the African-American men were screened. Those men likely had recent discussions with their physicians about prostate cancer risks.

The prevalent prostate cancer fears among all men were sexual problems and death. Past research suggests that fear of death from prostate cancer may prevent some African-Americans from getting screened.[21] Our results suggest this belief is not unique to African-Americans. Overall, men had more knowledge about the DRE than PSA. As education increased, so did knowledge about both exams. Screening status was also associated with PSA knowledge. This

finding suggests that screened men may have received information about the blood test's purpose, but we did not ask men what their doctors told them. Past research suggests that those men who have a PSA blood test are told by their doctor its advantages and disadvantages.[22] Our study supports this previous finding.

This qualitative study provides a unique comparison, but it has limitations. Even though the findings, which compare African-American and white men in the Southeast, can be generalized to that region of the United States, they cannot be generalized to the whole population. We also did not examine other socioeconomic factors like income, access to healthcare or literacy, factors that can affect prostate cancer knowledge.[5] Our sample is large for a qualitative study, however, and its unique comparison offers two important implications for future research and health education.

First, this study's results clearly suggest that education, not race or screening status, is linked to prostate cancer knowledge. Because we focused only on education, we do not know what other possible aspects of socioeconomic status education is capturing. Future research could delineate how or why education contributes to prostate cancer knowledge. To the extent it is tapping other factors, educational differences in prostate cancer knowledge may reflect social disparities in health care access. Our results about PSA testing partially support this idea because being screened was associated with PSA blood test knowledge in addition to education. Still, education may be reflecting other socioeconomic factors such as income or health literacy. Future research could disaggregate these factors within larger, racially diverse samples to investigate how they independently or together are associated with prostate cancer knowledge, screening, and health disparities. Identifying the role of socioeconomic factors can help physicians tailor their discussions to different groups, and to help men make informed decisions about screening.

Second, understanding how education and other socioeconomic factors affect men's knowledge will benefit interventions targeting at-risk men. Identifying whether education, income, health care access or health literacy affect prostate cancer knowledge has different implications for how to correct the relative lack of accurate information. For example, if socioeconomic factors result in lack of information, media campaigns may help fill the gaps in knowledge, as others have found.[23] Instead, if differences by education reflect lack of health services, then interventions that utilize client-navigators can increase screening rates.[24] Another possibility is that health literacy is the factor predicting knowledge, so future interventions should ensure information is understandable to low literacy audiences.

In summary, in this large qualitative study we found that education and not race was associated with men's knowledge and misperceptions of prostate cancer and screening. Men with the lowest education have poor understanding of the prostate gland and screening, so they cannot make informed decisions about screening. Efforts to increase screening knowledge should focus on undereducated men, and physicians should ensure that all patients understand the risks and benefits of prostate cancer screening. Future research should focus on interventions with undereducated men with risk factors so that they can make informed decisions about screening.

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Table 1

Sample Summary by Education, Race and Screening Status

Participant Education and Race	Screened		Unscreened		Total
	n	%	n	%	n
Low Education					
African American	7	20.6	9	30.0	16
White	2	5.9	1	3.3	3
Total	9	26.5	10	33.3	19
Medium Education					
African American	5	14.7	1	3.3	6
White	6	14.7	5	16.7	11
Total	10	29.4	6	20.0	17
High Education					
African American	6	17.6	7	23.3	13
White	9	26.5	7	23.3	16
Total	15	44.1	14	46.6	29
Cumulative Total	35	100	30	100	65