Discussions About Prostate Cancer Screening Between U.S. Primary Care Physicians and Their Patients

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OBJECTIVE: This study examined the likelihood that U.S. primary care physicians (PCPs) discuss and recommend prostate cancer screening with their patients and physician-related and practice-related factors associated with this behavior.

METHODS: We analyzed data from the 2007–2008 National Survey of Primary Care Physician Practices Regarding Prostate Cancer Screening (N=1,256), the most recent and comprehensive survey specifically designed to address issues concerning prostate cancer screening and representing nearly 95,000 PCPs. We evaluated the relationship between PCP behavior regarding prostate cancer screening discussions and covariates, including PCP demographic and practice-related factors. Weighted percentages and Chi-square tests were used to compare use of screening discussions by PCP characteristics. Adjusted odds of discussing screening and recommending the PSA test were determined from logistic regression.

RESULTS: Eighty percent of PCPs reported that they routinely discuss prostate cancer screening with all of their male patients, and 64.1% of PCPs who discussed screening with any patients reported that they attempted to talk their patients into getting the PSA test. In multivariate analyses, encouraging PSA testing was more likely among non-Hispanic black PCPs (OR=2.80, 95% CI [1.88, 4.16]), PCPs serving 100 or more patients per week (OR=2.16, 95% CI [1.38, 3.37]), and PCPs spending longer hours per week in direct patient care (31–40 hours: OR=1.90, 95% CI [1.13, 3.20]; 41 or more hours: OR=2.09, 95% CI [1.12, 3.88]), compared to their referents. PCPs in multi-specialty group practice were more likely to remain neutral or discourage PSA testing compared to PCPs in solo practice.

CONCLUSIONS: Both individual and practice-related factors of PCPs were associated with the use of prostate cancer screening discussions by U.S. PCPs. Results

from this study may prove valuable to researchers and clinicians and help guide the development and implementation of future prostate cancer screening interventions in the U.S.

KEY WORDS: primary care physicians; prostate cancer screening; prostate-specific antigen; physician–patient discussions; prostate cancer.

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INTRODUCTION

Prostate cancer is a common malignancy and the second leading cause of cancer-related death among U.S. men.¹ The prostate-specific antigen (PSA) test and digital rectal examination (DRE) are screening tools associated with early detection of the disease, and use of these screening tools has increased over the years.^{2,3} Emerging research regarding the benefits and harms associated with early detection challenge the frequent use of these tools.¹ Notwithstanding, decisions regarding prostate cancer screening are crucial, particularly for African American men and men with a family history of prostate cancer who are at high risk for the disease.

Approximately 41–49% of men aged 50 years and older are screened for prostate cancer every year.^{4,5} While major medical and public health organizations disagree regarding routine screening using the PSA test,¹ these organizations do agree that men should discuss the risks and benefits of prostate cancer screening with their health care provider.^{1,6–8} Results of two recent studies indicate that health care providers generally discussed prostate cancer screening with patients.^{9,10} In national surveys of U.S. patients, most men reported that they had discussed the advantages and disadvantages of the PSA test with physicians before the test was ordered.^{11–13} Recent study results have shown that some primary care physicians (PCPs) usually discuss prostate cancer screening with their patients and involve them in a shared decision about receiving the screening tests,^{12,13} whereas others usually order the test without such discussion.¹² Results of both of these studies showed that the physicians, rather than their patients, typically initiated prostate cancer screening discussions.^{11,14} Results of an earlier study showed that PCPs generally made unilateral decisions about prostate cancer screening for their patients.¹⁵ Factors that have been cited as barriers to physician–patient discussions of

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prostate cancer screening include lack of time and the complexity of the topic,¹⁴ patient comorbidity,¹¹ and perception by physicians that the health literacy of their patients is too low for such discussions to be of value.⁹

Although some researchers have asked physicians and/or their patients whether they discussed prostate cancer screening,^{10,16} the nature of such discussions has not been assessed. It is unclear, for example, whether physicians discuss the advantages and limitations of screening tests equally, whether they discuss the tests only with patients who have already had a test and had an abnormal result, or whether they discourage, encourage, or remain neutral about their patients being screened. In this study, we examined associations between individual, knowledge, and practice-related characteristics of PCPs and the likelihood that they 1) discuss prostate cancer screening with their male patients as part of a joint decision process; and 2) encourage their patients to be screened.

METHODS

We analyzed data from the 2007–2008 National Survey of Primary Care Physician Practices Regarding Prostate Cancer Screening, conducted by the Centers for Disease Control and Prevention. The overall physician sampling frame (N=3,000) was selected from the American Medical Association (AMA) Physician Masterfile of U.S. physicians. The sampling frame consisted of office-based physicians who spent the majority of their time in direct patient care in family practice (FP), general practice (GP), or internal medicine (IM). A disproportionate stratified sampling design was used to select a sampling frame consisting of equal numbers of African American and non-African American physicians, based on race codes in the AMA Physician Masterfile.

Survey Instrument

The survey was developed from previous qualitative analyses of data from PCP focus groups and interviews,^{17,18} and relevant questions determined through literature review. Qualitative data from physician focus groups designed to identify the major issues related to prostate cancer screening^{17,18} formed the basis for a draft instrument. The instrument was then revised to include: 1) existing questionnaire items identified through a comprehensive literature review including reviews of previous physician surveys; and 2) appropriate input by experts in the field. The instrument was finalized through a pilot testing process. The intent of these methods was to maximize the relevance to primary care physicians and ensure adequate validity and reliability.

Data Collection

Study Eligibility. Eligible physicians met the following criteria: 1) provided patient care in an outpatient setting; 2) spent at least 8 hours per week, at time of survey, in outpatient care in their primary outpatient practice site; 3) provided health maintenance exams or routine checkups to patients at their

primary practice site; and 4) provided care for male patients over age 40. Surveys were mailed to physicians along with a \$40 cash incentive for their participation. Follow-up surveys were mailed up to three additional times to non-respondents. The overall PCP survey response rate was 57% after adjustment for those who were ineligible or unlocatable, resulting in 1,256 completed surveys.

Analysis

Outcomes. The two outcome variables, screening discussions and encouraging PSA testing, were assessed using participants' responses to the following questions:

1. "Do you routinely discuss prostate cancer with your male patients to involve the patient[s] in the decision about [prostate cancer] screening?" (Response options were: "Yes, with all patients"; "Yes, only with patients who decline the test"; "Yes, only with patients who had a previously elevated PSA"; "Yes, only with patients who request the PSA test"; and "No.")
2. "What is your usual policy when discussing PSA testing with patients?" (Response options were "I try to talk the patient into getting the test"; "I try to talk the patient out of getting the test"; and "I remain neutral.")

For question 1, we dichotomized responses as "yes, with all patients" versus all other responses. For question 2, we dichotomized responses as "I try to talk the patient into getting the test" versus all other responses (among physicians with an affirmative response to Question 1).

Covariates. Six physician demographic characteristics [age [31–39, 40–49, 50–59, 60+], race/ethnicity [non-Hispanic white, non-Hispanic black, Hispanic, Other], sex [male, female], years practicing medicine [1–10, 11–20, 21–30, 31+], clinical specialty [FP, GP, IM], and number of hours spent in direct patient care [≤ 30 , 31–40, >40]], physicians' assessment of their knowledge of prostate cancer (none/little, moderate, great), and five practice-related factors (practice type [solo, single specialty, multiple specialty, other]) and population of the community in which the practice was located [$<50,000$ vs. $\geq 50,000$]) were assessed as covariates. Other PCP practice-related characteristics included weekly patient volume (<100 , ≥ 100), proportion of Medicare patients served, and proportion of African American male patients served. Continuous variables were categorized using tertiles or cut-points as appropriate given the distribution of the variables. The provider questionnaire indicating the questions relevant to the current analysis is presented as an [online appendix](#).

To account for the survey's stratified sampling design in our analyses of the data, we used SAS/SURVEY, Version 9.2 (SAS Institute, Cary, NC), and final sample weights were used to generate population-based estimates. We used Chi-square tests to compare the percentages of physicians who engage in screening discussions with their patients by various physician characteristics and multivariate logistic regression to estimate the adjusted odds that physicians engage in such discussions. For the purposes of this exploratory analysis, all physician and

practice-related characteristics with a Chi-square p-value of less than 0.20 in bivariate analyses for either outcome were retained in the multivariate regression model. Statistical tests were two-sided with a significance level of 0.05.

RESULTS

The weighted sample representing 95,227 PCPs is shown in Table 1, where 70.4% of the sample participants were male, 70.2% were non-Hispanic white, 41.5% practiced in a single specialty group, 57% were family practitioners, 53.8% practiced in areas with more than 50,000 people, and 69.2% perceived themselves to be moderately knowledgeable about issues related to PSA testing. The majority (80.1%) of PCPs had routine prostate cancer screening discussions with their all of their male patients. Some PCPs reported having discussions only with particular groups of patients such as those with a prior elevated PSA (1.9%), patients who declined the test (8.9%), or patients who requested a PSA test (3.5%). Only 5.6% of PCPs reported that they did not discuss screening at all. Among PCPs who discussed screening, very few (1.5%) discouraged patients against taking the PSA test, while nearly two-thirds (64.1%) encouraged PSA testing.

Bivariate analysis showed that the likelihood of PCPs routinely discussing prostate cancer screening with patients varied by PCP race/ethnicity, where non-Hispanic black and other race (Asian PCPs comprised about 90% of this category) PCPs were more likely than non-Hispanic whites to discuss prostate cancer screening (Table 2, column 1). Screening discussions also varied by age, years in medical practice, weekly patient volume, and number of hours spent in direct patient care each week.

The percentage of PCPs with a discussion policy to talk the patient into getting the PSA test varied by PCP sex, race/ethnicity, age, years practicing medicine, type of practice, weekly patient volume, and hours spent in direct patient care (Table 2, column 2). PCPs who were male, non-Hispanic black or Hispanic, in solo practices, seeing more than 100 patients each week, and spending longer hours per week in direct patient care were more likely to have a policy to talk patients into getting the PSA test compared to others. Likelihood of talking patient into getting the PSA test increased with PCP age and years in practice. Primary care physicians who reported that they remained neutral or discouraged testing in their discussion were more likely male, in single and multi-specialty group practices, with lower weekly patient volumes, and who worked fewer hours per week (data not shown).

In multivariate analyses, PCPs of other race (OR=2.51, 95% CI [1.13, 5.58]), and PCPs in a non-specialty group practice (OR=6.81, 95% CI [1.98-23.44]) had higher odds of involving patients in screening discussions than their referents (Table 3, column 1). A marginal finding ($p < 0.10$) was that PCPs seeing 100 or more patients per week and PCPs reporting a great deal of knowledge about prostate cancer screening guidelines had higher odds of screening discussions.

Non-Hispanic black PCPs (OR=2.80, 95% CI [1.88, 4.16]) had higher odds of having a discussion policy to talk the patient into getting the PSA test compared to non-Hispanic whites (Table 3, column 2). Also, PCPs aged 40-49 (OR=2.47,

Table 1. Overall Primary Care Physician and Practice Characteristics^a

PCP and Practice Characteristics	Non-missing Frequency	Weighted Frequency	% of category
Sex			
Male	775	66,853	70.4
Female	479	28,077	29.6
Race/Ethnicity			
Non-Hispanic White	489	66,655	70.2
Non-Hispanic Black	600	4,515	4.8
Hispanic	38	4,777	5.0
Other	127	18,998	20.0
Age (years)			
31-39	270	21,794	23.1
40-49	458	31,389	33.3
50-59	372	27,416	29.1
60+	139	13,713	14.5
Years practicing medicine			
1-10	454	34,072	36.0
11-20	414	27,460	29.0
21-30	269	21,840	23.0
31+	109	11,379	12.0
Type of practice			
Solo practice	392	26,390	28.7
Single-specialty group practice	444	38,205	41.5
Multi-specialty group practice	341	24,982	27.1
Other type of practice	43	2,452	2.7
Clinical specialty			
Family Practice	688	54,266	57.0
General Practice	51	4,233	4.4
Internal Medicine	517	36,727	38.6
Size of community where practice located			
Population ≤ 50,000	477	42,510	46.2
Population > 50,000	734	49,414	53.8
Weekly patient volume			
<100 patients	652	47,251	50.3
≥ 100 patients	588	46,650	49.7
Hours per week in direct patient care			
8-30 hours	292	23,215	26.2
31-40 hours	570	42,703	48.1
41+ hours	319	22,818	25.7
Knowledge of prostate cancer screening guidelines			
None/Little knowledge	165	13,756	15.2
Moderate knowledge	819	62,745	69.2
Great deal of knowledge	223	14,190	15.6
% Patients on Medicaid			
0%	360	30,369	34.4
1%-10%	405	32,631	37.0
11%-97%	410	25,257	28.6
% Male patients African American			
0%-3%	267	31,258	34.5
4%-15%	274	29,045	32.0
16%-100%	667	30,339	33.5
Routine prostate cancer screening discussions?			
Yes, with all patients	1,010	75,470	80.1
Yes, with patients who decline test	108	8,347	8.9
Yes, with patients with prior elevated PSA	24	1,758	1.9
Yes, with patients who request PSA test	40	3,295	3.5
Does not discuss screening	59	5,305	5.6
PSA test discussion policy			
Encourages patients to take test	811	56,445	64.1
Remains neutral in discussions	349	30,349	34.4
Discourages patients from taking test	14	1,327	1.5

^a Unweighted frequency and weighted percentages of column based on valid responses for category PSA, prostate-specific antigen

Table 2. Percentage of U.S. Primary Care Physicians (PCPs) who Discuss Prostate Cancer Screening with Patients and Percentage with Discussion Policy to Talk Patients into getting the PSA Test, by Selected PCP Characteristics

PCP and Practice Characteristics	Discusses prostate cancer screening with all male patients		Discussion policy to talk patients into getting the PSA test	
	N (%) ^a	p	N (%)	p
All PCPs	1,010 (80.1)		811 (64.1)	
Sex		0.986		< 0.001
Male	622 (80.1)		529(68.8)	
Female	386 (80.1)		280(52.0)	
Race /Ethnicity		0.005		< 0.001
Non-Hispanic White	375(77.8)		274(61.8)	
Non-Hispanic Black	492(82.6)		431(76.5)	
Hispanic	27(70.9)		25(77.5)	
Other	115(90.4)		81(66.7)	
Age (years)		0.031		< 0.001
31-39	216 (80.0)		139(44.7)	
40-49	384 (85.4)		298(64.5)	
50-59	282 (74.0)		253(70.3)	
60+	113 (80.6)		111(81.6)	
Years practicing medicine		0.041		< 0.001
1-10	365 (80.8)		257(51.7)	
11-20	346 (84.9)		279(66.4)	
21-30	201 (72.9)		178(69.0)	
31+	89 (80.8)		91(86.3)	
Type of practice		0.684		< 0.001
Solo practice	326 (81.7)		303(78.7)	
Single, specialty group	346 (78.7)		271(63.1)	
Multi, specialty group	275 (79.2)		198(51.3)	
Other type of practice	35 (87.6)		21(55.4)	
Clinical specialty		0.886		0.161
Family practice	557 (80.8)		438(63.2)	
Internal medicine	413 (79.4)		41(81.9)	
General/other practice	40 (78.6)		332(63.3)	
Practice Location (Community size)		0.994		0.286
≤50,000	384 (80.1)		317(66.7)	
>50,000	590(80.1)		469(62.6)	
Weekly patient volume		0.016		<.001
<100	510(76.4)		365(51.8)	
≥100	487(83.8)		435(75.3)	
Hours per week in direct patient care		0.029		< 0.001
8-30	218(72.9)		145(49.6)	
31-40	470(82.9)		382(65.9)	
41+	260(81.8)		231(72.7)	
Knowledge of prostate cancer screening guidelines		0.058		0.122
None/little knowledge	126(77.2)		92(59.1)	
Moderate knowledge	661(80.1)		528(63.2)	
Great deal of knowledge	191(89.1)		164(72.5)	
% patients on Medicaid		0.621		0.127
0	276(77.7)		223(68.0)	
1-10	336(80.6)		270(65.9)	
11-97	338(81.4)		268(58.5)	
% male patients African American		0.710		0.623
0-3	201(77.9)		153(62.3)	
4-15	223(81.1)		162(62.7)	
16-100	543(79.7)		463(66.5)	

^a Unweighted frequency and weighted percentages of row based on valid responses for category

95% CI [1.33, 4.56]) and PCPs aged 50–59 (OR=2.88, 95% CI [1.23, 6.74]) had higher odds of encouraging the PSA test compared to PCPs aged 31–39. The odds of encouraging the PSA test was twice as high for PCPs seeing 100 or more patients per week compared to PCPs with smaller volumes, and for PCPs spending 31 or more hours per week in direct patient care compared to PCPs working fewer hours. Compared to PCPs in solo practice, PCPs practicing in a multi-specialty group were less likely to encourage patients to get the PSA test. PCP sex and years practicing medicine did not reach statistical significance in the

multivariable model. Only PCPs in multi-specialty groups had increased odds of remaining neutral or discouraging testing compared to PCPs in solo practice.

DISCUSSION

Prostate cancer screening and PSA test use, in particular, are complex issues. Disagreement surrounding screening criteria

Table 3. Adjusted Odds for Discussing Prostate Cancer Screening with all Patients and for having Discussion Policy to Talk Patients into getting the PSA Test among U.S. Primary Care Physicians (PCPs)

PCP and Practice Characteristics	Discuss prostate screening with all male patients ^a		Discussion policy to talk patients into getting the PSA test ^b	
	AOR (95%CI)	p	AOR (95%CI)	P
Total observations in model	1,036		980	
Sex		0.929		0.461
Male	ref		ref	
Female	0.98 (0.59,1.62)		0.84 (0.52,1.34)	
Race/Ethnicity		0.085		< 0.001
Non-Hispanic White	ref		ref	
Non-Hispanic Black	1.15 (0.76,1.74)		2.80 (1.88,4.16)	
Hispanic	0.61 (0.24,1.57)		2.34 (0.79,6.93)	
Other	2.51 (1.13,5.58)		1.65 (0.91,2.97)	
Age (years)		0.716		0.021
31-39	ref		ref	
40-49	1.06 (0.52,2.18)		2.47 (1.33,4.56)	
50-59	0.67 (0.25,1.78)		2.88 (1.23,6.74)	
60+	0.74 (0.20,2.75)		2.03 (0.52,7.95)	
Years practicing medicine		0.832		0.082
1-10	ref		ref	
11-20	1.32 (0.65,2.68)		0.89 (0.50,1.58)	
21-30	1.04 (0.40,2.69)		0.85 (0.35,2.08)	
31+	1.28 (0.35,4.75)		3.78 (0.91,15.71)	
Type of practice		0.010		0.006
Solo practice	ref		ref	
Single, specialty group	0.93 (0.52,1.66)		0.67 (0.39,1.15)	
Multi, specialty group	0.90 (0.48,1.70)		0.37 (0.20,0.66)	
Other type of practice	6.81 (1.98,23.44)		0.79 (0.20,3.05)	
Clinical specialty		0.682		0.952
Family practice	ref		ref	
Internal medicine	0.60 (0.19,1.88)		1.19 (0.30,4.80)	
General/other practice	0.96 (0.60,1.53)		1.05 (0.68,1.61)	
Weekly patient volume		0.051		< 0.001
<100	ref		ref	
≥100	1.63 (1.00,2.67)		2.16 (1.38,3.37)	
Hours per week in direct patient care		0.185		0.029
8-30	ref		ref	
31-40	1.68 (0.96,2.91)		1.90 (1.13,3.20)	
41+	1.43 (0.76,2.72)		2.09 (1.12,3.88)	
Knowledge of prostate cancer screening guidelines		0.070		0.534
None/little knowledge	ref		ref	
Moderate knowledge	1.04 (0.57,1.90)		1.26 (0.72,2.20)	
Great deal of knowledge	2.35 (1.00,5.54)		1.49 (0.74,3.01)	
% patients on Medicaid		0.832		0.162
0	ref		ref	
1-10	1.15 (0.68,1.95)		0.80 (0.49,1.30)	
11-97	1.16 (0.66,2.02)		0.61 (0.37,1.01)	

^aModel includes all variables in table for outcome "involves patients in screening discussions"

^bModel includes all variables in table for outcome "discussion policy is to encourage PSA test"

AOR, adjusted odds ratio; CI, confidence interval

and the efficacy of the PSA test will continue until the benefits of testing are settled. Our finding that about 80% of PCPs, or nearly 76,000 nationally, reported that they routinely discuss prostate cancer screening to involve patients in the decision about screening with all age-appropriate male patients confirms findings of a recent smaller study. The study, which included 35 FP physicians and 28 general internists, reported that 79% of PCPs engaged in prescreening discussions with their patients.¹⁰ Our findings also showed that 64.1% (representing 56,137 nationally) of PCPs that engage in discussions reported that their usual policy when discussing PSA testing with patients was to talk the patient into getting the PSA test.

In a qualitative study, researchers divided U.S. PCPs into two groups on the basis of their prostate cancer screening practices: "routine screeners" who screened their patients regularly on the basis of their experience and belief in the benefit of PSA screening, and "non-routine screeners" who did

not do so because of what they believed to be a lack of scientific evidence documenting the benefit of PSA screening.¹⁷ Our study found evidence of both patterns; higher percentages of those PCPs who encouraged the PSA test as well as physicians who tended to remain neutral or discourage the test. The 349 (34.4%) PCPs who remained neutral may suggest that some level of informed, or possibly shared, decision-making about prostate cancer screening is taking place between physicians and patients. If so, this behavior is in accordance with recommendations of the major medical and public health organizations (including the new 2010 American Cancer Society recommendation¹) that physicians discuss the possible benefits and risks of prostate cancer screening with patients before ordering the screening tests.⁴ However, our results did not indicate the content of these discussions.

In the current study, PCPs who described themselves as having a great deal of knowledge about the prostate cancer

screening guidelines were more likely to involve their patients in discussions about screening (than PCPs with no or little knowledge of the screening guidelines) but were no more likely to encourage them to be screened. This finding is consistent with Cooper and associates (2004) who found that "non-routine screeners" gave no recommendation but rather discussed the implications of screening, tended to rely more on scientific evidence, tended to be more knowledgeable of the prostate cancer screening guidelines (than "routine screeners"), and explained that the benefit of PSA screening has not been proven.¹⁷

In a study of African American PCPs, 98% reported offering the PSA test to asymptomatic non-African American men at around 50 years of age and to asymptomatic African American men 5–10 years earlier.¹⁸ Most reported feeling that the seriousness of prostate cancer outweighed the potential limitations of screening and the risks of side effects from treatment.¹⁸ In another study,¹⁷ African American physicians reported high levels of screening. Few comprehensive studies regarding prostate cancer screening have been conducted among African American PCPs. Our finding, that non-Hispanic black PCPs were more likely than non-Hispanic white PCPs to encourage their patients to be screened, may reflect the underlying sentiment identified in a previous study that suggested that African American PCPs were more concerned about the high prostate cancer burden among African American men.¹⁸

Results from the National Survey of Medical Decisions showed that a majority of physicians (about 70%) discussed prostate cancer screening with their patients and a majority (73%) recommended that patients take the test,¹⁹ as did our analysis. However, this study offered little information on factors related to these practices. In an international study of general practitioners, the likelihood of physicians screening their patients for prostate cancer was associated with being older, having practiced longer, being female, and being less knowledgeable about PSA efficacy.²⁰ In our study, in addition to finding the likelihood that PCPs would discuss prostate cancer screening with their patients (first outcome) to be associated with PCP race, we also found it to be positively associated with weekly patient volume, self-perception of knowledge about the screening guidelines, and type of practice of the PCP. This suggests the importance of both individual and practice-level factors in prostate cancer screening practices among PCPs.

Our study provides information on PCP characteristics that are not associated with discussing prostate cancer screening with patients. They include white race, having lower weekly patient volumes, and having little knowledge about the prostate cancer screening guidelines. PCPs who did not have a discussion policy to talk the patient into getting the PSA test (or were more neutral or discouraged testing) tended to be non-Hispanic white, with fewer years practicing medicine, in multi-specialty group practices, with lower patient volumes, and spending fewer hours per week in direct patient care. This information is timely due to the current screening guidelines from most organizations that recommend that PCPs discuss prostate cancer screening with their patients and utilize some form of individual or shared decision-making.⁶

Strengths of our study included use of data from the largest, most comprehensive survey to date of prostate cancer screening practices, representing nearly 95,000 U.S. PCPs. This study

oversampled African American PCPs, about whose screening practices relatively little is known. Our analyses of the relationship between multiple factors associated with PCP attitudes and behaviors about prostate cancer offer information that could not be obtained from earlier qualitative studies.^{17,18}

Limitations to our study included our reliance on non-validated data derived from the self-reports of PCPs,^{21,22} and our inability to conduct meaningful analyses of prostate cancer screening behaviors among PCPs of other races due to the very small numbers of these groups in our study sample. The majority of physicians categorized as other race, self-identified as Asian. Therefore, our findings may reflect this group of PCPs more than others. Also, depending on whether the "policy" when discussing PSA testing with patients was formal or informal, physicians may have had different levels of flexibility in their recommendations. The survey instrument did not capture this distinction.

Finally, this study was conducted before the newer American Cancer Society prostate cancer screening guidelines (2010) were released, thus results may not adequately reflect PCPs following of current screening guidelines. Due to disagreements over prostate cancer screening efficacy, policymakers, clinicians, and scientists struggle with medical issues such as prostate cancer screening. The current study shows that there is a difference in what major organizations such as ACS and USPSTF recommend and what clinicians actually do in practice. The clinical decision to encourage patients to undergo screening, remain neutral, or discourage screening can vary based on PCP individual as well as practice-related factors. As findings from randomized trials continue to emerge, perhaps better clarity and direction about screening and its implications will follow.

Future studies should examine both African American and other minority race PCPs in separate analyses to describe specific attitudes and behaviors of these groups related to prostate cancer. A future study might also examine in more detail relationships between the amount of time spent with patients in such discussions and the PCP screening recommendation. This would serve to enlighten both researchers and clinicians about which individual or practice-related factors are related to time spent with patients. Our findings add clarity to results from earlier qualitative studies of PCP practices related to prostate cancer screening^{17,18} and provide additional information on associations with PCP- and practice-related factors. We hope that these results prove valuable to researchers and clinicians and help guide the development and implementation of future prostate cancer screening interventions in the U.S.

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REFERENCES

1. **Wolf AM, Wender RC, Etzioni RB, et al.** American Cancer Society guideline for the early detection of prostate cancer: update 2010. *CA Cancer J Clin.* 2010;60:70–98.
2. **Voss JD, Schectman JM.** Prostate cancer screening practices and beliefs. *J Gen Intern Med.* 2001;16:831–7.
3. **Ross LE, Taylor YJ, Richardson LC, Howard DL.** Patterns in prostate-specific antigen test use and digital rectal examinations in the Behavioral Risk Factor Surveillance System, 2002–2006. *J Natl Med Assoc.* 2009;101:316–24.
4. **Swan J, Breen N, Graubard BI, McNeel TS, Blackman D, Tangka FK, Ballard-Barbash R.** Data and trends in cancer screening in the United States: Results from the 2005 National Health Interview Survey. *Cancer.* 2010;116:4872–81.
5. **Ross LE, Zahava Berkowitz Z, Donatus U, Ekwueme DU.** Use of the Prostate-Specific Antigen Test among U.S. Men: Findings from the 2005 National Health Interview Survey. *Cancer Epidemiol Biomark Prev.* 2008;17(3):636–44.
6. National Guideline Clearinghouse. Guideline synthesis: screening for prostate cancer. Available at: <http://www.guideline.gov>. Accessed February 15, 2011.
7. **Smith RA, Cokkinides V, Brawley OW.** Cancer screening in the United States, 2009: a review of current American Cancer Society guidelines and issues in cancer screening. *CA Cancer J Clin.* 2009;59:27–41.
8. **Lim LS, Sherin K.** Screening for prostate cancer in U.S. men ACPM position statement on preventive practice. *Am J Prev Med.* 2008;34:164–70.
9. **Guerra CE, Jacobs SE, Holmes JH, Shea JA.** Are physicians discussing prostate cancer screening with their patients and why or why not? A pilot study. *J Gen Intern Med.* 2007;22:901–7.
10. **Linder SK, Hawley ST, Cooper CP, Scholl LE, Jibaja-Weiss M, Volk RJ.** Primary care physicians' reported use of pre-screening discussions for prostate cancer screening: a cross-sectional survey. *BMC Fam Pract.* 2009;10:1–6.
11. **Han PK, Coates RJ, Uhler RJ, Breen N.** Decision making in prostate-specific antigen screening: National Health Interview Survey, 2000. *Am J Prev Med.* 2006;30:394–404.
12. **McFall SL.** US men discussing prostate-specific antigen tests with a physician. *Ann Fam Med.* 2006;4:433–6.
13. **Tannor BB, Ross LE.** Physician-patient discussions about prostate-specific antigen test use among African-American men. *J Natl Med Assoc.* 2006;98:532–8.
14. **Dunn AS, Shridharani KV, Lou W, Bernstein J, Horowitz CR.** Physician-patient discussions of controversial cancer screening tests. *Am J Prev Med.* 2001;20:130–4.
15. **Wolf AM, Becker DM.** Cancer screening and informed patient discussions. Truth and consequences. *Arch Intern Med.* 1996;156:1069–72.
16. **Pendleton J, Curry RW, Kaserian A, et al.** Knowledge and attitudes of primary care physicians regarding prostate cancer screening. *J Natl Med Assoc.* 2008;100:666–70.
17. **Cooper CP, Merritt TL, Ross LE, John LV, Jorgensen CM.** To screen or not to screen, when clinical guidelines disagree: primary care physicians' use of the PSA test. *Prev Med.* 2004;38:182–191.
18. **Stroud LA, Ross LE, Rose SW.** Formative evaluation of the prostate cancer screening practices of African-American physicians. *J Natl Med Assoc.* 2006;98:1637–43.
19. **Hoffman RM, Couper MP, Zikmund-Fisher BJ, et al.** Prostate cancer screening decisions: results from the National Survey of Medical Decisions (DECISIONS study). *Arch Intern Med.* 2009;169:1611–8.
20. **Drummond FJ, Sharp L, Comber H.** Major inter-laboratory variations in PSA testing practices: results from national surveys in Ireland in 2006 and 2007. *Ir J Med Sci.* 2008;177:317–23.
21. **Jordan TR, Price JH, King KA, Masyk T, Bedell AW.** The validity of male patients' self-reports regarding prostate cancer screening. *Prev Med.* 1999;28:297–303.
22. **Volk RJ, Cass AR.** The accuracy of primary care patients' self-reports of prostate-specific antigen testing. *Am J Prev Med.* 2002;22:56–8.