

Exploring patient perceptions of PSA screening for prostate cancer

Risks, effectiveness, and importance

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Abstract

Objective To study the beliefs of a group of Canadian men regarding the risks, effectiveness, and importance of routine prostate-specific antigen (PSA) testing when used as a screening tool for prostate cancer.

Design A 1-page questionnaire designed to gauge patient beliefs about PSA screening.

Setting Two primary care clinics in Kingston, Ont.

Participants Seventy-two men aged 41 to 80.

Main outcome measures Whether men believed that the PSA blood test was not risky when used as a screening test for prostate cancer, was effective at preventing death from prostate cancer, and was important for their health.

Results Fifteen men reported having visited their physicians because of difficulty urinating in the past 2 years, or a personal history of prostate cancer, and were excluded; for these men, the use of the PSA blood test would not be for screening. Of the 57 men considered in the study, 54 (95%) believed that using the PSA blood test as a screening tool for prostate cancer was not risky, 39 (68%) believed that the PSA blood test was good or very good at preventing death from prostate cancer, and 45 (79%) believed that the routine use of the PSA blood test was important or very important for their health. Men in the suggested screening age group of 51 to 70 years (n=32) had an equally positive impression of PSA screening.

Conclusion Despite a limited body of evidence showing its effectiveness, Canadian men continue to have a favourable impression of PSA screening and remain largely unaware of potential adverse events associated with PSA testing.

EDITOR'S KEY POINTS

- Men in the potential screening age category had a high self-reported rate of prostate-specific antigen (PSA) screening, believed that the PSA test was not associated with any risk, and believed that the PSA blood test was important or very important to their health.
- Despite the lack of convincing evidence for routine PSA testing in asymptomatic men, the patients surveyed in this study had favourable opinions of PSA screening and were unaware of any risk associated with its use.
- The risks and benefits of PSA screening might not be communicated to patients in an effective manner. Communicating these risks, along with the potential benefits of the test, in a clear and concise way to patients remains a challenge for primary care physicians.

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Examiner l'opinion des patients concernant le dépistage du cancer de la prostate par le dosage de l'APS

Risques, efficacité et importance

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Résumé

Objectif Déterminer l'opinion d'un groupe d'hommes canadiens au sujet des risques, de l'efficacité et de l'importance d'une mesure routinière de l'antigène prostatique spécifique (APS) comme dépistage du cancer de la prostate

Type d'étude Un questionnaire d'une page destiné à évaluer l'opinion des patients au sujet du dépistage par l'APS.

Contexte Deux cliniques de soins primaires à Kingston, Ont.

Participants Soixante-deux hommes âgés de 41 à 80 ans.

Principaux paramètres à l'étude Le fait de croire que le dosage de l'APS sanguin ne présente pas de risque lorsqu'on l'utilise comme dépistage du cancer de la prostate, qu'il est efficace pour prévenir un décès causé par un cancer de la prostate et qu'il est important pour leur santé.

Résultats Quinze participants ont déclaré avoir consulté leur médecin en raison de difficultés mictionnelles au cours des 2 dernières années ou avoir une histoire personnelle de cancer de la prostate; ils ont été exclus; pour ces sujets, le dosage de l'APS n'aurait pas eu un but de dépistage. Sur les 57 hommes retenus pour l'étude, 54 (95%) croyaient que l'utilisation du dosage de l'APS pour dépister le cancer de la prostate ne présentait pas de risque, 39 (68%) estimaient que le dosage de l'APS sanguin était bon ou très bon pour prévenir un décès par cancer de la prostate et 45 (79%) croyaient que l'utilisation routinière du dosage de l'APS était importante ou très importante pour leur santé. Les 32 hommes appartenant au groupe d'âge pour lequel le dépistage est recommandé (51 à 70 ans) avaient une opinion tout aussi favorable du dépistage par l'APS.

Conclusion Malgré le nombre limité de données démontrant l'efficacité du dépistage par l'APS, les hommes canadiens continuent d'avoir une opinion favorable pour ce type de dépistage tout en n'étant à peu près pas conscients des effets indésirables qu'il peut entraîner.

POINTS DE REPÈRE DU RÉDACTEUR

Les hommes appartenant à la catégorie d'âge pour lequel un dépistage est recommandé disaient avoir eu un taux élevé de dépistage par le dosage de l'antigène prostatique spécifique (APS), croyaient que ce test ne présentait aucun risque et estimaient que le dosage de l'APS était important ou très important pour leur santé.

Malgré le peu de données convaincantes en faveur d'une mesure routinière de l'APS chez les hommes asymptomatiques, les participants de cette étude avaient une opinion favorable du dépistage par l'APS et ne voyaient aucun risque associé à cette mesure.

Il semble que les risques et avantages du dépistage par l'APS ne sont pas communiqués d'une façon efficace aux patients. Informer les patients de façon claire et concise des risques mais aussi des avantages potentiels associés à ce test demeure un défi pour le médecin de première ligne.

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Routine screening of men with no history of prostate cancer using the prostate-specific antigen (PSA) blood test has not been convincingly shown to reduce prostate cancer-related deaths. As such, the Canadian Task Force on Preventive Health Care and the US Preventive Services Task Force have concluded that there is insufficient evidence to recommend including PSA testing in the periodic health examination for men of any age.^{1,2} There is also a Cochrane systematic review that reaches the same conclusion.³ However, a great deal of debate continues, and PSA testing continues to be widely used as a screening tool for prostate cancer. Screening is highest in the United States, where in one study more than 50% of men aged 65 to 74 reported ever having a PSA test.⁴ In a 2002 Canadian survey of men older than 40 years, 43% reported ever having a PSA test.⁵

It was hoped that 2 recently published, large randomized trials investigating the effectiveness of regular PSA testing at preventing death from prostate cancer would shed some light on the ongoing controversy. Unfortunately, these 2 studies (the European Randomized Study of Screening for Prostate Cancer [ERSPC] and the US Prostate, Lung, Colorectal and Ovarian [PLCO] Cancer Screening Trial) produced contradictory and equivocal results.^{6,7} Therefore, uncertainty remains and the ongoing debate leaves patients and primary care physicians to decide how to best balance the risks and benefits of regular PSA testing. The risks associated with routine PSA screening for prostate cancer are well known and include causing undue anxiety, a high incidence of false positives, negative side effects of resulting biopsies and treatment, and the discovery and treatment of clinically insignificant disease (ie, disease that would not otherwise cause any morbidity or mortality).

Previous studies have outlined patient factors associated with PSA testing. These factors include positive attitude of their family physicians toward PSA testing, family physician age, patient age, and the presence of lower urinary tract symptoms.⁸ It should be noted that the presence of lower urinary tract symptoms means that PSA testing is no longer being used for asymptomatic screening. Limited data exist on patient beliefs about the risks and benefits of PSA testing. One study that included American and Canadian men showed that most believed that routine PSA testing was beneficial, and that it could significantly reduce the risk of dying from prostate cancer, but were unsure if there was controversy regarding its use.⁹ No previous study that we know of addresses whether men believe that there are risks (ie, overdiagnosis and overtreatment) associated with routine PSA screening.

We designed a patient questionnaire to inquire about men's perceptions of PSA screening. We included

questions about demographic information and whether participants had recently undergone PSA blood tests. Our main interest was to determine what patients knew about the risks associated with PSA testing, and how effective and important they believed PSA testing was to their health.

METHODS

Ethics approval was obtained from the Health Sciences Research Ethics Board at Queen's University in Kingston, Ont, to administer a survey to men aged 41 to 80 regarding their knowledge about and attitudes toward PSA testing. The participants represent a convenience sample; surveys were voluntarily completed in the waiting rooms of 2 primary care clinics in Kingston. Participants completed surveys, which were available at the reception desk, by their own initiative or after being approached by the lead author in the waiting room. As such, a response rate is not available. The first clinic is a community-based clinic affiliated with a larger family health team. The second clinic is a university-affiliated academic clinic. The lead author is not a regular staff physician at either clinic.

The 1-page questionnaire, written at the seventh-grade level, was developed de novo to assess patient knowledge and perceptions of PSA testing. The survey was divided into 2 sections. The first section asked about the following demographic characteristics: regular family physician name, patient age, highest level of education, whether they had visited their doctor because of difficulty urinating in the past year, whether they had a family history of prostate cancer, and whether they had a personal history of prostate cancer. The second part of the questionnaire contained questions to elicit patient knowledge and perception about PSA testing (**Box 1**).

Box 1. Prostate-specific antigen questions as they appeared in the patient questionnaire

Has your family doctor ever talked to you about the PSA blood test? (no or yes)

Have you had a PSA blood test in the past 2 years? (no or yes)

Potential risks of any screening test include: unnecessary anxiety, inaccurate findings, negative side effects of resulting biopsies and treatment, and discovering disease that will not cause death or dysfunction. How risky is the PSA blood test, when used as a screening test for prostate cancer? (1 = not risky to 4 = very risky)

How good is the PSA blood test at preventing death from prostate cancer? (1 = not good to 4 = very good)

How important to your health is it to do the PSA blood test? (1 = not important to 4 = very important)

PSA—prostate-specific antigen.

RESULTS

Characteristics

In total, 72 men completed the survey. Fifteen were excluded because they reported difficulty urinating in the past 2 years or a personal history of prostate cancer; PSA testing would not be used for routine screening in either of these settings. The community clinic participants ($n=37$) were rostered patients of 3 different family physicians, while the academic clinic participants ($n=35$) represented a group of patients rostered by 15 different family physicians. The academic clinic group was slightly older (mean [SD] age 61 [12] years vs 57 [9] years, $P<.05$). In both groups, participants were well educated, with 67% having completed college, university, or postgraduate programs (Table 1). The high level of postsecondary education in our sample is unlikely to be representative of the Canadian population and probably represents a selection bias.

Of the 57 men considered in our study, 60% (95% CI 47% to 73%) reported having ever discussed the PSA blood test with their family doctor and 49% (95% CI 36% to 62%) reported having undergone a PSA blood test in the past 2 years. Of the men aged 51 to 70 ($n=32$), for whom screening would be considered the most appropriate,⁶ 75% (95% CI 60% to 90%) reported having ever discussed the PSA blood test with their family doctor and 66% (95% CI 49% to 82%) reported having a PSA blood test in the previous 2 years.

Patient perceptions

Most men (95% [95% CI 89% to 100%]) believed that the PSA blood test was not risky when used as a screening test for prostate cancer (Table 2). A definition of risk, including many potential risks associated with the PSA blood test, was included in the survey question (Box 1). Overall, participants also had a favourable impression of the

Table 1. Characteristics of participating patients:
 $N=57$.

| CHARACTERISTICS | VALUES |
|--|----------------------|
| Mean (SD) age, y | 59 (10) |
| Education, n (%) | |
| • High school | 19 (33) |
| • College, university, or postgraduate | 38 (67) |
| Family history of prostate cancer, n (%) | 9 (16) |
| Family doctor ever discussed the PSA blood test, n (%) | 34 (60)* |
| PSA blood test in the past 2 years, n (%) | 28 (49) [†] |
| PSA—prostate-specific antigen. | |
| *95% CI 47% to 73%. | |
| [†] 95% CI 36% to 62%. | |

Table 2. Patient perceptions of the risks, effectiveness, and importance of PSA testing for prostate cancer screening in men aged 41 to 80: $N=57$.

| QUESTIONS | ANSWERS, N (%) |
|---|----------------------|
| Potential risks of any screening test include the following: unnecessary anxiety, inaccurate findings, negative side effects of resulting biopsies and treatment, and discovering disease that will not cause death or dysfunction. How risky is the PSA blood test, when used as a screening test for prostate cancer? | |
| • Not risky | 54 (95)* |
| • Risky or very risky | 3 (5) |
| How good is the PSA blood test at preventing death from prostate cancer? | |
| • Not good | 18 (32) |
| • Good or very good | 39 (68) [†] |
| How important to your health is it to do the PSA blood test? | |
| • Not important | 12 (21) |
| • Important or very important | 45 (79) [‡] |
| PSA—prostate-specific antigen. | |
| *95% CI 89% to 100%. | |
| [†] 95% CI 57% to 81%. | |
| [‡] 95% CI 68% to 90%. | |

effectiveness of PSA screening at preventing death from prostate cancer (68% [95% CI 57% to 81%] believed it was good or very good) and of its overall importance to their health (79% [95% CI 68% to 90%] believed it was important or very important). Men aged 51 to 70 were slightly more likely to have positive beliefs about the overall importance of PSA screening to their health; 84% believed it was important or very important to their health, and 97% believed that the PSA test was not associated with any risk.

DISCUSSION

Our survey of Canadian men found a comparable level of PSA testing to levels previously reported, with 49% of men aged 41 to 80 reporting having undergone a PSA test in the past 2 years. Despite the lack of convincing evidence for routine PSA testing in asymptomatic men, the patients surveyed in our study had favourable opinions of PSA screening and were unaware of any risk associated with its use.

Results from the ERSPC suggest that, at best, PSA screening prevents 1 death for every 1410 men between the ages of 55 and 69 screened during a 10-year period.⁶ Unfortunately, this modest benefit, if accurate, is accompanied by substantial morbidity due to overdiagnosis and overtreatment, with an estimated 48 men receiv-

ing treatment to prevent the 1 prostate cancer-related death. While the PLCO trial found no mortality benefit among the screening group, the control group of this study was biased by the fact that 52% of the men in this group received some type of screening as part of "usual care,"¹⁰ leaving a mild undetected benefit of PSA screening a possibility, which would agree with the ERSPC trial. However, a meta-analysis of 6 different randomized controlled trials (including the ERSPC and PLCO trials) and 387 286 participants concluded that the current evidence does not support routine screening for prostate cancer with the PSA test.¹¹

In our study, we found that men in the potential screening age category defined in the ERSPC had a high self-reported rate of PSA screening (66% in the past 2 years), believed that the PSA test was not associated with any risk (97%), and believed that the PSA blood test was important or very important to their health (84%). The very high level of men who believe there is no risk associated with the PSA blood test is surprising and worrying, especially considering that the known adverse events related to PSA testing were included on our survey as a cue (**Box 1**). Men in our study do report discussing the PSA blood test with their physicians (75% in the 51- to 70-year-old age group) but the poor performance of the test and the high burden of adverse events are clearly not being communicated in an enduring manner.

The controversy in the medical literature notwithstanding, patient opinion seems to strongly favour the continued use of the PSA blood test. This finding is consistent with previous studies.⁹ One possible explanation for the ongoing favourable patient impression of PSA testing is what we will call an *existential bias* toward a medical test or procedure. The root cognitive error of this patient bias is as follows: this test exists, and is done all the time, therefore it must be beneficial. Most physicians are presumably aware of the many potential risks of testing, but even physician personal behaviour seems to predict the ongoing use of the PSA test; a recent study showed that 78% of primary care doctors older than 50 years in the United States had themselves undergone PSA testing.¹²

Men in our study were homogeneous in their belief that PSA testing was not risky, and that it was both effective and important to their health. Our findings suggest that the ongoing debate about PSA testing has not trickled down from medical journals to the general population in a meaningful way. Of course, there are many who believe PSA testing is beneficial (including physicians, lay people, and various organizations) who continue to publicly promote its use. However, it is worrisome that the known risks associated with diagnostic workup and treatment of PSA testing are unknown to most patients.

Limitations

Our study limitations include a relatively small sample size and the method of convenience sampling. It was not possible to calculate a response rate because respondents either completed surveys voluntarily in the waiting room or were approached by the lead author. Our survey was designed to be concise and to measure patient perceptions of the risks and importance of PSA testing. Our survey tool did not undergo formal psychometric testing. As noted, the high level of college or university education (67%) in our sample is inconsistent with the general level in the Canadian population, but not grossly so; a study using 2004 Statistics Canada data reported the proportion of Canadians with a university degree or postsecondary certificate to be 59%.¹³ In our study, there also exists the potential for selection bias, with men having a more favourable impression of PSA screening being more likely to want to fill out surveys. Despite the aforementioned limitations, our findings agree closely with previous studies regarding the self-reported rate of PSA testing,^{4,5} and the general belief among men that PSA testing is beneficial to their health.⁹

Conclusion

A striking number of the men surveyed in our study believe that PSA screening does not carry any risk of adverse events. To our knowledge, our study is the first to show that patients perceive PSA testing to be a risk-free enterprise. This might be explained by the fact that, on the surface, the act of having a simple blood test seems risk-free. As physicians, we know that the risks are implied in the downstream diagnostic procedures and treatment that necessarily follow a positive PSA test result. Communicating these risks, along with the potential benefits of the test, in a clear and concise way to our patients remains a challenge for primary care physicians. 🌿

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Contributors

Both authors contributed to the concept and design of the study; data gathering, analysis, and interpretation; and preparing the manuscript for submission.

Competing interests

None declared

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