Personal prostate-specific antigen screening and treatment choices for localized prostate cancer among expert physicians

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Abstract

Introduction: We aimed to determine the personal practices of urologists, radiation oncologists, and medical oncologists regarding prostate cancer screening and treatment using the physician surrogate method, which seeks to identify acceptable healthcare interventions by ascertaining interventions physicians select for themselves.
Methods: A hierarchical, contingent survey was developed through a consensus involving urologists, medical oncologists, and radiation oncologists. It was piloted at the University of Toronto and then circulated to urologists, radiation oncologists, and medical oncologists through professional medical societies in the U.S., Canada, Central and South America, Australia, and New Zealand. The primary outcome was physicians' personal choices regarding prostate-specific antigen (PSA) screening and the secondary outcome was treatment selection among those diagnosed with prostate cancer.
Results: A total of 869 respondents provided consent and completed the survey. Of these, there were 719 urologists, 89 radiation oncologists, nine medical oncologists, and 53 undisclosed specialists. Most (784 of 869 respondents; 90%) endorsed past or future screening for themselves (among male physicians) or for relatives (among female physicians). Among urologists and radiation oncologists making prostate cancer treatment decisions, there was a significant correlation between physician specialty and the treatment selected (Phi coefficient=0.61; p=0.001).

Conclusions: Physicians who routinely treat prostate cancer are likely to undertake prostate cancer screening themselves or recommend it for immediate family members. Treatment choice is influenced by the well-recognized specialty bias.

Introduction

There is controversy regarding screening for and treatment of prostate cancer. The risk of over-diagnosis, over-treatment and associated treatment morbidity, and lack of trend to improve overall mortality motivated several public health agencies to recommend against prostate specific antigen (PSA) screening[1, 2]. However, many expert physicians in the treatment of prostate cancer have continued to recommend PSA screening, often through a patient-physician shared decision model[3]. Further, treatment decisions for patients with localized prostate cancer are controversial without definitive evidence to support the superiority of surgery or radiotherapy as active interventions.

In addition to socio-demographic, geographic, clinical, and tumour characteristics, patient and physician preferences play a substantial role in treatment selection[4]. Physicians may provide advice to patients which is at odds with the decisions they make for themselves[5]. Therefore, the physician surrogate method uses a physician's personal preferences rather than expressed recommendations to assess treatment acceptability[6]. This method has been previously evaluated in expert physicians treating genitourinary (GU) cancers[7] but, to our knowledge, this is the first application of this technique to PSA screening.

In the present study, we surveyed expert physicians involved in the treatment of prostate cancer, including urologists, radiation oncologists, and medical oncologists, regarding the decisions regarding prostate cancer screening and treatment that they make for themselves.

Methods

We developed a survey to assess physicians' personal choices (for men) and recommendations to relatives (for women) regarding PSA screening and treatment of localized prostate cancer. The survey was developed by among a team of urologists (CJDW, LK, RS), radiation oncologists (GM) and medical oncologists (IT) through a consensus process to identify a parsimonious series of questions. A hierarchical, contingent structure was developed in which a respondent's response to a given question determined which questions they would subsequently be asked (Figure 1). This served to reduce the survey response burden while maximizing the information obtained. The survey was written in English and translated to French, Spanish, and Portuguese. The survey was piloted at the University of Toronto prior to dissemination.

An email invitation was distributed to physician members of the Canadian Urological Association (CUA), the Genitourinary Radiation Oncologists of Canada (GU-ROC), the Urological Society of Australia and New Zealand (USANZ), and the Confederacion Americana de Urologia (CAU) in addition to urologist, medical oncologist, and radiation oncologist members of the American Medical Association (AMA). Due to privacy restrictions of these organizations, we cannot ascertain the size of the audience who received the survey invitation.

Our primary outcome was PSA screening endorsement. For men, we operationalized this as a prior history of PSA screening or, for those less than 50 years, a plan to undertake PSA screening in the future. For women, we operationalized this as a recommendation for PSA screening to immediate family members. Secondarily, among physicians personally diagnosed with prostate cancer (men) or asked to recommend treatment for an immediate relative (women), we examined treatment choice. We descriptively characterized physicians' choices regarding PSA screening and prostate cancer treatment. We performed stratified analyses according to respondent age, gender, specialty, proportion of practice dedicated to GU oncology, and practice setting. We operationalized age categorically using the age strata from the American Urological Association Guidelines on the Early Detection of Prostate Cancer. Among radiation oncologists and urologists, we assessed the association between physician specialty and the treatment choice using the phi coefficient, a measure of the degree of association between two binary variables[8]. Interpreted in a similar manner to the Pearson correlation coefficient, the phi coefficient is interpreted as follows: 0.1 = small effect/weak correlation, 0.3 = medium effect/moderate correlation, 0.5 = large effect/strong correlation[9].

Sunnybrook Health Sciences Centre Research Ethics Board approved the study protocol. All analyses were performed using SAS 9.4 (SAS Institute Inc., Cary, NC, USA).

Results

Of 893 physicians who responded to the invitation, 7 did not give consent and 17 provided consent but didn't complete the survey. Of 869 eligible respondents, 807 (92.9%) were male and 62 (7.1%) were female (Table 1). The median age was 50 years (interquartile range 41-60 years) and most lived in North America (64.0%). The majority (719, 82.7%) were urologists, with 89 (10.1%) radiation oncologists, 9 (0.9%) medical oncologists, and 53 (6.1%) other or undisclosed specialities.

Of 869 respondents, 784 (90.2%) endorsed PSA screening. Urologists (91.5%), radiation oncologists (85.2%) and medical oncologists (88.9%) more likely to endorse screening than other or undisclosed physicians (81.1%; p=0.01; Table 2). Among urologists, radiation oncologists, and medical oncologists, differences in screening endorsement were not significant (p=0.15). While men were more likely to endorse PSA testing than women, respondent age, proportion of practice dedicated to GU oncology, and practice setting were not significantly associated with endorsement of PSA testing (Table 2).

As there may be a difference between an expressed plan to undergo PSA testing and having actually undertaken such testing, we redefined our outcome to examine men who had undergone PSA testing. Of 807 male respondents, 494 (61.2%) had previously undergone PSA testing. Stratified by age, significantly fewer men aged 54 years and under had previously undergone PSA testing (n=221, 45.0%) compared with men aged 55-69 years (n=212, 85.5%) or aged 70 years and older (n=61, 89.7%).

A total of 46 respondents (5.3%) were personally diagnosed with prostate cancer (men; n=30) or asked to recommend treatment for an immediate relative (women; n=16). Of these, 19

were low-risk, 26 were intermediate- or high-risk and one was unspecified. Treatment selection varied by physician specialty (Table 3). Among urologists and radiation oncologists, physicians who commonly offer treatment for localized prostate cancer, there was a moderately strong, statistically significant association between physician specialty and treatment modality selection (phi coefficient 0.61, p=0.001).

Discussion

Most physicians who treat genitourinary cancers in this multinational cohort chose and recommended prostate cancer screening for themselves and immediate family members. In contrast, several primary care guidelines in their countries of origin recommend against the routine use of PSA screening[1, 2]. Rather than assessing physicians' interpretation of epidemiological evidence regarding screening or physician responses to hypothetical situations[10], we assessed the respondent physicians' actual personal health decisions. One may hypothesize that physicians involved in the treatment of genitourinary cancers may recommend population-level prostate cancer screening due to bias, financial interest and other ulterior motives. However, these physicians would be unlikely to personally opt for prostate cancer screening in the absence of a perceived clinical benefit.

It has been recognized previously that physicians may offer treatment recommendations to patients which differ from the decisions they make for themselves. Such differences may be due to cognitive biases including an exaggerated concern regarding harm from an action designed to prevent harm (known as betrayal aversion) and harm from a recommended treatment being viewed as a greater burden than harm from an omitted treatment (known as commission-omission distinction). Although physician preferences and perceived patient preferences often differ[11], physician recommendations have been reported to play a greater role than patient preference in the management of localized prostate cancer[12].

Among physicians who treat clinically-localized prostate cancer, we found a moderately strong, statistically significant association between physician specialty and treatment modality selected, in keeping with previously identified specialty bias in urologist and radiation oncologist recommendations to their patients[7, 13, 14].

Despite strong generalizability from the inclusion of physicians from many countries and practice environments, this study has limitations. First, as the organizations who circulated the survey invitation would not disclose the audience size, we are unable to calculate response rate or assess the degree or significance of responder bias (a form of selection bias). However, this is likely prominent. Second, we assessed physicians self-reported behaviour, without verification of the accuracy of reporting. Thus, social desirability bias may affect the results. In addition, we examined only physicians' personal decisions regarding PSA testing, not digital rectal examination, another component of prostate cancer screening. Finally, despite inviting physicians from all relevant specialties, most respondents were urologists. However, previous work has demonstrated that urologists and radiation oncologists hold similar views regarding PSA screening[10]. Follow-up studies with equal representation amongst specialties, the

inclusion of prostate cancer expert physicians defined by other means such as publication history, and inclusion of public health experts could provide further insight.

Conclusion

We demonstrated a significant discordance between the prostate cancer screening decisions of physicians involved in the treatment of genitourinary cancers and current national guidelines regarding screening. Among those diagnosed with localized prostate cancer, physicians' treatment selections were in keeping with a previously identified specialty bias.

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Figures and Tables

Fig. 1. Survey design and questions.

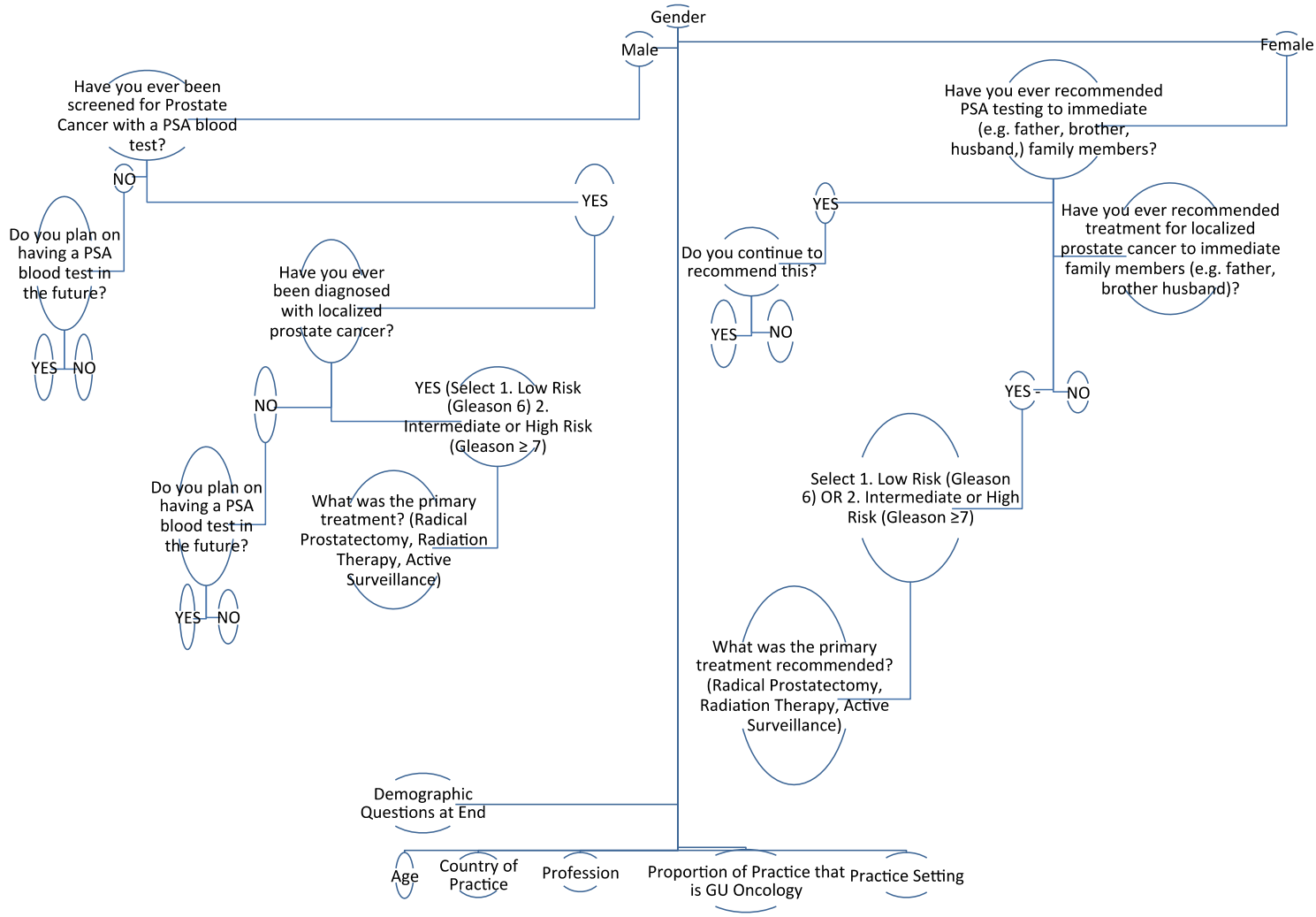

Table 1. Demographic characteristics of survey respondents	
	n=869
Gender (n, %)	
Male	807 (92.9)
Female	62 (7.1)
Age (median, IQR)	50 years (41– 60)
Region of practice (n, %)	
North America	595 (68.5)
Central /South America	131 (15.1)
Oceania	68 (7.8)
Europe	30 (3.5)
Missing	45 (5.2)
Specialty (n, %)	
Urology	719 (82.7)
Radiation oncology	89 (10.1)
Medical oncology	9 (0.9)
Other or undisclosed	53 (6.1)
Proportion of practice dedicated to GU oncology (n, %)	
<25%	173 (19.9)
25–50%	371 (42.7)
50– 5%	170 (19.6%)
>75%	110 (12.7)
Missing	45 (5.2)
Practice setting (n, %)	
Academic	351 (40.4)
Community	473 (54.4)
Missing	45 (5.2)

IQR: interquartile range.

Table 2. Univariate analysis assessing association between respondent demographic characteristics and the endorsement of PSA testing		
Demographic strata	**Endorsement of PSA testing, n (%)**	**Chi-squared (p)**
Age		0.28
≤54 years	481 (88.9)	
55–69 years	240 (92.3)	
≥70 years	63 (92.7)	
Gender		<0.0001
Male	741 (94.5)	
Female	43 (69.4)	
Specialty		0.01
Urology	658 (91.5)	
Radiation oncology	75 (85.2)	
Medical oncology	8 (88.9)	
Other/undisclosed	43 (81.1)	
Proportion of practice dedicated to GU oncology		0.11
<25%	154 (89.0)	
25–50%	343 (92.5)	
50–75%	147 (86.5)	
>75%	102 (92.7)	
Missing	38 (84.4)	
Practice setting		0.35
Academic	320 (91.2)	
Community	426 (90.1)	
Missing	38 (84.4)	

PSA: prostate-specific antigen.

Table 3. Treatment selection among respondents personally diagnosed with prostate cancer (men) or asked to provide treatment recommendations to first-degree relatives (women), stratified according to respondent specialty and prostate cancer risk category

	Urologist	Radiation oncologist	Medical oncologist	Other / missing
All cases				
RP	20 (64.5%)	1 (16.7%)	2 (66.7%)	3 (50.0%)
RT	4 (12.9%)	5 (83.3%)	1 (33.3%)	2 (33.3%)
AS	7 (22.6%)	0	0	1 (16.7%)
Missing	0	0	0	0
Low-risk prostate cancer				
RP	6 (42.9%)	0	0	0
RT	2 (14.3%)	3 (100%)	0	2 (100%)
AS	6 (42.9%)	0	0	0
Missing	0	0	0	0
Intermediate- or high-risk prostate cancer				
RP	14 (82.3%)	1 (33.3%)	2 (66.7%)	3 (100%)
RT	2 (11.8%)	2 (66.7%)	1 (33.3%)	0
AS	1 (5.9%)	0	0	0
Missing	0	0	0	0
Unknown risk category				
RP	0	0	0	0
RT	0	0	0	0
AS	0	0	0	0
Missing	0	0	0	1 (100%)

AS: active surveillance; RP: radical prostatectomy; RT: radiotherapy,