

The association between the knowledge on prostate cancer screening with the beliefs and behaviors of Saudi men attending King Khalid University Hospital

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ABSTRACT

Background: The evidence showed that prostate cancer (PC) is the second most common malignancy in men globally. Unfortunately, it rarely produces symptoms, and the diagnosis is delayed until the tumor is advanced. **Objectives:** To determine the participants' uptake of prostate cancer screening (PCS). Also, to assess their perceptions regarding PCS. Furthermore, to evaluate the association between patients' knowledge of PC and their beliefs and behaviors towards PCS. **Methods:** This cross-sectional study recruited men aged older than 40 attending the King Khalid University Hospital (KKUH) between October 2020 and March 2021. SMS messages were sent to a random sample of 228 participants, inviting them to participate in an online self-administered questionnaire. The questionnaire consisted of 1- demography and history of PCS; 2- the knowledge questionnaire about PC; 3- the Champion's Health Belief Model (HBM). **Results:** Out of the 228 participants, 45.2% were men aged 60 years and above, 54.4% with college degrees and postgraduate studies, and 92.5% were married. The median knowledge score was 5, and the range was 12. Most men (72.4%) had a low knowledge score, and 79.4% of them did not have a previous PCS. Men aged 60 + were more likely to undergo the screening than their counterparts, with *P* values of 0.005. Higher knowledge scores were associated with the perceived benefits of prostate-specific antigen (PSA), digital rectal examination (DRE), and health motivation, *P* values of 0.0001, 0.0001, and 0.02, respectively. PSA and DRE's perceived barriers were associated with low knowledge scores, *P* values of 0.0001 and 0.003, respectively. A higher probability of PCS participation was associated with the older age group, a *P* value of 0.001. Low participation was associated with perceived barriers of DRE, a *P* value of 0.031. **Conclusion:** The majority of the participants had poor knowledge regarding PC and PCS. Only a fifth of the men did PCS. High knowledge was associated with PSA and DRE perceived benefits and health motivation.

Keywords: Health belief model (HBM), knowledge level, prostate cancer, screening

Introduction

Prostate cancer is a commonly diagnosed cancer globally,^[1] and the second most frequent cause of death after lung cancer in men

worldwide. It accounted for 1,276,106 cases and caused 358,989 mortalities, 3.8% of all deaths due to cancer in men, in 2018.^[2,3] In Saudi Arabia, prostate cancer is the sixth most common cancer among males, and the most common cancer among men over 75.^[4] In contrast with the majority of other countries, the age-standardized incidence rate of prostate cancer in Saudi Arabia was (5.3 per 100,000 people in 2012) and (6.3 per 100,000 people in 2016).^[5] These figures are much lower than the overall

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incidence rate of prostate cancer worldwide (30.6 per 100,000 people in 2012).^[6] However, both the incidence and deaths of prostate cancer in Saudi Arabia and Asian men are expected to increase substantially.^[7,8]

Unfortunately, prostate cancer rarely produces symptoms until it is untreatable,^[9] and the diagnosis is not usually confirmed until the tumor is locally advanced or metastatic. Despite the worldwide availability of tests to detect and diagnose prostate cancer – digital rectal examination (DRE) and prostate-specific antigen (PSA)-,^[10] several studies show low screening intentions and rates for prostate cancer.^[11-14]

It is crucial to enhance participation rates in prostate cancer screenings (PCS) among Saudis and improve their knowledge and attitudes towards the screening practices.^[15] Furthermore, increase their awareness of prostate cancer's projected incidence among the Saudis.^[7,8]

The health belief model (HBM) is employed to explain personal beliefs about disease and predict an individual's health behavior towards it. The HBM was initially created by social psychologists Rosenstock, Kegels, and Hochbaum in the 1950s to understand the widespread failure of tuberculosis screening programs.^[16] It was developed as an applicable model in 1966 by Rosenstock.^[16] Since then, it has been employed to describe the perception and predict an individual's behavior towards a disease.^[16,17] Victoria Champion^[18] modified the constructs of HBM to develop the Champion Health Belief Model Scale (CHBMS) to assess health beliefs of breast cancer and screening behaviors. The CHBM measures the beliefs of susceptibility, seriousness, benefits, barriers, health motivation, and confidence, with the screening behavior. So far, we did not find studies using the CHBM for prostate cancer in Saudi Arabia. For our study, we have decided to use a reliable and valid CHBM questionnaire as a tool to measure the health beliefs related to prostate cancer screenings modified by Mohammad H. Abuadas, 2016.^[16,17] The current survey aimed to estimate the uptake of prostate cancer screening (PCS). Also, to assess their different perceptions regarding PCS. Furthermore, to determine the association between patients' knowledge about PC and their beliefs and behaviors towards PCS.

Methods

We conducted an observational cross-sectional study of Saudi men aged 40 years old and above attending the outpatient King Khalid University Hospital (KKUH) between October 2020 and March 2021. The study aimed to understand Saudi men's beliefs concerning PCS, which will consequently offer health care professionals assistance in enhancing, designing, and implementing health education programs that potentially increase Saudi's screening practices.

Sampling technique

We used the single proportion formula to recruit an adequate number of participants as follows: $n = Z^2 \alpha P (1-P) / d^2$. N is

the required sample size, $Z = 1.96$ at confidence level 95%, P is the expected proportion of people who did not do PCS based on previous studies. Using 95% confidence level and $d = 5\%$ precision, a previous study result of population proportion of 89.4^[15] resulted in 228 participants, which was the minimal number required to conduct this study.

A simple random sample was obtained from the patients' list attending KKUH outpatient clinics using MS excel. These patients were sent SMS messages inviting them to participate in an online self-administered questionnaire.

Inclusion and exclusion criteria

The inclusion criteria were limited to Saudi males who were 40 years and older. At the same time, the exclusion criteria involved any individual who was currently or had a first-degree relative diagnosed with prostate cancer.

Data collection tools

A pilot study was conducted using a validated and translated questionnaire into Arabic to assure the other questionnaires' reliability in use. The questionnaires were divided into three parts:

Part 1. The researchers developed the sociodemographic data scale based on the literature comprising six questions about the participant's age, educational level, and marital status. A previous family history of prostate cancer and prostate cancer screening history including both PSA and DRE in addition to the prostate cancer-related question.

Part 2. The knowledge questionnaire about prostate cancer and screening, designed by Weinrich 2004,^[19] measures the participant's knowledge about prostate cancer and its screening. The Knowledge questionnaire contained 12 questions measuring five different concepts, including risk factors, symptoms, screening age guidelines, treatment side effects, and limitations. Answers were scored as "True (Yes)," "False (No)" and "Do not know," with "Do not know" answers coded as incorrect. The scores ranged from a minimum score of 0 (0%) to a maximum score of 12 (100%). Achieving higher scores denoted a higher level of knowledge. The levels were categorized as "low" for median and below score and "high" for above median score. The knowledge questions were translated into Arabic and back-translated to English by bilingual professionals. The final version was revised, piloted, and modified by the authors.

Part 3. The modified reliable and valid Champion's Health Belief Model (CHBM) has been a comprehensive tool for measuring prostate cancer screenings' health beliefs. It was translated into Arabic and validated among a sample of Jordanian men.^[16,17] The modified CHBMS-PCS is composed of 42 items within seven subscales [susceptibility, severity, benefits (PSA), barriers (PSA), benefits (DRE), barriers (DRE), and health motivation]. A five-options Likert scale followed all the items: strongly agree (5 points), agree (4 points), neutral (3 points), disagree (2

points), and strongly disagree (1 point). Each of the subscales were independently evaluated, and there was no estimation of the total score. Subscale scores for each participant were estimated. Higher scores mean positive feelings about that construct. Except for negatively correlated barriers, all subscales have a positive response to screening behaviors.

Data analysis

The data were collected and transformed automatically into an excel sheet and imported into the IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp. Descriptive statistics included frequency, the median and IQR of continuous variables, and percentages for categorical variables. The Chi square test was used in categorical variables. Simultaneously, Mann–Whitney U and Kruskal–Wallis tests were to compare medians among various groups. A multivariate binary regression model was conducted to predict the individuals' participation in prostate cancer screening. A *P* value of < 0.05 denoted the statistical significance.

Institutional Review Board of the College of Medicine, King Saud University, Saudi Arabia, approved the study (Project No. E-20-5414), which was in accordance with the Declaration of Helsinki. The informed consent indicated the study's purpose and the participant's right to opt-out any time without the researchers' obligation. Besides, participants' anonymity was assured by assigning each participant with a code number for analysis only. Moreover, no incentives or rewards were given to the participants.

Results

A total of 228 respondents participated in the study. The respondents' characteristics and their knowledge regarding prostate cancer and screening are shown in Table 1. Most of our participants were men aged 60 years and above (45.2%), with college degrees and postgraduate studies (54.4%), and married (92.5%). The median of the knowledge score was 5, and the range was 12, whereas the mean score was 4.6 ± 2.7 . Most men (72.4%) had a low knowledge score (median and below score). Worth mentioning that the knowledge score of men aged 60 and above, with institutional education, married, and those who had a previous screening was higher than that of the other groups. Nevertheless, the knowledge score comparison based on participants' age, education level, marital status, and previous prostate cancer screening did not reach statistically significant differences.

The majority of our respondents (79.4%) did not have a previous prostate cancer screening test, as shown in Table 2. Additionally, men aged 60 + were more likely to undergo the screening than their counterparts with an odds ratio (CI) 4.822 (1.762–13.201) *P* value of 0.005. Those who had institutional education and the married were more likely to undergo the screening than the other groups, but these differences did not reach statistical significance.

Beliefs and attitudes

Table 3 shows the association between subjects' knowledge of prostate cancer and screening with components of Champion's Health Belief Model Scales. Higher knowledge scores were significantly associated with perceived benefits of prostate-specific antigen (PSA), digital rectal examination (DRE), and health motivation, *P* values of 0.0001, 0.0001, and 0.02, respectively. On the other hand, PSA and DRE's perceived barriers were significantly associated with low knowledge scores, *P* values of 0.0001 and 0.003, respectively.

Table 4 highlights the association between the participants' characteristics and components of the Health Belief Model (HBM) median scores. The older age groups had a higher perception of the benefits of PSA, DRE, and were more health motivated, *P* values 0.017, 0.033, and 0.002, respectively. Also, the divorced/widow men had higher perception scores of susceptibility to prostate cancer than other groups, *P* value 0.02. In comparison, the married men had significantly higher perceptions of benefits of PSA testing, DRE, and health motivation than other groups *P* values of 0.001, 0.049, and 0.01, respectively. The single respondents had the highest perception of PSA barriers *P* value of 0.04. Lastly, comparing the median scores of perceived PC susceptibility, severity, PSA and DRE benefits and barriers, and health motivation showed no statistically significant differences among various educational groups. Table 4.

Table 5 highlights the associations between previous experience with prostate cancer screening and the scores of HBM components. Those with previous experience of prostate cancer screening had a higher perception of PSA benefits, a *P* value of 0.015. In contrast, those who did not undergo prostate cancer screening before had a higher perception of PSA and DRE barriers, *P* values 0.006 and 0.001, respectively.

In Table 6, the outcome of the multivariate binary regression model to predict participation in prostate cancer screening tests based on the participants' characteristics, knowledge of PC and screening, and HBM constructs indicated that age was significantly associated with a higher probability of participation in prostate cancer screening programs with an OR (95% CI) 2.35 (1.40–3.93), a *P* value of 0.001. Also, negative predicted individuals' participation was significantly associated with perceived barriers of DRE, OR (95% CI) 0.88 (0.79–0.98), a *P* value of 0.031. On the other hand, knowledge score, perceived susceptibility, severity, benefits, barriers of PSA, benefits of DRE, and health motivation failed to predict individuals' participation in prostate cancer screening programs.

Discussion

Prostate cancer screening has always been an invaluable tool in the early detection of prostate cancer. It is part of the shared decision-making between the patient and the doctor, making it

Table 1: The Association between subjects' characteristics and knowledge prostate cancer and screening

Demographic variables	n [%] 228 [100%]	Knowledge score		Chi2 Test (χ^2) P	Odds ratio (95%CI)	P
		Low knowledge score n (%) 165 (72.4)	High knowledge score n (%) 63 (27.6)			
Age years						
40-49	61 (26.8)	45 (73.8)	16 (26.2)	(0.59) 0.74	Reference	0.74
50-59	64 (28.1)	48 (75.0)	16 (25.0)		0.938 (0.420-2.094)	
60 and more	103 (45.2)	72 (69.9)	31 (30.1)		1.211 (0.596-2.461)	
Education						
Illiterate/primary education	26 (11.4)	21 (80.8)	5 (19.2)	(3.49) 0.33	Reference	0.34
Secondary education	54 (23.7)	36 (66.7)	18 (33.3)		2.100 (0.680-6.485)	
Institutional education	24 (10.5)	15 (62.5)	9 (37.5)		2.520 (0.702-9.048)	
College and higher education	124 (54.4)	93 (75.0)	31 (25.0)		1.400 (0.487-4.027)	
Marital status						
Single	11 (4.8)	8 (72.7)	3 (27.3)	(2.36) 0.30	Reference	0.99
Married	211 (92.5)	151 (71.6)	60 (28.4)		1.060 (0.272-4.129)	
Divorced/Widow	6 (2.6)	6 (100)	0 (0.0)		0.000	
Previous prostate screening						
No	181 (79.4)	134 (74.0)	47 (26.0)	(1.2) 0.27	Reference	0.27
Yes	47 (20.6)	31 (66.0)	16 (34.0)		1.472 (0.739-2.930)	

NB: The median of the knowledge score was 5 and the range 12, whereas the mean score was 4.6+2.7.

Table 2: The Association between the subjects' characteristics and their past experience with prostate cancer screening

Demographic variables	n [%] 228[100%]	experience with prostate cancer screening		Chi2 Test (χ^2) P	Odds ratio (95%CI)	P
		NO n (%) 181 (79.4)	YES n (%) 47 (20.6)			
Age years						
40-49	61 (26.8)	56 (91.8)	5 (8.2)		Reference	
50-59	64 (28.1)	53 (82.8)	11 (17.2)	(11.867) 0.003	2.325 (0.757-7.138)	0.005
60 and more	103 (45.2)	72 (69.9)	31 (30.1)		4.822 (1.762-13.201)	
Education						
Illiterate/primary education	26 (11.4)	20 (76.9)	6 (23.1)		Reference	
Secondary education	54 (23.7)	45 (83.3)	9 (16.7)	(3.103) 0.376	0.833 (0.359-1.936)	0.391
Institutional education	24 (10.5)	16 (66.7)	8 (33.3)		2.083 (0.799-5.433)	
College and higher education	124 (54.4)	100 (80.6)	24 (19.4)		1.250 (0.453-3.450)	
Marital						
Single	11 (4.8)	11 (100)	0 (00)	(3.095) 0.21	0.000	0.95
Married	211 (92.5)	156 (78.2)	46 (21.8)		1.394 (0.159-12.230)	
Divorced/Widow	6 (2.6)	5 (83.3)	1 (16.7)		Reference	

Table 3: The Association between subjects' knowledge of prostate cancer and screening with components of Champion's health belief's model scales

Construct of HBM	Low knowledge score		High knowledge score		Mann-Whitney U test	P
	Median	IQR	Median	IQR		
Susceptibility	14.0	5	12.0	10	-1.9	0.057
Severity	18.0	8	19.0	9	-0.29	0.77
Benefits PSA	24.0	6	28.0	5	4.66	0.0001
Barriers PSA	13.0	4	10.0	5	-3.9	0.0001
Benefits DRE	23.0	8	26.0	7	3.66	0.0001
Barriers DRE	16.0	4	14.0	7	-2.99	0.003
Health motivation	29.00	6	31.00	7	2.30	0.02

an integral part of medical care. Nonetheless, the use of prostate cancer screening tools and their success depend on the public's perceptions and acceptance. Very few studies investigating individual's knowledge, beliefs, and behaviors towards prostate cancer screening have been conducted in the Middle East, let alone Saudi Arabia. Only two reported men's knowledge and

attitudes towards prostate cancer and its screening in Saudi Arabia. Our study assessed Saudi adults' knowledge, beliefs, and behaviors towards prostate cancer screening. Most participants had poor knowledge of prostate cancer and screening and had never undergone the procedure but generally possessed positive prostate cancer screening attitudes.

Table 4: Highlights the association between the participants’ characteristics and components of the Health Belief Model (HBM) median scores

Demographic variables	Median (IQR)						
	Susceptibility	Severity	Benefits PSA	Barriers PSA	Benefits DRE	Barriers DRE	Health Motivation
Age groups							
40-49 years	14.0 4	19.0 8	24.0 7	12.0 4	22.0 9	17.0 5	28.00 6
50-59 years	13.0 7.5	19.0 9.5	26.0 7.5	11.0 4.5	24.0 9.5	15.0 5.5	31.00 6
60 years and more	14.0 6	18.0 9	26.0 6	12.0 4	24.0 6	16.0 5	30.00 6
<i>P</i>	0.42	0.65	0.017	0.38	0.033	0.32	0.002
Kruskal-Wallis Test	1.73	0.85	8.09	1.93	6.84	2.23	12.35
Marital status							
Single	14.0 3	21.0 6	19.0 5	15.0 4	19.0 6	18.0 5	27.00 8
Married	13.0 5	18.0 9	26.0 6	12.0 4	24.0 8	16.0 5	30.00 6
Divorced/widow	16.5 4	19.5 6	22.0 7	14.0 3	20.0 4	17.0 3	27.50 7
<i>P</i>	0.024	0.65	0.001	0.008	0.049	0.71	0.01
Kruskal-Wallis Test	7.49	0.83	14.97	9.71	6.04	0.67	9.12
Education level							
Illiterate/primary education	15.0	17.0	25.5	13.0	23.0	17.0	28.00
Secondary education	14.5	20.0	26.0	13.0	24.0	16.0	28.50
Institutional education	14.5	19.5	26.5	11.0	25.0	14.0	30.00
College/higher education	13.0	18.0	25.0	12.0	23.0	16.0	30.00
<i>P</i>	0.17	0.51	0.68	0.85	0.10	0.45	0.29
Kruskal-Wallis Test	4.9	2.27	1.46	0.79	6.12	2.62	3.68

Table 5: Comparison of previous prostate cancer screening with components of Champion’s Health belief’s model scores

Construct of HBM	Previous experience with prostate cancer screening				Mann-Whitney U test	<i>P</i>
	No		Yes			
	Median	IQR	Median	IQR		
Susceptibility	14.0	5	13.0	6	0.056	0.95
Severity	19.0	9	17.0	8	-1.05	0.28
Benefits PSA	25.0	7	28.0	6	2.42	0.015
Barriers PSA	12.0	5	11.0	4	-2.77	0.006
Benefits DRE	24.0	8	26.0	8	1.81	0.07
Barriers DRE	16.0	5	14.0	6	-3.20	0.001
Health motivation	29.00	7	30.00	6	0.93	0.35

Although our study showed that most of our respondents believed that doing PSA screening would help detect prostate cancer early, only 20.6% of participants had previously undergone prostate cancer screening tests. Despite the low level of screening uptake, we have shown an improvement from a similar Saudi study that was published in 2015, which reported only 10% of participants had a regular checkup for their prostate either by PSA (6.8%) or DRE (3.2%).^[15] Another recent Saudi study published in 2021 showed that although 64% of the participants had sufficient knowledge about prostate cancer, and above 70% of the respondents believed that screening for prostate cancer was critical. Only 23% of the participants did a prostate cancer screening test.^[20]

Similarly, studies conducted in Turkey and Jordan showed that only 23.8% and 13.6% of participants underwent prostate cancer screening tests, respectively.^[12,21] This low screening level may be attributed to poor PC knowledge and the early detection of prostate cancer in Saudi Arabia.

The majority of our respondents (72.4%) had a low knowledge score, and most of the participants answered “I do not know” when asked about their knowledge of prostate cancer. The knowledge scores of men who had a previous prostate screening were higher than those of men who did not have a screen. The deficit of knowledge that was reported in this study was also found in other studies. Similar findings were reported

Table 6: multivariate binary regression model to predict participation in prostate cancer screening tests based on participants' characteristics, knowledge of PC and screening and HBM constructs.

Variables	B	Standard Error	Wald	Degrees of freedom	P	Odds ratio	95% C. I.	
							Lower	Upper
Age groups	0.856	0.262	10.660	1	0.001	2.354	1.408	3.935
Education levels	0.179	0.165	1.169	1	0.280	1.196	0.865	1.653
Marital status	0.650	0.771	0.711	1	0.399	1.916	0.423	8.687
Knowledge score	0.073	0.074	0.993	1	0.319	1.076	0.932	1.243
Susceptibility	0.027	0.042	0.421	1	0.517	1.027	0.947	1.115
Severity	-0.006	0.032	0.038	1	0.845	0.994	0.933	1.058
Benefits of PSA	0.060	0.062	0.920	1	0.338	1.061	0.940	1.199
Barriers of PSA	-0.066	0.071	0.873	1	0.350	0.936	0.814	1.076
Benefits of DRE	-0.020	0.052	0.150	1	0.698	0.980	0.884	1.086
Barriers of DRE	-0.119	0.055	4.652	1	0.031	0.888	0.797	0.989
Health motivation	-0.038	0.049	0.619	1	0.431	0.963	0.875	1.059
Constant	-2.610	2.430	1.154	1	0.283	0.074	-	-

from Australia,^[22] Jordan (67.1%)^[12], and Iran (86.1%).^[23] Furthermore, it was reported that men in the Arab world were characterized by poor knowledge and attitudes towards prostate cancer screening.^[24] The incidence and mortality due to prostate cancer are expected to increase, and early detection has a better prognosis.^[25] That is why men should be counseled about PSA tests who are aged between 50 and 70 through shared decision-making.^[24]

Understandably, our study found that high knowledge scores correlated positively with PSA and DRE's perceived benefits and the high motivation towards health. Moreover, those who did prostate cancer screening tests previously had a higher perception of PSA and DRE benefits. On the other hand, PSA and DRE's perceived barriers were significantly associated with low knowledge scores, and hence they did not undergo prostate cancer screening tests. In agreement with our study, findings were obtained in an Iranian study, which stated that 74.4% and 90.5% of men reported a good level of health motivations and perceived benefits, respectively. Also, a Turkish study showed that the low knowledge score had a poor positive correlation with susceptibility and benefit perceptions.^[21,26]

Fear of pain while undergoing PCS procedures, especially DRE, may prevent some men from doing these tests. Assuring the patients that these tests are relatively pain-free, and if they were to feel pain, it would merely be a discomfort to a mild pain at most. To our relief, only 25.9% of the participants in our study considered DRE to be painful. In contrast, a study conducted in Spain stated that 61% of the participants complained of pain with DRE.^[27]

Anxiety and fear of the diagnosis could be a major barrier in whether an individual accepted a screening procedure. In the current study, 39.1% of the participants were scared to think about prostate cancer. This finding is consistent with another study conducted in Riyadh on the "Knowledge and attitude of the population towards cancer prostate." They found that 49%

of the participants said, "I do not prefer doing PC examination as they would increase my anxiety and fear."^[15]

On the other hand, a study in Brazil found that proper knowledge, attitude, and practice regarding prostate cancer were reported in 63.8%, 40.6%, and 28.1% of men, respectively. Those participants with adequate attitudes reported almost twice better practice for detecting prostate cancer.^[28]

Only 17% of the participants in our study considered the cost to be a barrier. A possible reason for this is that most of the participants in our study had free access to hospital services or had medical insurance coverage. Another possible reason is that the Saudi population's average income is usually adequate to cover their needs. In contrast, a previous study stated that 60% of the men raised concerns regarding screening costs. This financial burden may act as a barrier to undergoing prostate cancer screening.^[29]

The present study revealed that almost 34% of the participants might be embarrassed about having a DRE. A similar finding from Brazil, in which about a third of participants considered that prostate examination affects masculinity, may lead to embarrassments.^[28]

Family physicians with the primary care team in close partnership with a urologist can play a crucial role in identifying and referring suspected prostate cancer patients for further investigation. Also, they could manage patients with stable diseases in the community.^[30]

The researchers acknowledge some limitations to this study. The men who participated in the study were from the city of Riyadh and were highly educated. Also, because of the online survey design, responders may have given random answers. Therefore, despite the concordance with the national and international findings, we may not generalize the findings to all Saudi men.

Conclusion/Recommendations

Primary care physicians play a major role in the health care system. Patients visit primary care physicians for routine health checkups, vaccinations, follow-ups, and many other reasons. As they are heavily involved in the health care system, they must be very well educated to help direct and address the patients' concerns. For them to know the epidemiology of prostate cancer and the burden the disease causes, and the associated morbidity, will help them address the elderly patients' concerns. The majority of our participants had poor knowledge about prostate cancer and a low attitude towards screening; thus,

primary care physicians play an important role in educating the patients about the symptoms of the disease to look for, different screening methods, and the importance of early diagnosis. We recommend adopting national programs to increase awareness about prostate cancer and enlighten the Saudi population on the importance of screening practices. Further studies and regular monitoring should be conducted to assess men's knowledge, attitude, and behavior towards PC and its screening practices in all regions of Saudi Arabia.

Key points

1. Our participants had low knowledge of prostate cancer and its screening.
2. The older the participants the more likely to undergo prostate screening.
3. The perceived barriers of PSA and DRE were associated with poor knowledge and low uptake of PCS.

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Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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