Original Article

The relevance of prostate cancer screening among Saudi men attending outpatient clinics of tertiary-care hospitals in Riyadh, Saudi Arabia

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Abstract

Background: Prostate cancer is a significant health-care burden in both developing and under developed countries. Efforts in Saudi Arabia may be hindered by the unclarity of awareness of predictors of early prostate cancer screening, given the complexity of such screening.

Aims: The objective of this study was to assess awareness levels of early screening of prostate cancer and its predictors among Saudi men.

Methods: A cross-sectional participatory approach was used to assess the awareness levels of early screening of prostate cancer among Saudi men within the age group for which early prostate cancer screening is recommended.

Results: Participants were recruited out of those admitted to outpatient clinics of the five largest tertiary-care hospitals. Four hundred and eighteen Saudi outpatient men aged 40–65 years were interviewed. Of all participants, 79.2% had heard of prostate cancer. When comparing eligible age groups, there was a significant difference in the percentage of men who had not undergone prostate screening ($P < 0.0001$). Across all eligible age groups, 65.8% of participants had not been advised to undergo prostate screening by their primary care physicians. In each age group, more than 75% of men reported that they would consider early screening for prostate cancer.

Conclusion: There was no significant difference in the percentages of men who would consider screening if they presented lower urinary tract symptoms ($P = 0.179$). Data on the uptake of voluntary screening of prostate cancer in Saudi Arabia are either inconclusive or insufficient. Therefore, it may be challenging to interpret the awareness levels and surveillance strategies for this disease in Saudi Arabia.

Keywords: Awareness, early screening, prostate cancer, risk predictors

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INTRODUCTION

Prostate cancer is the sixth leading cause of cancer-related mortality in men worldwide and the first leading cause of cancer-related deaths among men in many African nations, such as Guinea, and the second leading cause of death in men in the United States.[1,2,3] Prostate cancer has, therefore, become a significant health-care burden in both developed and developing countries. According to data from the GLOBOCAN database, in 2018, an estimated 1,276,106 new cases of prostate cancer were reported among men worldwide, while the number of deaths due to prostate cancer was 358,989.[4] These figures were dramatically higher than those in previous years. Although the incidence of prostate cancer differs between countries, the proportion of cases varies. For instance, the prevalence in Saudi Arabia is low compared to other countries in Europe and the Gulf region. The incidence rate of prostate cancer in Saudi Arabia is around 6 cases per 100,000 men, compared to 8 cases in Oman, 13 in Kuwait, and 15 in Bahrain.[5,6]

The International Agency for Research on Cancer estimates that, in 2018, the age-standardized incidence rate (ASIR) of prostate cancer was 6.1 per 100,000 Saudi men, while the age-standardized mortality rate (ASMR) was 1.7 per 100,000 Saudi men. In comparison, the agency estimated that, in 2008, the ASIR of prostate cancer in Saudi Arabia was 7.7 per 100,000, while the ASMR was 5.1 per 100,000 men.[6] The latest report from the Saudi Cancer Registry (2014) released in September 2017 ranks prostate cancer as having the fifth highest incidence among Saudi men, with 324 out of 4908 cases of men diagnosed with various cancers. According to the report mentioned above (2014), most cases of prostate cancer were recorded in the Riyadh region; 87 cases recorded here represented 5.7% of the 1514 cases of Saudi men diagnosed with any type of cancer. Moreover, the eastern region had the highest prevalence of prostate cancer, with 80 cases recorded, which represented 8.9% of all 900 Saudi men diagnosed with various cancers.[7] According to data from the GLOBOCAN database, the incidence of prostate cancer in Saudi Arabia increased to 607 new cases in 2018, almost double the number of cases compared to the Saudi Cancer Registry figures for 2014.[6] In Saudi Arabia, a study found that the median life expectancy for patients with prostate cancer in the Eastern region of Saudi Arabia is 71 years, in contrast to that in the Western countries, where it is above 80 years.[8] With that number expected to increase in correlation with population growth, cost-effective awareness initiatives for those who have not been previously screened for prostate cancer seem to be needed for Saudi men within the age-recommended group for screening. This study aims to explore the recent trends in awareness levels of early screening and risk factors of prostate cancer among Saudi men.

METHODS

This quantitative cross-sectional study was conducted in five major tertiary-care hospitals in Riyadh, Saudi Arabia, which are considered referral hospitals for most cancer patients in Riyadh: King Khalid University Hospital, King Faisal Specialist Hospital and Research Center, King Fahd Medical City Hospital, Prince Sultan Military Medical City Hospital, and King Fahd National Guard Hospital. This study included 418 Saudi outpatients from these hospitals who were informed about the aim of the study. Participants were recruited from outpatient service points such as specialized consultation clinics (e.g. lipid or obesity clinic), laboratories, or pharmaceutical, radiological, and physiotherapy service points. However, patients with prostate cancer, acute-care patients, medical staff, nurses, allied hospital staff (e.g. receptionists or janitors), visitors, and dependents were excluded. A stratified random sampling technique was chosen for each service point, which yielded a population-representative sample of the total male outpatient population from December 2019 to January 2020.

The questionnaire was divided into three phases and assessed the awareness levels of prostate cancer through 13 items devised from the Cancer Awareness Measure (CAM).[9] First, vulnerability or severity scores were reported based on the eight most common warning signs anticipated as possible barriers for those men seeking prostate assessment. Second, because of the uncertainty in identifying the highest risk predictor of prostate cancer in Saudi Arabia, common susceptibility factors for the development of aggressive and slow-growing prostate cancer were counted using closed-question items. Third, four unprompted-question items were chosen for assessing the decision-making approach of participants with relation to screening for prostate cancer. The eligible men were invited to complete the survey via a face-to-face, online form-assisted interview. Nevertheless, it is noteworthy that one of the reasons as to why the Cancer Research UK developed The CAM is to help researchers estimate the levels of cancer perceptions and evaluate the decision-making process of participants to promote cancer awareness.

Analysis

Data were analyzed using IBM SPSS Statistics for Windows, version XX (IBM corp., Armonk, N.Y., USA). Descriptive

statistics were assigned for demographic variables (age group, marital status, and educational level), including question items extracted from CAM. Frequency counts and percentages of our participants were assigned to their categorical responses to prostate cancer screening according to the age groups. Associations between demographic variables and knowledge of risk factors were tested using the Chi-square test. A scoring system was applied to assess the level of severity of lower urinary tract symptoms of each participant. Finally, $P < 0.05$ was established as an indicator of statistical significance, and continuous variables were summarized as mean ± standard deviation.

RESULTS

Of the 418 outpatient Saudi men interviewed at the tertiary-care hospitals, more than one-third of participants ($n = 155$, 37.1%) were aged between 40 and 44 years, 64 participants ($n = 64$, 15.3%) were aged between 45 and 49 years, 103 participants ($n = 103$, 24.6%) were aged between 50 and 54 years, 56 participants ($n = 56$, 13.4%) were aged between 55 and 59 years, and 40 participants ($n = 40$, 9.6%) were aged between 60 and 65 years. Three hundred and sixty-three (86.84%) were married or previously married with children, and half of the participants ($n = 209$, 50.0%) were educated to university level. There were 319 men (79.2%) who had previously heard of prostate cancer. Of all men who had previously undergone screening, 15 (9.3%) had been diagnosed with prostate cancer. Moreover, 77 men (47.8%) had been diagnosed with a prostate disease other than prostate cancer.

Across all age groups, there were varying differences in perceptions on risk factors for prostate cancer. Of all surveyed men, 34.2% selected age as the most important factor, 16.9% selected diet, 15.9% selected family history, 9.7% selected long-term shift work, and 4.0% selected ethnicity [Table 1].

There was a significant difference between the eligible age groups in terms of the percentage of men who had not undergone prostate screening ($P < 0.0001$). Only half of the men aged ≥50 years (41.7%–52.5%) had undergone routine prostate screening, whereas only 7–8 eight out of 10 men aged 40–49 years had not undergone any prostate screening. There were also significantly more men aged ≥55 years who had been advised by their primary care physicians to undergo prostate screening compared to those who were younger ($P < 0.0001$). Furthermore, across all eligible age groups, 65.8% of participants had not been advised to undergo prostate screening by their doctor. Based on their responses, more than 75% of men of each age group reported that they would consider prostate cancer screening if they presented any lower urinary tract symptoms. There was no significant difference between the groups in the percentages of men who would consider screening if they presented lower urinary tract symptoms ($P = 0.179$). Moreover, across all eligible age groups, three out of ten men responded that they would feel uncomfortable discussing their prostate health; however, there were significant differences between the groups in this respect ($P = 0.027$) [Table 2].

Upon comparing eligible age groups, there were no significant differences in the severity of lower urinary tract symptoms experienced ($P = 0.813$), in marital status ($P = 0.108$), or in educational levels ($P = 0.117$). Of all surveyed men, 58.3% experienced mild urological symptoms, 35% experienced moderate urological symptoms, and 6.7% experienced severe urological symptoms [Table 3].

DISCUSSION

In the absence of a routine screening campaign for prostate cancer in Saudi Arabia, it was expected that a small percentage of men would have never undergone

Table 1: Percentage of responses as to what subjects perceived as the most critical risk factors for prostate cancer

Variable	Risk factors (%)						*P*
	Age	Diet	Family history	Ethnicity	Work for long periods	Others	
Age group (years)							
40-44	43 (28.3)	32 (21.1)	27 (17.8)	5 (3.3)	19 (12.5)	26 (17.1)	0.048
45-49	21 (33.9)	6 (9.7)	9 (14.5)	2 (3.2)	8 (12.9)	16 (25.8)	
50-54	40 (39.6)	20 (19.8)	11 (10.9)	2 (2.0)	6 (5.9)	22 (21.8)	
55-59	22 (43.1)	7 (13.7)	11 (21.6)	5 (9.8)	3 (5.9)	3 (5.9)	
60-65	12 (32.4)	3 (8.1)	6 (16.2)	2 (5.4)	3 (8.1)	11 (29.7)	
Marital status							
Single	9 (36.0)	5 (20.0)	3 (12.0)	3 (12.0)	4 (16.0)	1 (4.0)	0.001
Married or previously married with children	123 (34.9)	59 (16.8)	57 (16.2)	8 (2.3)	31 (8.8)	74 (21.0)	
Married or previously married without children	6 (23.1)	4 (15.4)	4 (15.4)	5 (19.2)	4 (15.4)	3 (11.5)	
Education level							
High school or less	56 (43.8)	18 (14.1)	19 (14.8)	5 (3.9)	11 (8.6)	19 (14.8)	0.400
University	61 (30.0)	38 (18.7)	32 (15.8)	10 (4.9)	20 (9.9)	42 (20.7)	
Postgraduate	21 (29.2)	12 (16.7)	13 (18.1)	1 (1.4)	8 (11.1)	17 (23.6)	

Table 2: Responses to questions about prostate cancer screening according to the age groups

Question	Age group (years)					*P*
	40-44	45-49	50-54	55-59	60-65	
Have you undergone any prostate screening?						
Yes	13 (8.4)	14 (21.9)	43 (41.7)	28 (50.0)	21 (52.5)	<0.0001
Not sure	13 (8.4)	5 (7.8)	8 (7.8)	4 (7.1)	7 (17.5)	
No	129 (83.2)	45 (70.3)	52 (50.5)	24 (42.9)	12 (30.0)	
Have you been told that you need to undergo prostate screening by your doctor?						
Yes	11 (7.1)	5 (7.8)	12 (11.7)	12 (21.4)	13 (32.5)	<0.0001
Not sure	15 (9.7)	8 (12.5)	16 (15.5)	8 (14.3)	6 (15.0)	
No	126 (81.3)	49 (76.6)	73 (70.9)	31 (55.4)	18 (45)	
If you suspect signs of prostate cancer, would you consider screening?						
Yes	120 (77.4)	47 (73.4)	89 (86.4)	47 (83.9)	30 (75.0)	0.179
Not sure	14 (9)	8 (12.5)	6 (5.8)	3 (5.4)	5 (12.5)	
No	18 (11.6)	7 (10.9)	6 (5.8)	1 (1.8)	2 (5.0)	
Would you feel uncomfortable about discussing the health of your prostate with your family?						
Yes	57 (36.8)	20 (31.3)	35 (34.0)	15 (26.8)	16 (40.0)	0.027
Not sure	36 (23.2)	8 (12.5)	27 (26.2)	8 (14.3)	13 (32.5)	
No	59 (38.1)	34 (53.1)	39 (37.9)	28 (50.0)	8 (20.0)	

Table 3: Severity of lower urinary tract symptoms experienced by 418 adult Saudi men

Variable	Severity			*P*
	Mild ≤7	Moderate 8–19	Severe ≥20	
Age group (years)				
40-44	91 (59.9)	50 (32.9)	11 (7.2)	0.813
45-49	40 (64.5)	18 (29.0)	4 (6.5)	
50-54	56 (55.4)	39 (38.6)	6 (5.9)	
55-59	31 (60.8)	17 (33.3)	3 (5.9)	
60-65	17 (45.9)	17 (45.9)	3 (8.1)	
Marital status				
Single	15 (60)	6 (24)	4 (16.0)	0.108
Married or previously married with children	201 (57.1)	128 (36.4)	23 (6.5)	
Married or previously married without children	19 (73.1)	7 (26.9)	0 (0)	
Education level				
High school or less	67 (52.3)	49 (38.3)	12 (9.4)	0.117
University	129 (63.5)	66 (32.5)	8 (3.9)	
Postgraduate	39 (54.2)	26 (36.1)	7 (9.7)	

early prostate screening. Although the majority of men had heard of prostate cancer (79.2%), our results nevertheless revealed gaps in the awareness of predictors and screening for prostate cancer. In Jeddah, Saudi Arabia, a prostate cancer screening awareness study found that 79.4% of men had inadequate facts about prostate cancer screening methods. Among those men, 41.2% had meager information about prostate symptoms and 35.1% had insufficient knowledge about its predictors.[10]

Knowledge of risk factors for prostate cancer is a significant determinant of prevention and screening. Our results showed that most responses in the group with lower levels of educational attainment varied between "age" and "other cancers" compared with men who had postgraduate degrees. This indicates that most men questioned were aware that age is the most common predictor of prostate cancer. While the exact causes of prostate cancer are largely undetermined, age and genetic predispositions are among the most identifiable factors. In 2018, the U. S. Preventive Services Task Force updated its recommendations on prostate-specific antigen (PSA)-based screening for men aged between 55 and 69 years. In addition, men who have a relative with prostate cancer have a higher chance of developing the disease at an early age. It is, therefore, recommended that men as young as 45 years old start monitoring their prostate health and risk for prostate cancer and discuss the benefits and harms of prostate cancer screening with their physicians.[11] Other risk factors for prostate cancer are social and environmental, particularly a high fat, high processed carbohydrate diet. In addition, men of African descent are 76% more likely to develop prostate cancer compared with Caucasian men, and have 2.2 times the mortality rate as compared to other races.[12] Our study findings show that fewer men, regardless of educational background, age, and marital status, selected fatty diet, family history of a relative, shift work or lack of exercise, and being of African race as susceptibility factors for prompting prostate cancer development. This comparably aligns with the advocacy for more early

cancer prevention population-based metrics to assess the relationship between lifestyle and risk factors for cancer in Saudi Arabia.[13] That approach is rendered on whether men, within the age-recommended groups for screening, are at a higher risk of developing an abnormally functioning prostate. The American Cancer Society recommends that men with an identifiable risk factor contemplating prostate cancer screening should formulate well-informed decisions based on the possible benefits and risks of prostate cancer screening and outcomes of treatments.[14]

Awareness of the benefits and harms of prostate cancer screening channels an insight into the way men make decisions regarding their reproductive health. Some men reported a lack of regular checkups, which could be interpreted as neglect on behalf of the patient. This neglect could be sociocultural and may prevent individuals with higher risk from undergoing prostate screening. Nonetheless, it could be addressed by tailoring a nationwide individual-based model rather than a mass prostate cancer screening plan. A population-based prostate cancer screening study was conducted at King Saud University Medical City, where males between the ages of 50 and 70 years were screened for PSA levels, argued against mass initial screening for men, especially that there is uncertainty that early detection can lead to significant changes in the outcome of the disease.[15] Another subsequent study concluded that initiating a mass screening for prostate cancer in Saudi Arabia prompts the need for follow-up care and urges physicians to evaluate the adverse effects of prostate biopsies and the negative psychological impact toward such false-positive test results.[16] Hence, our study demonstrated some variations in prostate-related urinary tract symptoms associated with age and the potential risk of overdiagnosis of nonclinically significant prostate cancer. Our results were similar to those generated via the International Prostate Symptom Score (IPSS) system, which uses a reproducible tool to assess prostate health. Single men aged ≥55 years with low levels of educational attainment presented the largest share of severe prostate-related symptoms, with nocturia being the most common complaint. One study conducted on 284 healthy men using the IPSS system found that IPSS scores increased with age; this may illustrate underlying changes in prostate-related urinary tract symptoms, with frequency and nocturia being the most prominent symptoms on the IPSS.[17] Subsequently, there is no significant correlation between the severity of urinary symptoms, which is also caused by benign prostatic hyperplasia and prostatitis, and the risk for developing prostate cancer. Instead, primary care physicians need to avoid engaging patients on whether they would consider different screening options for prostate cancer based on the severity of symptoms. The fact that almost two-third of the men in our study were not advised to undergo screening by their family physician is therefore appropriate. Furthermore, men with mild-to-moderate urinary tract symptoms may need to be treated without addressing the risks and benefits of early prostate cancer screening or its symptomatic treatment. This is particularly crucial as the onset of lower urinary tract symptoms is considered a clinically late event in the cycle of prostate cancer among healthy or asymptomatic elderly men.[18]

Many Saudi men have conflicting knowledge on predictors, early screening, and outcomes of prostate cancer.[19] The habit of avoiding regular primary care physician consultations due to cultural sensitivity must be viewed as a core concern for men. This could be framed as an individually motivated intervention rather than an issue pertaining to an entire health-care system. Similarly, all stakeholders in the health-care system should attempt to enhance the attitudes of men who are at a higher risk and enrich their knowledge on the harms and benefits of PSA testing through shared decision-making. Some of the most common harms from prostate cancer treatment include urinary incontinence, erectile dysfunction, bowel incontinence, and urgency.[20] Attaining this knowledge would result in reducing decisional conflict and promoting larger involvement in the process of early detection.[21] Further detailed work into bolstering the cultural attitudes surrounding prostate cancer screening methods is anticipated in the near future to facilitate the early intervention of prostate cancer for those at higher risk and achieving the highest level of cure from this disease in Saudi Arabia.

Limitations

The limitation of this study must be acknowledged. Outpatient selection may have been a limiting factor in this study as our subjects were selected from those attending an array of clinics within tertiary-care hospitals. This is less indicative of the sociodemographic distributions observed in this study, which appeared to be representative of that group to some extent. We, therefore, recommend further studies with a larger group of adults in larger geographical areas. These further studies may investigate more cultural factors and their impact on health behavior and motivation analysis.

CONCLUSION

Although the incidence rate of prostate cancer in the Kingdom is low and differs from one Saudi city to another,

the proportion of cases varies exponentially. The uptake of early preventive screening is poorly documented in the Saudi Cancer Registry. It is often incumbent upon the Saudi Ministry of Health to work with physicians and hospitals on tailoring an individual-based model, rather than a mass prostate cancer screening plan, that could identify men with the highest risk to make informed and optimal decisions with regard to their prostate health. Since decisions to undergo screening depend on physicians, on patients, and on guidelines from the literature, there is potential for primary care physicians who are likely to prioritize informed decisional conflict to incorporate the attitude of Saudi men toward current counseling campaigns increasing awareness about more common cancer-producing health hazards such as smoking and obesity.

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Conflicts of interest

There are no conflicts of interest.

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