The knowledge and attitude towards prostate cancer and screening practices among males in Saudi Arabia

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ABSTRACT

Background: Early-stage prostate cancer can be asymptomatic. The digital rectal exam (DRE) and the prostate specific antigen (PSA) test are usually used for prostate cancer screening. This study aims to assess knowledge and attitudes towards prostate cancer screening among males in Saudi Arabia. Materials and Methods: A cross-sectional study was conducted on Saudi males above the age of 40. A self-reported questionnaire was distributed online. Results: A total of 368 males completed the questionnaire. In the studied group, 64.5% had heard about prostate cancer through social media (46.7%), the internet (40.1%), or healthcare providers (18.6%). In addition, around 20.3% of the participants had heard about the PSA screening test. Moreover, 55.2% of participants had an inadequate level of knowledge about prostate cancer and the PSA test, while 53.1% had a negative attitude. Conclusion: There was a poor level of knowledge and attitude towards screening for prostate cancer among males in Saudi Arabia. This could be due to the lack of education on the risks of prostate cancer by healthcare providers.

Keywords: Carcinoma, knowledge survey, prostate cancer, PSA

Introduction

Prostate cancer is the abnormal growth of the prostate gland, which is a small accessory gland of the male reproductive system that is located at the base of the bladder in front of the rectum. The prostate usually weighs about 20 g and produces proteolytic enzymes in semen to facilitate fertilization.¹,² Prostate cancer is characterized by both physical and psychological symptoms.³ It is usually asymptomatic at its early stages and presents with symptoms similar to benign prostatic hyperplasia such as interrupted flow, frequency, nocturia, hematuria, and dysuria at advanced stages.⁴,⁵ Metastatic prostate cancer may spread to bones and cause pain in the hips, spine, or ribs.⁶

Prostate cancer is the second most common malignancy and the fifth leading cause of death in men globally. It is estimated to cause 358,989 deaths per year, about 3.8% of all cancer-related deaths in men.⁶,⁷ The American Cancer Society report predicted approximately 174,650 new cases of prostate cancer and 31,620 deaths due to prostate cancer in the United States in 2019. Moreover, prostate cancer affects black men more frequently than white men, indicating a genetic predisposition to cancer.⁷ Prostate cancer screening is typically done by digital rectal exam (DRE) and prostate...
specific antigen (PSA) testing. Screening practices for prostate cancer remain controversial due to concerns with overdiagnosis. Routine DRE screening in primary care, according to some evidence, may not have a major effect on mortality, because of the high number of false positives, which leads to unnecessary invasive diagnostic test that can cause discomfort, erectile dysfunction, and urine incontinence, in addition to prostate cancer overdiagnosis and overtreatment.[9]

The European Randomized Study of Screening for Prostate Cancer (ERSPC) reported a significant reduction in prostate cancer mortality with PSA screening.[9] On the other hand, the Prostate, Lung, Colorectal, and Ovarian (PLCO) Cancer Screening Trial showed no significant reduction in mortality with early prostate cancer screening.[9,10] The American Cancer Society recommends the disclosure of all benefits, risks, and potential concerns of prostate cancer screening to people at high risk.[11]

In Saudi Arabia, 323 new cases of prostate cancer were reported in 2014, ranking as the fourth most common type of cancer among men. The population growth rate was 5.5 cases per 100,000 men. The Eastern region recorded the highest incidence rate of 12.6 per 100,000 men, while the incidence rate in the Riyadh province increased by 9.5 per 100,000 Saudi men. The mean age at diagnosis was 73 years.[12] This study aims to assess the awareness and attitude towards prostate cancer screening among males in Saudi Arabia.

Methodology

A cross-sectional study was conducted through an online questionnaire on Saudi Arabian males who are above 40 years old. Respondents who did not match the study’s inclusion criteria were not allowed to participate.

Data was collected using a self-administered questionnaire to determine the level of awareness and attitude toward prostate cancer screening. It was disseminated at random throughout several social media channels. There were three sections to the questionnaire. The first component consisted of socio-demographic questions about the participants’ age, educational level, occupation, and personal and family history of prostate diseases. The second component assessed participants’ understanding of prostate cancer, including risk factors, protective factors, and screening tests. The participants’ attitudes about prostate cancer screening procedures were measured in the third section.

The sample size was estimated, and 358 people were found to be eligible. The data was analyzed using the Statistical Package for Social Sciences Program, version 24 (IBM Corp., Armonk, NY, USA). Frequency and percentages were used to describe categorical variables. Participants who responded to more than 60% of questions correctly were categorized as having adequate or positive knowledge and attitude. Chi-square test was used to determine the association between the socio-demographic data and the level of knowledge and attitude. A P value less than or equal to 0.05 was considered statistically significant. The duration of the study started from January 2021 to May 2021.

The study was approved by the Institutional Review Board of Imam Muhammad bin Saud Islamic University in Saudi Arabia. Informed consent was obtained from all participants. All data were kept confidential and only used for the purposes of this study.

Results

A total of 368 males completed the questionnaire, of whom the majority were between 50–59 years old (43.5%). Around 94% of participants were Saudi, and 98% were married. Three-quarters of the sample were from the Central region (75.9%), while the rest were distributed across other regions of Saudi Arabia. More than half of the participants (56.2%) had a university level of education and were still working (61.7%) [Table 1].

Most of the participants (86.7%) reported a personal history of prostate conditions such as prostatic enlargement (65.1%), and 13.3% reported a family history of prostate conditions of mainly prostatic enlargement (52.6%). Furthermore, 7.9% had a personal history of prostate cancer [Table 2].

According to Figure 1, 64.5% of participants had heard about prostate cancer mainly through social media (46.7%), the internet (40.1%), and healthcare providers (18.6%).

| Table 1: Demographic characteristics of participants |
|----------------|----------------|
| Count | Percentage |
| Age |
| 40-49 | 160 | 41.7 |
| 50-59 | 167 | 43.5 |
| 60-69 | 51 | 13.3 |
| 70-79 | 4 | 1.0 |
| ≤80 | 2 | 0.5 |
| Nationality |
| Saudi | 345 | 93.8 |
| Non-Saudi | 23 | 6.3 |
| Marital status |
| Single | 3 | 0.9 |
| Married | 338 | 98.0 |
| Divorced | 4 | 1.2 |
| Residency |
| Central region | 262 | 75.9 |
| Northern region | 4 | 1.2 |
| Southern region | 27 | 7.8 |
| Eastern region | 19 | 5.5 |
| Western region | 33 | 9.6 |

| Education |
|----------------|----------------|
| Preparatory school | 6 | 1.7 |
| Intermediate school | 16 | 4.6 |
| Secondary school | 82 | 23.8 |
| University | 194 | 56.2 |
| Higher level | 47 | 13.6 |
| Occupation |
| Worker | 213 | 61.7 |
| Not working | 13 | 3.8 |
| Retired | 119 | 34.5 |
Age over 50 years (63.8%) and family history (45.8%) were the most well-known risk factors among the participants. In addition, few participants were aware of smoking (22.8%), multiple sexual partners (21.3%), and alcohol (14.7%). On the other hand, 85.9% of participants believed that physical activity is the main protective factor against prostate cancer, followed by a high intake of fruits and vegetables (63.9%), and a low-fat diet (44%) [Figures 2 and 3].

Less than a quarter of the participants (20.3%) had heard about the PSA screening test through social media (47.1%), healthcare providers (38.2%), the internet (26.5%), or family and friends (20.6%) [Table 3].

Moreover, 55.2% of the sample had an inadequate level of knowledge about both prostate cancer and the PSA test, and 53.1% had a negative attitude towards them. The majority of participants reported that they had never been told about the PSA test or its advantages by their physicians (87.8% and 93.6%, respectively). Only 43 participants (12.5%) had done the PSA test before [Table 4].

The participants’ nationality had a statistically significant effect on the knowledge level and attitudes towards prostate cancer and the PSA test in which Saudi participants had a higher level of knowledge and a more positive attitude compared to non-Saudis ($P < 0.001$). In contrast, the age, education level, and occupation status had no significant effect on both the level of knowledge and attitude ($P \geq 0.05$) [Table 5].

### Discussion

Prostate cancer is usually asymptomatic and commonly diagnosed in the geriatric population. Most cases are found incidentally in clinical settings. The number of cases of clinically diagnosed prostate cancer is expected to rise with the vast development of healthcare and screening advances in Saudi Arabia.[4] Although early screening is known to affect treatment outcomes significantly, it requires high levels of awareness among the public and a positive attitude towards it.[13,14] This study aimed to assess the level of knowledge and attitude towards prostate cancer and early screening among the male population living in Saudi Arabia.

In this study, 64.5% of participants had heard about prostate cancer through mainly social media (46.7%) and the internet (40.1%). These findings are lower than a study by Benurugo et al.[15] (2020), that found that 80% of their...
participants had heard about prostate cancer primarily from healthcare providers (77%) and less commonly from social media (5%) and the internet (6%). Similarly, a study conducted in Ghana reported that 96.3% of participants had heard about prostate cancer primarily from healthcare providers (40.3%). Nevertheless, our results were higher than a study by Gift et al. (2020), that showed that only 33.5% of participants had heard about prostate cancer. The low levels of knowledge in this study may indicate an inadequacy in the role of healthcare providers in raising awareness about prostate cancer, its risk factors, symptoms, and screening tests among the Saudi population. Furthermore, obtaining knowledge from social media has its drawbacks as not all information published on the internet is accurate and sufficient.

Age and family history were the most well-known risk factors among our participants, while smoking, alcohol, obesity, fatty diets, and multiple sexual partners were the least known risk factors. This contradicts a study conducted in Nigeria that found that the most familiar risk factor of prostate cancer was sexual activity followed by age, family history, and occupation. However, our results were consistent with the findings of Benurugo et al. (2020), who reported that family history was the most well-known risk factor among participants in Rwanda. Physical activity, fruits and vegetables intake, and low-fat diets were the most well-known protective factors against prostate cancer among our participants.

Table 4: Knowledge and attitudes toward prostate cancer and PSA test

| Level of knowledge | Count | Percentage |
|--------------------|-------|------------|
| Inadequate         | 212   | 55.2%      |
| Adequate           | 172   | 44.8%      |
| Attitude           |       |            |
| Negative           | 204   | 53.1%      |
| Positive           | 180   | 46.9%      |

Table 5: The relationship between demographic characteristics and level of knowledge and attitudes

| Level of knowledge | Count | Percentage | Attitudes | Count | Percentage |
|--------------------|-------|------------|-----------|-------|------------|
| Inadequate         |       |            | Negative  |       |            |
| Adequate           |       |            | Positive  |       |            |

Age

| Age       | Count | Percentage | Count | Percentage |
|-----------|-------|------------|-------|------------|
| 40-49     | 88    | 41.5%      | 72    | 41.9%      |
| 50-59     | 94    | 44.3%      | 73    | 42.0%      |
| 60-69     | 26    | 12.3%      | 25    | 14.5%      |
| 70-79     | 3     | 1.4%       | 1     | 0.6%       |
| 80 or older| 1   | 0.5%       | 1     | 0.6%       |

Nationality

| Nationality | Count | Percentage | Count | Percentage |
|-------------|-------|------------|-------|------------|
| Saudi Arabia| 173   | 88.3%      | 172   | 100.0%     |
| Non-Saudi   | 23    | 11.7%      | 0     | 0.0%       |

Marital status

| Marital status | Count | Percentage | Count | Percentage |
|----------------|-------|------------|-------|------------|
| Single         | 2     | 1.2%       | 1     | 0.6%       |
| Married        | 170   | 98.3%      | 168   | 97.7%      |
| Divorced       | 1     | 0.6%       | 3     | 1.7%       |

Education

| Education | Count | Percentage | Count | Percentage |
|-----------|-------|------------|-------|------------|
| Preparatory school | 3   | 1.7%       | 2     | 1.2%       |
| Intermediate school | 11  | 6.4%       | 8     | 4.8%       |
| Secondary school | 36   | 20.8%      | 41    | 24.8%      |
| University   | 99    | 57.2%      | 100   | 60.6%      |
| Higher level | 24   | 13.9%      | 14    | 8.5%       |

Occupation

| Occupation | Count | Percentage | Count | Percentage |
|-----------|-------|------------|-------|------------|
| Worker    | 105   | 60.7%      | 108   | 62.8%      |
| Not working| 8    | 4.6%       | 5     | 2.9%       |
| Retired   | 60    | 34.7%      | 52    | 31.5%      |

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| Positive | 180 | 46.9% |
| Have you ever been told by your doctor about PSA? |
| Yes | 42 | 12.2% |
| No | 303 | 87.8% |
| Have you ever been told by your doctor about the advantage of PSA? |
| Yes | 22 | 6.4% |
| No | 323 | 93.6% |
| Have you had PSA before? |
| Yes | 43 | 12.5% |
| No | 302 | 87.5% |

Table 5: The relationship between demographic characteristics and level of knowledge and attitudes

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|--------------------|-----------|
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| Count | Percentage | Count | Percentage |
| Age |
| 40-49 | 88 | 41.5% | 72 | 41.9% |
| 50-59 | 94 | 44.3% | 73 | 42.4% |
| 60-69 | 26 | 12.3% | 25 | 14.5% |
| 70-79 | 3 | 1.4% | 1 | 0.6% |
| 80 or older | 1 | 0.5% | 1 | 0.6% |

Nationality

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| Saudi Arabia | 173 | 88.3% | 172 | 100.0% |
| Non-Saudi | 23 | 11.7% | 0 | 0.0% |

Marital status

| Marital status | Count | Percentage | Count | Percentage |
|----------------|-------|------------|-------|------------|
| Single | 2 | 1.2% | 1 | 0.6% |
| Married | 170 | 98.3% | 168 | 97.7% |
| Divorced | 1 | 0.6% | 3 | 1.7% |

Education

| Education | Count | Percentage | Count | Percentage |
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| Preparatory school | 3 | 1.7% | 2 | 1.2% |
| Intermediate school | 11 | 6.4% | 8 | 4.8% |
| Secondary school | 36 | 20.8% | 41 | 24.8% |
| University | 99 | 57.2% | 100 | 60.6% |
| Higher level | 24 | 13.9% | 14 | 8.5% |

Occupation

| Occupation | Count | Percentage | Count | Percentage |
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| Worker | 105 | 60.7% | 108 | 62.8% |
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| Have you had PSA before? |
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hand, Benurugo et al.\textsuperscript{[5]} (2020) indicated that the participants were not aware of the protective effects of physical activity and diet control.

Contrary to the findings of Necku et al.\textsuperscript{[9]} (2019), who reported that almost 76% of participants were aware of the PSA screening test, just under a quarter of our participants (20.3%) had heard about it before from mainly social media (47.1%) and healthcare providers (38.2%). Another study conducted in Italy found that 72.7% of participants were aware of the PSA test from physicians mostly (51.1%).\textsuperscript{[10]} In line with previous studies, more than half of our sample (55.2%) had a poor level of knowledge of both prostate cancer and the PSA test, and 53.1% had a negative attitude towards them.\textsuperscript{[5,16,17]}

Only 12.5% of the participants in this study had done a PSA test before, which is lower than what was reported by other studies in Italy, Rwanda, Ghana, and Zambia.\textsuperscript{[5,13‑17]} This may be due to the lack of knowledge and poor attitude among the male population in Saudi Arabia. Therefore, it is essential to raise awareness through campaigns and urge healthcare providers to educate their patients about the risks of prostate cancer and the importance of early screening.

Study limitations include the use of a self-administered questionnaire that could lead to response bias in which some participants may give inaccurate responses due to the Hawthorne effect. The questionnaire investigated the participants’ past personal history, which may have resulted in recall bias. Another limitation is the distribution of the questionnaire online, which may be the reason behind the large number of young, educated participants who use social media frequently in our study compared to older participants.

**Conclusion**

The male population living in Saudi Arabia showed a poor level of knowledge and attitudes toward prostate cancer and early screening. This may be due to an inadequacy in the role of healthcare providers to educate their patients properly about prostate cancer. Further investigations to understand the reasons behind the low level of awareness among the Saudi population are required.

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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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