



(REVIEW ARTICLE)



## Research analysis of prostate cancer in Saudi Arabia

Karim Hamda Farhat <sup>1,\*</sup>, Abdulaziz Mohammed Althunayan <sup>1,2</sup> and Danny Munther Rabah <sup>1,2,3</sup>

<sup>1</sup> *The Cancer Research Chair, Department of Surgery, College of Medicine, King Saud University, Riyadh, Saudi Arabia.*

<sup>2</sup> *Department of Surgery, College of Medicine, King Saud University, Riyadh, Saudi Arabia.*

<sup>3</sup> *Department of Urology, King Faisal Specialist Hospital and Research Center, Riyadh, Saudi Arabia.*

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### Abstract

Prostate cancer (PCa) is an emerging public health concern in Saudi Arabia, with increasing incidence and significant challenges in early detection and management. This review summarizes current research on PCa in Saudi Arabia, covering its incidence, risk factors, treatment outcomes, screening practices, awareness, and recent advancements. We aim to offer a thorough understanding to healthcare professionals, policymakers, and the public. Data from observational studies, cancer registries, and clinical guidelines published between 2008 and 2024 were also reviewed. The incidence of prostate cancer is rising, with 752 new cases by 2022; however, it remains lower than that in Western countries. High metastasis rates at diagnosis (31.4%) and low screening uptake contribute to poor outcomes, with a 5-year survival rate of 49%. Treatment aligns with international standards; however, awareness and early detection lag. Enhanced screening and education are recommended to improve prognosis.

**Keywords:** Prostate cancer; Epidemiological trends; Risk factors; Treatment outcomes; Screening practices

### 1. Introduction

Prostate cancer (PCa) remains a significant global health challenge and is one of the most prevalent malignancies in men worldwide. While its incidence and mortality rates are well documented in Western countries, emerging data highlight a concerning rise in the prostate cancer burden in regions such as the Middle East, particularly Saudi Arabia. Historically characterized by lower incidence rates than high-income countries, Saudi Arabia has observed a steady increase in PCa cases [1].

Despite advancements in diagnostic and therapeutic strategies globally, Saudi Arabia faces unique challenges in PCa management. A striking 31.4% of patients present with distant metastasis at diagnosis, a rate nearly six-fold higher than that in the United States [2], contributing to a 5-year survival rate of only 49% [3]. These disparities are exacerbated by low public awareness, cultural hesitancy toward preventive screening, and the fragmented uptake of prostate-specific antigen (PSA) testing. Although treatment protocols align with international guidelines [4], late-stage detection limits their effectiveness, emphasizing the urgent need for targeted interventions to bridge gaps in early diagnosis and education.

This review presents current research on prostate cancer in Saudi Arabia by examining epidemiological trends, risk factors, treatment outcomes, screening practices, and recent advancements.

\* Corresponding author: Karim Hamda Farhat

### 1.1. Incidence and Epidemiological Trends

Prostate cancer is the sixth most common cancer among males in Saudi Arabia, with a notable increase in its incidence over the years. According to the Global Cancer Observatory (GCO) 2022 data [1], there are 752 new cases and 213 deaths by 2022, accounting for 2.7% of all new cancer cases and 1.6% of cancer deaths. It ranks 12th in terms of incidence and 18th in terms of mortality, among all cancers. The age-standardized incidence rate (ASIR) showed a significant upward trend, increasing from 0.2 per 100,000 in 2008 to 1.4 per 100,000 in 2016, as reported in a 2024 registry review [2]. This increase is potentially attributed to improved documentation and registry reporting, with the WHO Globocan Report 2020 noting 693 new cases and 204 deaths, indicating a continued increase to 752 cases by 2022.

The incidence rate is lower than that in the United States, where the age-adjusted rate was 105 per 100,000 in 2017, but higher than that in Eastern Asia (13.9 per 100,000) and Western Asia (26.9 per 100,000), as per the same 2024 review. The 5-year prevalence is 3,009 cases, with a proportion of 14.5 per 100,000, highlighting a growing burden that requires attention.

### 1.2. Risk Factors and Prognostic Indicators

Research suggests that distant metastasis is a critical risk factor for poor survival, with a metastasis rate of 31.4% at diagnosis, which is significantly higher than the 5.6% reported in the US Surveillance, Epidemiology, and End Results (SEER) Registry, according to the 2024 registry review [2]. This high rate may contribute to the lower 5-year survival rate of 49%, as noted in a 2022 population-based survival study [3]. Other factors, such as age, marital status, tumor morphology, and place of residence, were not significant predictors of survival in the 2024 review.

Potential risk factors include increased obesity and unhealthy dietary intake, hypothesized in the same study, which aligns with global trends linking lifestyle factors to cancer risk. Additionally, a 2022 study in Western Saudi Arabia found that 47.5% of men had poor knowledge of prostate cancer risk factors, symptoms, and screening, indicating a knowledge gap that may exacerbate late diagnoses [2]. Low cancer screening uptake, such as 92% of women over 50 years who have never undergone a mammogram and 33.4% of women aged 21–65 years with a Pap smear in Jeddah, suggests a broader cultural or systemic barrier to preventive health measures.

**Table 1** Key incidence rates and risk factors

Category	Details
Incidence Rates	- Total PCa cases 2008–2017: 3607. - Yearly rate: 0.2–1.4 per 100,000. - 2022 new cases: 752, deaths: 213. - Compared to the US: 105 per 100,000 in 2017.
Risk Factors	- Metastasis rate: 31.4%, higher than that in the US (5.6%). - Hypothesized: obesity, unhealthy diet. - 47.5% poor knowledge of risk factors in western Saudi Arabia.

### 1.3. Treatment Options and Clinical Management

The treatment of prostate cancer in Saudi Arabia follows the guidelines established by the Saudi Oncology Society and Saudi Urology Association, updated in 2017 [4]. These guidelines are based on international standards, categorized by disease stage, risk group, and life expectancy, and consider the local feasibility.

For localized disease (cT1-2 N0), options include

- Low risk, life expectancy <5 years: no intervention until symptoms or progression.
- Low risk, 5–10 years: Active surveillance with PSA monitoring every 3–6 months and biopsy every 12–18 months.
- Low risk, >10 years: Active surveillance, radical prostatectomy (RP), External Beam Radiation Therapy (EBRT), or brachytherapy, with RP recommended by high-volume surgeons and EBRT at ≥74 Gy.
- Intermediate risk, 5–10 years: Active surveillance, RP with lymph node dissection (LND), or EBRT with 6 months of androgen deprivation therapy (ADT).
- High risk: EBRT with ADT for 18 months or RP with LND.

For locally advanced disease (cT3-4 or N1), EBRT with ADT for 2–3 years is standard, with RP and LND considered if there is no clinical lymph node involvement. Metastatic castration-sensitive disease involves chemotherapy with six cycles of docetaxel plus ADT, whereas castration-resistant cases may receive docetaxel, abiraterone, enzalutamide, or radium-223, depending on symptoms and progression.

Bone health was also addressed, with all patients receiving ADT recommended Vitamin D (800 IU/day) and calcium (1200 mg/day), and for those with a T-score <−1.5, denosumab or bisphosphonates every 6 months.

**Table 2** Treatment options by stage

Stage/Risk Group	Life Expectancy	Treatment Options
Localized, Low risk	<5 years	no intervention until symptoms or progression.
	5–10 years	Active surveillance: PSA every 3–6 months; biopsy every 12–18 months.
	>10 years	Active surveillance, RP, EBRT (≥74 Gy), or brachytherapy.
Metastatic, Castration-Sensitive		Chemo-hormonal therapy: 6 cycles of docetaxel + ADT.
Metastatic, Castration-Resistant		Docetaxel, abiraterone, enzalutamide, or radium-223 based on symptoms.

#### 1.4. Screening Practice and Awareness

Screening for prostate cancer in Saudi Arabia has not been formally implemented on a mass scale, thus contributing to late-stage presentations. Studies indicate a low uptake of PSA testing and digital rectal examination (DRE), with only two screening trials in 2001 and 2009 yielding incidence rates of 1.17% and 2.5%, respectively [5]. A 2019 study at a community-based clinic found that among 2,160 male patients, 108 (5%) underwent biopsy, confirming that 31 (2%) Saudi patients had prostate adenocarcinoma, with 71% diagnosed at early stages [6].

Awareness is a significant barrier, with men in the Arab world, including Saudi Arabia, showing poor knowledge of and attitudes towards screening. A 2011 comparative study across Saudi Arabia, Egypt, and Jordan found mean knowledge scores of 10.25–11.24 and attitude scores of 17.96–20.68, with only 8–30% practicing regular prostate check-ups [7, 8]. Recommendations include encouraging PSA testing before the age of 50 years and up to 70 years, with shared decision-making to enhance physician and patient knowledge.

#### 1.5. Recent Research and Advancements

Recent research has primarily focused on epidemiology and the need for screening programs. A 2024 multi-center study across four Middle Eastern countries, including Saudi Arabia, captured real-world data on disease progression and treatment patterns among 615 patients, highlighting the increasing incidence and need for tailored approaches [9]. However, specific advancements in treatment within Saudi Arabia are less well documented, with guidelines largely adopting international standards. A notable development is the approval of 2024 by the Saudi Food and Drug Authority of Biomerica's at-home PSA screening test, which aims to improve accessibility [10].

## 2. Conclusions

Prostate cancer in Saudi Arabia has a rising incidence, with 752 new cases by 2022, highlighting the need for enhanced screening and awareness to address late-stage diagnoses and high metastasis rates (31.4%). Treatment options align with global standards; however, cultural and knowledge barriers necessitate targeted interventions to improve the outcomes.

## Compliance with ethical standards

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*Disclosure of conflict of interest*

Authors declare no conflict of interest.

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**References**

- [1] GCO Fact Sheet for Saudi Arabia, 2022. Accessed at: <https://gco.iarc.who.int/today/data/factsheets/populations/682-saudi-arabia-fact-sheets.pdf>
- [2] Alasker A, Arabi TZ, Alghafees MA, Sabbah BN, Abdul Rab S, Alageel AK, Abouelkhair AE, Abdulwali AK, Al Hennawi MMI, Fallatah W, Musalli ZF, Noureldin YA. Prostate cancer among Saudis: a registry review. *Ann Med Surg (Lond)*. 2023 Nov 7;86(1):56-61. doi: 10.1097/MS9.0000000000001448.
- [3] Asefan M, Devol E, AlAhwal M, Souissi R, Sindi R, AlEid H, Bazarbashi S. Population-based survival for cancer patients in Saudi Arabia for the years 2005-2009. *Sci Rep*. 2022 Jan 7;12(1):235. doi: 10.1038/s41598-021-04374-6.
- [4] Aljubran A, Abusamra A, Alkhateeb S, Alotaibi M, Rabah D, Bazarbashi S, Alkushi H, Al-Mansour M, Alharbi H, Eltijani A, Alghamdi A, Alsharm A, Ahmad I, Murshid E. Saudi Oncology Society and Saudi Urology Association combined clinical management guidelines for prostate cancer 2017. *Urol Ann*. 2018 Apr-Jun;10(2):138-145. doi: 10.4103/UA.UA\_177\_17.
- [5] Arafa MA, Rabah DM. With increasing trends of prostate cancer in the Saudi Arabia and Arab World: Should we start screening programs? *World J Clin Oncol*. 2017 Dec 10;8(6):447-449. doi: 10.5306/wjco.v8.i6.447.
- [6] Almutairi AA, Edali AM, Khan SA, Aldihan WA, Alkhenizan AH. Yield of prostate cancer screening at a community based clinic in Saudi Arabia. *Saudi Med J*. 2019 Jul;40(7):681-686. doi: 10.15537/smj.2019.7.24256.
- [7] Arafa MA, Rabah DM, Wahdan IH. Awareness of general public towards cancer prostate and screening practice in Arabic communities: a comparative multi-center study. *Asian Pac J Cancer Prev*. 2012;13(9):4321-6. doi: 10.7314/apjcp.2012.13.9.4321.
- [8] Arafa MA, Farhat KH, Rabah DM. Knowledge and attitude of the population toward cancer prostate Riyadh, Saudi Arabia. *Urol Ann*. 2015 Apr-Jun;7(2):154-8. doi: 10.4103/0974-7796.150516.
- [9] El-Karak Fadi, Shamseddine Ali, Omar Ayman, Haddad Imene, Abdelgawad Mahmoud, Naqqash Manwar Al, Kaddour Mohammad Ali, Sharaf Mohamed, Abdo Ehab. Prostate cancer across four countries in the Middle East: a multi-centre, observational, retrospective and prognostic study. *ecancer* 2024;18:1695. doi: 10.3332/ecancer.2024.1695
- [10] The Saudi Food and Drug Authority (SFDA) Approves Biomerica's At Home PSA Screening Test to Detect Early Signs of Prostate Cancer. Accessed at: <https://www.biospace.com/press-releases/the-saudi-food-and-drug-authority-sfda-approves-biomericas-at-home-psa-screening-test-to-detect-early-signs-of-prostate-cancer>.