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KNOWLEDGE, PERCEPTION AND AWARENESS ABOUT PROSTATE CANCER IN MALE POPULATION DISTRICT CHARSADDA

Original Research

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ABSTRACT

Background: Prostate cancer remains one of the most prevalent malignancies among men globally, contributing significantly to morbidity and mortality. Despite ongoing advancements in diagnostics and treatment, awareness about the disease remains low in many low- and middle-income countries. In Pakistan, particularly in underserved regions like District Charsadda, public knowledge of prostate cancer risk factors, symptoms, and screening options is limited, posing challenges to early detection and effective management.

Objective: To assess the knowledge, perception, and awareness of prostate cancer among the male population of District Charsadda, Pakistan.

Methods: A descriptive cross-sectional study was conducted over six months (June–November 2023) at District Headquarter Hospital Charsadda. A total of 384 male participants aged 30 to 70 years were recruited using a non-probability convenience sampling method. Data were collected using a self-structured, validated questionnaire covering demographics, awareness, risk factors, and screening knowledge. Descriptive statistics were analyzed using SPSS version 22, and results were presented using frequencies, percentages, and graphical formats.

Results: Among 385 respondents, 50.4% had heard of prostate cancer, while 48.3% had no awareness. Only 41.0% recognized symptoms, and 52.2% were unaware of screening tests like the PSA test. Age was identified as the most common risk factor by 61.0%, followed by diet (18.2%) and family history (16.9%). A significant 74.3% cited lack of knowledge as the main barrier to screening, and only 47.0% were aware of available tests. Notably, 90.1% believed that early detection improves treatment outcomes.

Conclusion: The study highlights a critical gap in knowledge regarding prostate cancer in Charsadda. Strategic public health campaigns, improved access to screening services, and regular physician-led counseling are urgently needed to enhance awareness and encourage early diagnosis.

Keywords: Awareness, early detection, health education, knowledge, Pakistan, prostate cancer, screening.

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INTRODUCTION

Prostate cancer represents one of the most pressing health concerns affecting men globally, particularly among aging populations. The prostate gland, a walnut-sized structure situated below the bladder and surrounding the urethra, is essential to male fertility through its production of proteolytic enzymes that facilitate semen liquefaction and sperm motility (1). However, this gland is also prone to several pathological conditions as men age, including benign prostatic hyperplasia (BPH), prostatitis, and most critically, prostate cancer (PC). While BPH is generally non-malignant, it can cause significant urinary complications such as hematuria, frequency, incontinence, and infections due to urethral compression (2). Several risk factors, including aging, family history, high dihydrotestosterone (DHT) levels, obesity, diabetes, and sedentary lifestyles, contribute to the development of prostatic diseases (3). Among these conditions, prostate cancer stands out for its high incidence and potential lethality. Globally, prostate cancer is the second most commonly diagnosed cancer among men, affecting approximately 15% of the male population and contributing significantly to cancer-related mortality (4). The average age of diagnosis is around 66 years, with incidence increasing dramatically in men in their 60s and 70s (5,6). Early detection is crucial, as early-stage prostate cancer is typically asymptomatic. Prostate-specific antigen (PSA) testing serves as a widely used biomarker for early detection, given that PSA, a protein secreted by prostate epithelial cells, tends to rise in malignancy (7). Despite its clinical utility, PSA testing has sparked debate due to concerns over its specificity and potential for overdiagnosis and overtreatment. Consequently, it is often used in conjunction with other diagnostic methods, such as digital rectal examination (DRE) and transrectal ultrasound-guided biopsies (8). These controversies underscore the need for informed decision-making and personalized screening strategies.

Most prostate cancer cases are discovered through routine PSA screening, investigation of lower urinary tract symptoms, or in more severe cases, by the presence of metastatic symptoms like bone pain. The overlap in symptomatology between BPH and prostate cancer necessitates reliable diagnostic measures to avoid misdiagnosis. In many regions, especially in low- and middle-income countries, delayed diagnosis remains a significant challenge due to limited healthcare infrastructure, low awareness levels, and cultural stigmas surrounding male reproductive health (9). In Africa, for instance, prostate cancer leads to approximately 28,000 deaths and 40,000 new cases annually, with black men exhibiting a higher predisposition, likely influenced by complex genetic and environmental interactions (10). However, the specific causes behind these disparities remain underexplored, and further research in diverse populations is essential to inform targeted interventions. The global burden of prostate cancer continues to rise, with over 1.1 million new cases and more than 300,000 deaths reported in 2012 alone (11). Europe alone accounted for over 400,000 new cases that year, while projections in countries like Italy suggested a substantial increase by 2015 due to demographic shifts and longer life expectancies (12). Advances in personalized medicine, such as genetic profiling, offer promising avenues for more precise and effective treatment. Since 2018, the National Comprehensive Cancer Network (NCCN) has recommended germline genetic testing for prostate cancer patients, reflecting a broader shift toward individualized oncology care (13).

In the Caribbean, prostate cancer is a leading cause of cancer-related deaths among men, with mortality attributed largely to late-stage diagnoses and inadequate access to medical services (14). Belize, in particular, lacks published research on prostate cancer, despite data indicating an age-adjusted mortality rate of 41.86 per 100,000, placing it among the highest globally (15). Similarly, in Pakistan, the absence of a national cancer registry since 1964 has hindered effective cancer surveillance, with hospital-based data collection failing to capture the full scope of the disease burden (3). Across both regions, sociocultural barriers, misinformation, and financial constraints limit early detection and treatment. Sociodemographic factors also significantly influence prostate cancer outcomes. Marital status, for instance, has been shown to impact survival rates, with unmarried men—whether never married, divorced, or widowed—experiencing lower overall survival than their married counterparts (1,10). However, many studies inadequately differentiate among these subgroups, underscoring a need for more granular analysis of social determinants of health. Furthermore, socioeconomic status, education level, and language barriers all contribute to disparities in awareness and screening participation. An American study found that even participation in educational workshops did not consistently translate to improved knowledge, suggesting that current outreach methods may be insufficient or poorly tailored (14).

Despite ongoing debates about the utility of PSA screening, early detection remains a cornerstone of effective prostate cancer management. Guidelines from the American Cancer Society recommend that men over 50 be informed about the benefits and risks of screening, with earlier discussions for high-risk groups, including black men and those with a family history (5,12). Raising awareness and promoting informed decision-making are key strategies to reduce the global burden of prostate cancer. Health systems must adopt

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evidence-based screening protocols while also addressing systemic barriers that impede access to care. In this context, the current study seeks to examine awareness levels, risk factors, and screening practices related to prostate cancer in understudied populations, with a focus on regions like the Caribbean and South Asia where data are scarce. The objective is to identify gaps in knowledge and healthcare access that contribute to late-stage diagnoses and poor outcomes. By doing so, the study aims to inform targeted educational interventions and public health strategies that promote early detection, equitable care, and ultimately, reduced mortality from prostate cancer.

METHODS

This descriptive cross-sectional study was conducted over a period of six months, from June to November 2023, at the District Headquarter Hospital Charsadda. The primary aim was to assess awareness, knowledge, and screening practices related to prostate cancer among adult males residing in District Charsadda. A total of 384 participants were included in the study using a non-probability convenience sampling technique. This method was employed due to logistical feasibility and time constraints, allowing researchers to recruit participants who were readily accessible and willing to participate. The target population comprised male residents of Charsadda aged between 30 and 70 years. Inclusion criteria required participants to fall within the specified age range and to voluntarily consent to participate in the study. Individuals below the age of 30 and those unwilling to participate were excluded. Informed written and verbal consent was obtained from all participants after they were briefed about the study's purpose, confidentiality measures, and their rights, including the option to withdraw at any time without consequence (2,3).

Data collection was carried out using a self-developed, structured questionnaire designed to capture sociodemographic details, awareness levels, risk perceptions, and screening behaviors associated with prostate cancer. The questionnaire was developed based on a literature review and was validated through expert input and a preliminary pilot test conducted among a small subset of the target population to ensure clarity, reliability, and content accuracy. Adjustments were made accordingly before full-scale administration. The questionnaire was administered in the local language to enhance comprehension and ensure data accuracy. Statistical analysis was performed using SPSS version 22. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize the data. Results were presented through visual representations such as tables, pie charts, graphs, and histograms for better understanding. Where necessary, inferential statistics were applied to examine relationships between variables, and a p-value less than 0.05 was considered statistically significant. Ethical approval was obtained from the relevant Institutional Review Board (IRB) prior to the commencement of the study. Confidentiality and anonymity of participants were strictly maintained throughout the study. All data were securely stored and used solely for research purposes.

RESULTS

The study surveyed a total of 385 participants to assess awareness, perceptions, and knowledge regarding prostate cancer. Participants were males aged between 30 and 70 years, with the majority falling within the 40–49 age group (31.4%), followed by those aged 50–59 (26.8%), 60–70 (25.5%), and 30–39 (16.4%). Regarding marital status, most respondents were married (94.8%), while unmarried and divorced individuals represented 4.2% and 0.3% respectively. Educational attainment varied across the sample, with 36.6% having no formal education, 28.6% possessing primary-level education, 24.9% with secondary education, and only 9.9% having tertiary-level qualifications. Occupational status revealed that 54.3% of participants were engaged in miscellaneous or unspecified jobs, while 19.7% were businessmen, 13% were civil servants, and 13% were taxi drivers. In terms of general awareness, 50.4% of respondents had previously heard of prostate cancer, while 48.3% had not, indicating limited community-level knowledge. Only 46.8% correctly identified prostate cancer as a disease affecting men, while 20.8% believed it affected both genders, and 28.8% admitted they did not know. When asked about risk factors, 61% recognized increasing age as a primary contributor, followed by 18.2% citing diet, 16.9% indicating family history, and only 3.9% identifying smoking.

Knowledge of symptoms was notably lacking. Only 41% of participants claimed to be aware of prostate cancer symptoms, while 58.7% were unaware. When further probed on specific symptoms, 42.3% correctly identified difficulty in initiating or stopping urination as a common sign, 30.6% mentioned frequent urination, 14.3% cited blood in urine, and 12.5% referred to pelvic pain. Regarding the preventability of prostate cancer, 53% of participants believed it was not preventable, whereas 46.5% thought it was. Conversely, the majority (77.7%) expressed belief in the curability of the disease, with 21.8% believing otherwise. Awareness of screening tools was relatively low, with only 47% stating they were aware of available tests, while 52.2% were not. When asked whether they or someone they knew had ever been diagnosed with prostate cancer, 43.8% responded affirmatively. When exploring perceived barriers to

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awareness and screening, 74.3% of participants cited lack of knowledge as the primary impediment. Other barriers included fear of the screening process (11.2%), lack of access to healthcare services (7.8%), and miscellaneous reasons (6.5%). Descriptive trends suggest that lower educational attainment may be associated with reduced awareness of prostate cancer and its screening modalities. For instance, among the 385 participants, a significant proportion (36.6%) had no formal education, and overall awareness of prostate cancer remained low at just 50.4%. Similarly, knowledge of available screening tests was reported by only 47% of respondents.

Table 1: Sociodemographic Characteristics of Study Participants (N = 385)

Variable	Category	Frequency (n)	Percentage (%)
Age Group (years)	30–39	63	16.4
	40–49	121	31.4
	50–59	103	26.8
	60–70	98	25.5
Marital Status	Married	365	94.8
	Unmarried	16	4.2
	Divorced	1	0.3
	Not Specified	3	0.8
Education Level	Primary	110	28.6
	Secondary	96	24.9
	Tertiary	38	9.9
	No Formal Education	141	36.6
Occupation	Civil Servant	50	13.0
	Taxi Driver	50	13.0
	Businessman	76	19.7
	Others	209	54.3

Table 2: Awareness and Knowledge of Prostate Cancer Among Participants (N = 385)

Variable	Response	Frequency (n)	Percentage (%)
Heard of Prostate Cancer	Yes	194	50.4
	No	186	48.3
	Unclear/Invalid	4	1.1
Perceived Affected Gender	Men	180	46.8
	Women	13	3.4
	Both	80	20.8
	Do Not Know	111	28.8
	Unclear/Invalid	1	0.3
Perceived Risk Factors for Prostate Cancer	Age	235	61.0
	Diet	70	18.2
	Family History	65	16.9
	Smoking	15	3.9

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Table 3: Perceptions of Symptoms, Preventability, and Curability of Prostate Cancer (N = 385)

Variable	Response	Frequency (n)	Percentage (%)
Knowledge of Prostate Cancer Symptoms	Yes	158	41.0
	No	226	58.7
	Unclear/Invalid	1	0.3
Belief in Prostate Cancer Preventability	Yes	179	46.5
	No	204	53.0
	Unclear/Invalid	1	0.3
Belief in Prostate Cancer Curability	Yes	299	77.7
	No	84	21.8
	Unclear/Invalid	2	0.5
Commonly Recognized Symptoms	Difficulty in starting/stopping urination	163	42.3
	Frequent urination	118	30.6
	Blood in urine	55	14.3
	Pelvic pain	48	12.5
	Unclear/Invalid	1	0.3

Table 4: Awareness of Screening, Personal Exposure, and Perceived Barriers to Prostate Cancer Detection (N = 385)

Variable	Response	Frequency (n)	Percentage (%)
Awareness of Screening Tests for Prostate Cancer	Yes	181	47.0
	No	201	52.2
	Unclear/Invalid	3	0.8
Personal or Known Diagnosis of Prostate Cancer	Yes	168	43.6
	No	216	56.1
	Missing	1	0.3
Perceived Barriers to Awareness and Screening	Lack of knowledge	286	74.3
	Fear of the screening process	43	11.2
	Lack of access to healthcare services	30	7.8
	Other	25	6.5
	Unclear/Invalid	1	0.3

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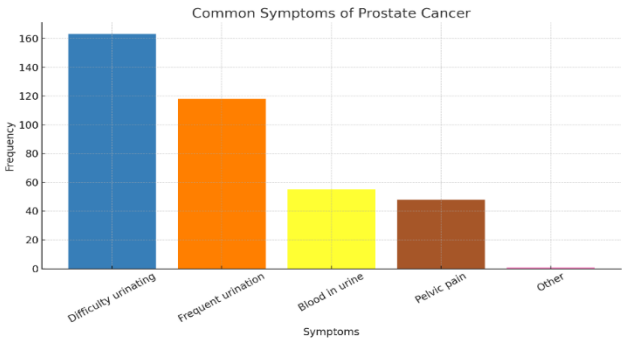


Figure 1 Common Symptoms of Prostate Cancer

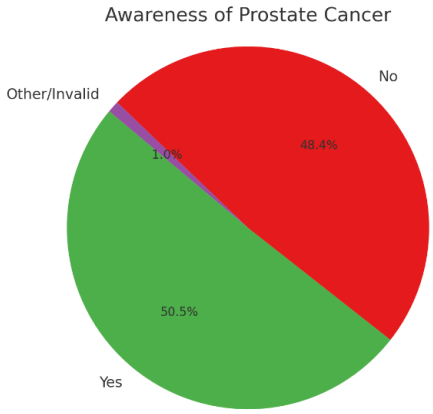


Figure 2 Awareness of Prostate

DISCUSSION

The current study aimed to assess knowledge, perception, and awareness regarding prostate cancer among males aged 30 to 70 years in District Charsadda. The findings revealed notable gaps in public understanding and awareness, particularly among older and less-educated participants. Age distribution of respondents showed a majority within the 40–49 age group, and over 90% of the participants were married. Previous literature supports that marital status positively influences cancer outcomes, particularly prostate cancer, due to social support and early healthcare engagement among married individuals (16). In contrast, single, divorced, or widowed men have been associated with higher cancer-specific mortality, highlighting the protective role of marital status in disease management and survival. The study confirmed age as a primary risk factor for prostate cancer, as identified by 61% of participants. This aligns with existing evidence that men over the age of 65 experience the highest incidence and mortality from prostate cancer. Additionally, 16.9% recognized family history and 18.2% identified diet as contributory risk factors (17). These findings are consistent with global patterns, where age, genetics, and lifestyle factors remain significant determinants of disease risk (17,18). However, awareness of such risk factors varied considerably, particularly among individuals with no formal education, who constituted 36.6% of the sample. Education level played a critical role in shaping awareness, with participants possessing tertiary education demonstrating better understanding of prostate cancer, its symptoms, and the need for early screening. This trend supports previous research indicating that educational attainment is directly correlated with health literacy and screening uptake (19).

Although 50.4% of respondents had heard of prostate cancer, nearly half (48.3%) were unaware of the condition. This level of awareness closely mirrors findings from other studies conducted in low-resource settings, suggesting a consistent knowledge deficit in similar populations. Moreover, only 46.8% correctly identified that prostate cancer affects males, while a considerable portion either believed it affected both genders or were unsure. Symptom recognition was also limited; just 41% could identify symptoms, with difficulty in urination (42.3%) and frequent urination (30.6%) being the most commonly recognized signs. These statistics indicate a pressing need for comprehensive health education programs to address misconceptions and improve early detection. Screening awareness remained low, with only 47% aware of diagnostic tools such as the prostate-specific antigen (PSA) test. The controversial nature of PSA screening continues to shape global discussions, particularly regarding its specificity and potential for overdiagnosis. Nonetheless, it remains a cornerstone in early detection strategies. The findings of this study highlight a gap in knowledge not only about the existence of screening methods but also about their role in reducing prostate cancer mortality (20). Furthermore, 43.6% of respondents had encountered someone diagnosed with prostate cancer, suggesting that proximity to affected individuals might enhance awareness, although this did not consistently translate into improved knowledge or screening behavior (21).

Barriers to screening were strongly evident, with 74.3% attributing lack of knowledge as the primary obstacle, followed by fear of the screening process (11.2%) and poor access to healthcare services (7.8%). This reflects broader systemic challenges faced in underserved regions, where health literacy, infrastructure, and accessibility remain limited. Alarmingly, only 6.2% of participants reported discussing prostate health regularly with a healthcare provider, and 63.4% had never visited a physician's clinic, underscoring the impact of poor healthcare-seeking behavior. These findings emphasize the need for targeted awareness campaigns, community-based outreach, and integration of prostate health education into primary care services. A notable strength of this study was its inclusion of a broad age range

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and a sizeable sample, allowing for a general overview of awareness levels across demographic segments. However, the use of a non-probability convenience sampling technique limited the generalizability of the findings. Stratified or multivariate analyses could have provided more nuanced insights into the factors influencing awareness and practices. Another limitation was the reliance on self-reported data, which may be subject to recall or social desirability bias.

Future research should incorporate probability-based sampling and consider mixed-method approaches to explore underlying reasons for poor awareness and screening hesitancy. Incorporating longitudinal elements could also help evaluate the effectiveness of educational interventions over time. Additionally, expanding the scope to include healthcare professionals' perspectives may offer a more holistic understanding of system-level barriers. In conclusion, the study highlighted critical gaps in knowledge and awareness regarding prostate cancer in the target population. Despite growing global emphasis on early detection, significant proportions of the population remain unaware of risk factors, symptoms, and screening options. Addressing these gaps through health education, community engagement, and policy-driven initiatives is essential to improve early diagnosis and reduce mortality. The findings reinforce the need for integrated public health strategies tailored to local needs, particularly in low-resource settings where awareness remains disproportionately low.

CONCLUSION

The findings of this study highlight a significant gap in knowledge and awareness regarding prostate cancer among the male population of District Charsadda. Despite the widespread prevalence and serious health implications of the disease, community-level understanding remains limited, particularly in recognizing risk factors, symptoms, and the importance of early screening. However, the study also revealed a generally positive attitude toward routine screening when informed, indicating a promising foundation for public health intervention. These insights emphasize the need for targeted awareness campaigns, community education, and consistent counseling by healthcare professionals to foster informed health-seeking behavior. Strengthening early detection efforts and promoting preventive strategies can play a critical role in reducing the burden of prostate cancer and improving outcomes in resource-limited settings.

Author Contribution

Author	Contribution
Syed Muhammad Dawood*	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Saleem Khan	Substantial Contribution to study design, acquisition and interpretation of Data Critical Review and Manuscript Writing Has given Final Approval of the version to be published
Umaima Sajjad	Substantial Contribution to acquisition and interpretation of Data Has given Final Approval of the version to be published
Muhammad Mohsin Yar	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Shantul Ghouri	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Talha Tahir	Substantial Contribution to study design and Data Analysis Has given Final Approval of the version to be published
Imad Ud Din Khan	Contributed to study concept and Data collection Has given Final Approval of the version to be published
Abdul Nasir	Writing - Review & Editing, Assistance with Data Curation

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