

Prevalence and socio-demographic characteristics of Elevated Prostate-Specific Antigen (PSA) Among Young Men Attending the Oncology Clinic of Bingham University Teaching Hospital, Jos, Nigeria: A Retrospective Cross-Sectional Study

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Abstract

Prostate cancer is traditionally considered a disease of older men; increasing cases among younger men have raised concerns regarding its epidemiology and associated risk factors. Evidence on prostate cancer among young men in Nigeria remains limited. To determine the prevalence of elevated prostate-specific antigen (PSA) among young men attending the Oncology Clinic of Bingham University Teaching Hospital (BHUTH), Jos, and to assess the age distribution and socio-demographic characteristics associated with the disease. A retrospective cross-sectional study was conducted using medical records of patients managed at the Oncology Clinic of Bingham University Teaching Hospital, Jos, Nigeria, from January 2021 to December 2024. Data were extracted using a structured data collection form. Descriptive statistics including frequencies and percentages were used to summarize variables. Associations between socio-demographic characteristics and elevated PSA status were assessed using Chi-square tests. Statistical significance was set at $p < .05$. A total of 198 patient records were reviewed. Fifteen (7.6%) were young men aged 20–39 years. Among the young men, 10 (66.7%) had elevated PSA values suggestive of prostate cancer. Most cases occurred among men aged 30–39 years. Marital status and occupation showed no statistically significant association with elevated PSA occurrence among young men ($p > .05$). The study identified elevated PSA values among a notable proportion of young men attending the oncology clinic. Although no significant socio-demographic predictors were observed, the findings highlight the need for increased awareness, early detection strategies, and further multicenter studies involving larger populations of young men in Nigeria.

Keywords: Prostate Cancer; Young Men; Prevalence; Oncology Clinic; Nigeria; Retrospective Study

1. Introduction

Prostate cancer remains one of the most significant health challenges affecting men worldwide. It is among the most diagnosed male cancers and continues to impose a substantial global public health burden. Recent global cancer statistics show that prostate cancer is the second most frequently diagnosed malignancy and the fifth leading cause of cancer-related deaths among men, with an estimated 1.5 million new cases and more than 397,000 deaths reported in 2022 alone [1]. The rising burden of this disease has been attributed to several factors, including population ageing, population growth, advances in diagnostic technologies, and shifts in lifestyle patterns [2,3].

Prostate cancer originates from the epithelial cells of the prostate gland and exhibits a wide range of clinical behaviours. Some tumors progress slowly and remain clinically insignificant for years, whereas others are highly aggressive and prone to early metastasis. Its development reflects a complex interplay of hormonal, genetic, environmental, and

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lifestyle determinants. Established risk factors include advancing age, African ancestry, a positive family history, obesity, dietary patterns, and exposure to environmental carcinogens [4,5]. Although the disease primarily affects older men, with most diagnoses occurring after the age of 65, recent evidence indicates a gradual rise in cases among younger men, a trend that is especially noticeable in regions with improved screening and early detection practices [6].

There are marked geographical differences in prostate cancer incidence and mortality. Countries in North America, Northern and Western Europe, Australia, and New Zealand consistently report the highest incidence rates, largely due to widespread use of prostate-specific antigen (PSA) testing and strong healthcare systems that facilitate early diagnosis [7]. Conversely, many low- and middle-income countries experience increasing prostate cancer mortality. This is often linked to late presentations, inadequate screening programs, low awareness, and constrained access to timely and effective treatment.

In sub-Saharan Africa, prostate cancer has emerged as one of the leading causes of cancer morbidity and mortality among men. Men of African descent are disproportionately affected; they tend to develop more aggressive disease types and experience poorer clinical outcomes compared with men of other racial backgrounds [5]. These disparities have been attributed to genetic predisposition, socioeconomic barriers, limited screening uptake, delays in seeking medical care, and inadequate access to specialized oncology services [9,10].

Nigeria faces a significant prostate cancer burden. Despite improvements in diagnostic capabilities and treatment options, most patients still present with advanced-stage disease, which greatly diminishes the chances of successful treatment and long-term survival [12]. This pattern is shaped by multiple factors, including low awareness of prostate cancer symptoms, cultural and social perceptions, financial constraints, and inadequate access to screening and treatment facilities [13].

Although prostate cancer has historically been viewed as a disease of older men, attention has increasingly turned toward young-onset prostate cancer typically defined as diagnosis before the age of 50. Young men diagnosed with the disease often confront unique clinical and psychosocial challenges, such as delayed diagnosis, concerns regarding fertility and sexual function, and the possibility of living with the disease and its consequences for many decades [6]. Additionally, emerging evidence suggests that early-onset cases may be more aggressive and may be associated with hereditary genetic mutations, including BRCA1 and BRCA2 variants [14,15]. These findings underscore the importance of investigating prostate cancer in younger populations, particularly in regions like Nigeria where such cases remain poorly documented.

Despite the growing interest in young-onset prostate cancer, there remains limited epidemiological evidence regarding its prevalence and associated socio-demographic characteristics in Nigeria. Most available studies focus predominantly on older populations, leaving significant gaps in understanding the burden of disease among younger men. Consequently, data from healthcare institutions providing oncology services are essential for informing targeted prevention strategies, screening policies, and resource allocation.

Bingham University Teaching Hospital (BHUTH), Jos, serves as a major referral center for cancer management in North-Central Nigeria. Understanding the prevalence and socio-demographic characteristics of young men with elevated PSA at this institution may provide valuable insights into the emerging burden of the disease in younger populations. Therefore, this study aimed to determine the prevalence of elevated prostate-specific antigen (PSA) among young men attending the Oncology Clinic of Bingham University Teaching Hospital, Jos, and to assess the age distribution and socio-demographic characteristics associated with the disease.

2. Literature Review

2.1. Global Burden of Prostate Cancer

Prostate cancer is one of the most common cancers affecting men worldwide and remains a major public health concern. According to GLOBOCAN estimates, it is the second most frequently diagnosed cancer among men and the fifth leading cause of cancer-related deaths globally. In 2020 alone, approximately 1.4 million new cases and over 375,000 deaths were attributed to the disease [2]. The incidence of prostate cancer differs considerably across regions, with the highest rates reported in North America, Europe, Australia, and the Caribbean. These regional differences have been linked to variations in screening practices, access to healthcare services, lifestyle factors, and population demographics. The burden of prostate cancer is expected to rise in the coming years because of population growth, increasing life expectancy, urbanization, and changing lifestyles. Advances in diagnostic technologies, particularly the widespread use of prostate-specific antigen (PSA) testing, have improved the detection of the disease. However, despite improvements

in diagnosis and treatment, prostate cancer continues to cause substantial morbidity and mortality, especially in low- and middle-income countries where access to quality healthcare services remains limited [2].

2.2. Prostate Cancer in Africa

Across Africa, prostate cancer has become a growing public health challenge and is now recognized as one of the most common cancers among men. Research has shown that men of African ancestry are more likely to develop prostate cancer and often experience more aggressive forms of the disease compared to men from other racial groups [8]. This observation has prompted increased interest in understanding the factors responsible for the high burden of prostate cancer among African populations. Several factors have been implicated, including genetic predisposition, environmental exposures, dietary patterns, and inadequate healthcare systems. In many African countries, organized screening programmes are either unavailable or poorly implemented, resulting in delayed diagnosis and treatment. Consequently, many patients seek medical attention only when the disease has reached an advanced stage, reduced the chances of successful treatment and increased mortality rates. In addition, low levels of awareness about prostate cancer symptoms and risk factors contribute significantly to poor health-seeking behaviour. Challenges such as poverty, limited healthcare resources, and inadequate access to specialized oncology services further worsen outcomes. Cassell et al. [5] emphasized the importance of conducting more research within African populations to better understand the unique genetic and environmental factors influencing elevated PSA occurrence and progression.

2.3. Prostate Cancer in Nigeria

In Nigeria, prostate cancer is widely recognized as the leading cancer affecting men and represents a major cause of cancer-related deaths. Over the years, studies from various tertiary healthcare institutions have documented a steady increase in the number of diagnosed cases [9]. This rising trend may be attributed to population ageing, increased awareness, improved diagnostic practices, and lifestyle changes. Despite these developments, a major challenge in Nigeria remains the late presentation of patients. Many men are diagnosed only after the disease has progressed to advanced stages, often presenting with complications such as urinary obstruction, bone pain, and metastatic disease. Several factors contribute to this pattern, including poor awareness, cultural beliefs, fear of cancer diagnosis, financial difficulties, and inadequate access to screening services. Furthermore, routine PSA screening is not commonly practiced in many Nigerian communities, limiting opportunities for early detection. Healthcare facilities also face challenges such as inadequate diagnostic equipment, shortage of trained specialists, and limited cancer treatment centres. These challenges underscore the need for increased public awareness, improved screening programmes, and strengthened healthcare systems to reduce the burden of prostate cancer in Nigeria [9].

2.4. Young-Onset Prostate Cancer

Prostate cancer has traditionally been regarded as a disease of older men, with most cases occurring after the age of 65 years. Nevertheless, recent studies have reported a growing number of cases among younger men, particularly those below the age of 55 years [6]. Although relatively uncommon, young-onset prostate cancer has become an area of increasing research interest because of its distinctive clinical and biological characteristics. Evidence suggests that genetic factors play a more prominent role in prostate cancer occurring at younger ages. Men diagnosed early in life are more likely to have a positive family history or inherited genetic mutations that increase susceptibility to the disease. Some studies have also reported that tumours in younger men may exhibit more aggressive features and progress more rapidly than those diagnosed in older individuals [6].

2.5. Socio-Demographic Factors Associated with Prostate Cancer

A wide range of socio-demographic factors influence the risk, detection, and outcomes of prostate cancer. Among these factors, age remains the most important predictor. The likelihood of developing prostate cancer increases significantly with advancing age due to cumulative genetic changes and age-related hormonal alterations [5]. Family history is another well-established risk factor. Men who have a father, brother, or other close relative diagnosed with prostate cancer are more likely to develop the disease themselves. This increased risk is largely attributed to inherited genetic factors that predispose individuals to prostate cancer [4]. Ethnicity also plays a crucial role in elevated PSA occurrence. Numerous studies have shown that men of African descent experience higher incidence rates, more aggressive disease progression, and poorer survival outcomes than men from other ethnic groups. Educational level influences awareness and understanding of prostate cancer, which in turn affects participation in screening and healthcare utilization. Men with higher levels of education are generally more likely to recognize symptoms, seek medical attention promptly, and engage in preventive health practices. In contrast, lower educational attainment is often associated with delayed diagnosis and poorer health outcomes [4]. Occupation and socioeconomic status are equally important, as they determine access to healthcare services, health insurance coverage, and the ability to afford medical care. Individuals

with stable employment and higher incomes tend to have better access to screening, diagnosis, and treatment services than those from economically disadvantaged backgrounds [16].

Healthcare-seeking behaviour is another critical determinant of prostate cancer outcomes. Factors such as cultural beliefs, fear of diagnosis, perceived stigma, and mistrust of healthcare systems may discourage men from seeking timely medical care. Conversely, individuals who routinely participate in health check-ups and screening programmes are more likely to benefit from early detection and successful treatment, ultimately improving their chances of survival.

3. Methodology

3.1. Study Design

A retrospective cross-sectional study design was adopted.

3.2. Study Area

The study was conducted at the Oncology Clinic of Bingham University Teaching Hospital (BHUTH), Jos, Plateau State, Nigeria. BHUTH is a tertiary healthcare institution that provides specialized oncology services to patients from Plateau State and neighboring regions.

3.3. Study Population

The study population comprised all male patients whose records were available at the Oncology Clinic between January 2021 and December 2024.

Inclusion Criteria: Male patients aged 20 years and above, Complete medical records available during the study period, Records containing information on age, marital status, occupation, and elevated PSA status.

Exclusion Criteria: Incomplete records, Records with missing demographic or diagnostic information.

Sample Size: A total of 198 eligible records were reviewed. Data were extracted from hospital records using a structured proforma designed for the study.

Data were analyzed using SPSS version 27. Frequencies, percentages, means, and standard deviations were used for descriptive analysis. Chi-square tests were used to assess associations between socio-demographic variables and elevated PSA status. Statistical significance was set at $p < .05$.

4. Results

Table 1 Prevalence of Elevated Prostate-Specific Antigen (PSA) Among Young Men Attending the Oncology Clinic

Variable	Frequency	Percentage
Elevated PSA	10	66.7
Low PSA	5	33.3
Total	15	100

Among the 198 patients reviewed, 15 (7.6%) were young men aged 20–39 years. Of these, 10 had elevated PSA results, giving a prevalence of 66.7% among young men attending the oncology clinic during the study period.

Table 2 Age Distribution of Young Men Diagnosed with Elevated Prostate-Specific Antigen (PSA)

Age Group (Years)	Frequency	Percentage
20–39	10	100

All identified young prostate cancer cases belonged to the 20–39 years age category because this study defined young men within that age range.

Table 3 Association Between Marital Status and Elevated Prostate-Specific Antigen (PSA) Among Young Men

Marital Status	Elevated PSA n (%)	Low PSA n (%)	χ^2	P-value
Married	4 (80.0)	1 (20.0)	0.038	.846
Single	6 (60.0)	4 (40.0)		
Total	10	5		

There was no statistically significant association between marital status and elevated PSA among young men, $\chi^2(1) = 0.038$, $p = .846$.

Table 4 Association Between Occupation and Elevated Prostate-Specific Antigen (PSA) Among Young Men

Occupation	Elevated PSA n (%)	Low PSA n (%)	Total	χ^2	P-value
Student	4 (66.7)	2 (33.3)	6	2.250	.522
Business	2 (50.0)	2 (50.0)	4		
Farmer	3 (100.0)	0 (0.0)	3		
Civil Servant	1 (50.0)	1 (50.0)	2		
Total	10	5	15		

Occupation was not significantly associated with elevated PSA among young men, $\chi^2(3) = 2.250$, $p = .522$.

5. Discussion

The study found that young men constituted a relatively small proportion of patients attending the oncology clinic, which is consistent with previous reports indicating that prostate cancer predominantly affects older men. Nevertheless, the presence of cases among young adults underscores the importance of vigilance in clinical practice. The observed prevalence among young men aligns with reports suggesting that prostate cancer may occur before the age of 40 years, although infrequently. Similar findings have been reported by [6], who noted increasing diagnosis among younger populations due to improved awareness and screening. The lack of significant association between marital status and elevated PSA observed in this study is consistent with previous investigations showing that marital status may influence health-seeking behavior rather than biological susceptibility to disease. Occupation was also not significantly associated with elevated PSA occurrence [4]. This finding agrees with earlier studies that identified age, family history, and genetic predisposition as stronger determinants of prostate cancer risk than occupational characteristics.

6. Conclusion

This study demonstrated that elevated PSA occurs among young men attending the Oncology Clinic of Bingham University Teaching Hospital, Jos. Although socio-demographic characteristics such as marital status and occupation were not significantly associated with disease occurrence, the findings highlight the need for increased awareness and early detection strategies. Larger multicenter studies are recommended to further investigate the epidemiology and determinants of young-onset prostate cancer in Nigeria.

Compliance with ethical standards

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Disclosure of conflict of interest

All the authors declare no conflict of interest of any sort.

Statement of ethical approval

Ethical approval with reference number – NHREC/21/05/2005/01572 was obtained from the Health Research Ethics Committee of the Bingham University Teaching Hospital Jos, Plateau State, Nigeria.

Statement of informed consent

This is not applicable to this study; however, ethical approval was obtained from the Health Research Ethics Committee of Bingham University Teaching Hospital, Jos, prior to commencement of the study. Permission was obtained from the Oncology Clinic management to access patients' medical records. Patient confidentiality was maintained throughout the study by removing identifiers and reporting findings in aggregate form only.

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