Prevalence and treatment patterns among adults with prostate disorder in a tertiary hospital, Bayelsa state, Nigeria

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ABSTRACT

Background: The prevalence of prostate disorder in the elderly is usually high due to its association with age. However, changing lifestyle have made prostate disorder to reported in middle age adults in some health care facilities in some parts of the world.

Objectives: This study evaluated the prevalence of prostate disorder, and medication use patterns among middle age adults in a tertiary healthcare facility in Bayelsa State, Nigeria.

Methods: The study was a cross-sectional retrospective study with modified proforma used to assess patients diagnosed with prostate disorder between July 2020 and July 2022. Data on socio-demographics, prevalence and medication use pattern by the patients were collected. Descriptive analysis was done using SPSS version 25. Pearson Chi-square was done to determine the relationship of demographics with prevalence of prostate disorder, with level of significance set at $p < 0.05$.

Results: The prevalence rate of prostate disorder was 29.2 %, and about one-third (34.8%) were above 60 years old. Tamsulocin (80.4 %) was the most prescribed anti prostate disorder drug, followed by Finasteride (66.3 %). More than one half (60.7 %) of the medications prescribed were antibiotics, with ciprofloxacin accounting for 14.1%%. Surgical procedures were carried out for 84.8% of the patients.

Conclusion: There was high prevalence of prostate disorder with age especially with 61 years and above. High level of poly-pharmacy and overuse of antibiotics in this study center.

Keywords: Prostate disorder, Prostate cancer, prevalence, treatment pattern, Bayelsa State.

Prévalence et modes de traitement chez les adultes atteints de troubles de la prostate dans un hôpital tertiaire, État de Bayelsa, Nigeria

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RÉSUMÉ

Contexte : La prévalence des troubles de la prostate chez les personnes âgées est généralement élevée en raison de son association avec l'âge. Cependant, l'évolution du mode de vie a fait que les troubles de la prostate sont signalés chez les adultes d'âge moyen dans certains établissements de santé de certaines régions du monde.

Objectifs: Cette étude évalue la prévalence des troubles de la prostate et les modes d'utilisation des médicaments chez les adultes d'âge moyen dans un établissement de soins de santé tertiaire de l'État de Bayelsa, au Nigeria.

Méthodes: Il s'agit d'une étude transversale rétrospective avec un proforma modifié utilisé pour évaluer les patients diagnostiqués d'un trouble de la prostate entre juillet 2020 et juillet 2022. Des données sociodémographiques, de prévalence et d'utilisation des médicaments par les patients ont été collectées. L'analyse descriptive a été réalisée à l'aide de la version 25 du logiciel SPSS. Le chi-carré de Pearson a été utilisé pour déterminer la relation entre les données démographiques et la prévalence des troubles de la prostate, le niveau de signification étant fixé à $p < 0,05$.

Résultats: Le taux de prévalence des troubles de la prostate était de 29,2 %, et environ un tiers (34,8 %) avait plus de 60 ans. La tamsulocine (80,4 %) était le médicament le plus prescrit contre les troubles de la prostate, suivie du finastéride (66,3 %). Plus de la moitié (60,7 %) des médicaments prescrits étaient des antibiotiques, la ciprofloxacine représentant 14,1 %. Des interventions chirurgicales ont été réalisées pour 84,8 % des patients.

Conclusion: La prévalence des troubles de la prostate est élevée avec l'âge, en particulier chez les patients âgés de 61 ans et plus. Un niveau élevé de polypharmacie et une surutilisation des antibiotiques dans ce centre d'étude.

Mots clés : Troubles de la prostate, cancer de la prostate, prévalence, mode de traitement, État de Bayelsa

INTRODUCTION

Benign prostatic hyperplasia is a non-cancerous increase in size of the prostate gland. It is a disorder of the prostate characterized by symptoms like frequent and difficulty in urination, weak stream, inability to urinate or loss of bladder function may be experienced.[1] These are due to enlargement of the prostate that results in complications such as bladder stone and chronic kidney problem.[2] Its progression restricts urine outflow from the bladder resulting in bladder outlet obstruction. Which is followed by detrusor muscle hypertrophy and over activity.[3]

Treatment options include lifestyle changes that involves weight loss, exercise and decreasing caffeine intake for those with mild symptoms. Although, the quality of evidence for exercise is low.[4] Those presenting with more significant symptoms may have to use medications like alpha blockers and 5-alpha reductase inhibitors.[5] While surgical removal of the prostrate may be carried out in those who do not improve in other measures.[6]

Globally, prostate disorder affects about 210 million (25 %) males as of 2010.[7] The prostate get larger in most men as they age. Incidence rates increases from 3 cases in every 1000 men within the age 45-49 years old, to 38 cases for every 1000 men by the age of 75-79 years old. While the prevalence rate is 2.7 % for men aged 45 - 49 years old, it increases to 24 % by the age of 80 years.[8] These simply show that prostate disorder is an agerelated condition that obstruct prostatic urethra.[9] However, changing lifestyle has led to reported cases of prostate disorder in middle age adults.[10]

Most studies done on prostate disorder are limited to geriatric patients due its association to elderly patients and also a lot of data exist in many developed countries on the prevalence and medications usage. It has become imperative that the prevalence level and medication usage in patient with prostate disorder in Nigeria within a selected tertiary healthcare facility as a point of call. These will enable proper monitoring with aim of providing adequate budgetary allocation, planning and detection of drug therapy problems associated with medications utilized, thus improving their quality of life and reducing untoward effects associated with the medications. These have become necessary to avert complications and prevent further damage to the patients. The objectives of this study was to evaluate the prevalence of prostate disorder and drug treatment pattern for middle aged adults with prostate disorder in Federal Medical Centre, Yenagoa, Bayelsa State, South-South Nigeria.

MATERIALS AND METHODS

Study design and site

This was a descriptive retrospective study that evaluated treatment practices of prostate disorder in Federal Medical Center (FMC), Yenagoa within the period of July, 2020 - July, 2022. FMC Yenegoa is located in Yenagoa Local Government Area (Area of 706 km^2), the capital city of Bayelsa State with a population size of 1,704,515, southern Nigeria. with coordinates 4°55'29"N 6°15'51"E / 4.92472°N 6.26417°E. The study centre covers a population size of 524,400[12], making it the largest hospital in the heart of Bayelsa state. The study was conducted at the Urology Clinic, which is the ideal setting for the research of prostate disorder and medication usage.

Study population and sample size

The study population included all male patients case files (315) who were 40 years and older, that have sought medical care at the Urology Clinic of Federal Medical Centre in Yenagoa within the study time frame. Random sampling of patients diagnosed with prostate disorder was done, and 92 prostate patients were selected for the study. Patients who were diagnosed with BPH not less than 6 months and already on medications were included in the study, while inpatients, Patients folders with illegible prescriptions and procedures were excluded from the study.

Data collection and analysis

Data were collected using a proforma data form developed for the purpose of the study. Patient case folders were sought and those for patients who were treated for prostate disorder were selected carefully. Parameter Assessed in this study include sociodemographics, diagnosis and treatment patterns. Clinical and laboratory data such as serum creatinine, full blood count, prostate specific antigen (PSA), urinalysis, Kidney function, abdominal ultrasound, drugs and surgery were also collected.

Collected data were sorted for completeness and entered into Microsoft Excel (Window 10), and thereafter transported to Statistical Package for Social Sciences (version 21) for analysis. Analysis was mainly descriptives, Pearson Chi square was done to determine the relationship of patients' demographics with diagnosis. Results were considered significant at p < 0.05.

Ethical approval

Ethical clearance was sorted from the Research Ethics Committee of the hospital before study was commenced. Approval was issued on the 30th June, 2023 with the reference number FMCY/REC/ECC/2023/SEPTEMBER/629. All patient data were de-identified and anonymized to ensure privacy and compliance with data protection regulations

## RESULTS

Demographic data

Table 1 presents the socio-demographic characteristics of the 92 patients diagnosed with prostate disorder in this study. The majority (65.2 %) of patients were between 40 60 years (middle age adult), while a significant proportion (84.78 %) were married. Almost half (47.8 %) of the patients were of business men, this was followed by civil servants (16.3 %).

Table 1: Socio-demographic details of patients diagnosed with prostate disorder

Characteristics		Frequency	Percentage (%)
Age (years)	40 – 45	9	9.8
	46 – 50	12	13.0
	51 – 55	21	22.8
	56 – 60	18	19.6
	61 & above	32	34.8
Marital status	Single	13	14.1
	Married	78	84.8
	Divorced/widowed	1	1.1
Occupation	Civil servant	15	16.3
	Business	44	47.8
	Farming	11	12.0
	Unidentified (Not found in folder)	22	23.9

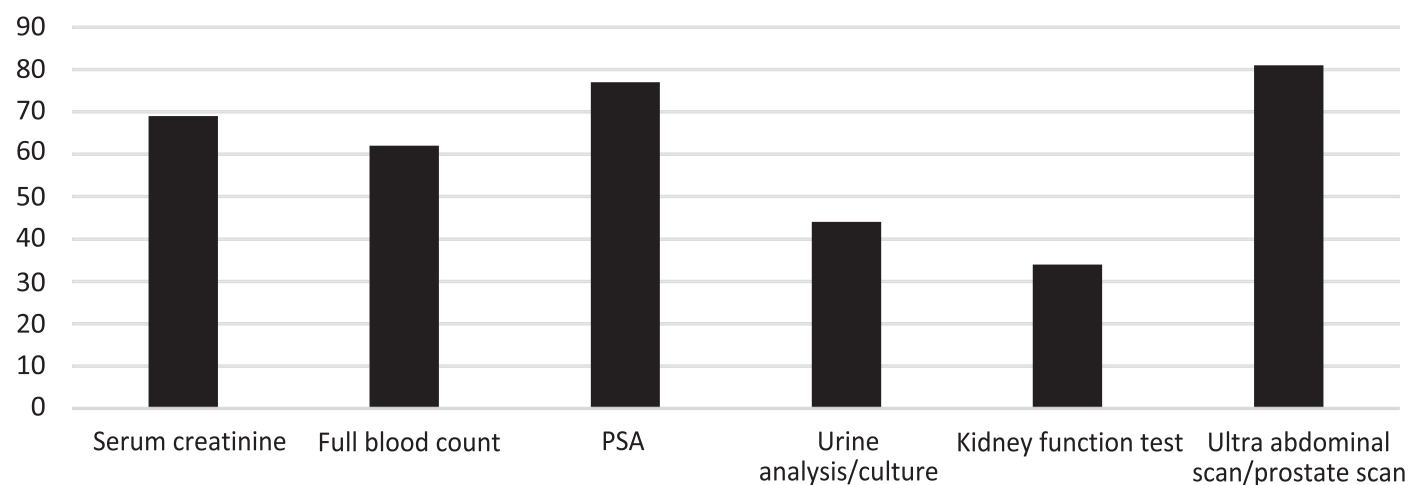**Prevalence of prostate disorder**

About one-third (29.2 %) of the patients were diagnosed with prostate cancer out of a total of 315 men who were above 40 years and older, and sought medical care at the Federal Medical Centre in Yenagoa (Figure 1). 04
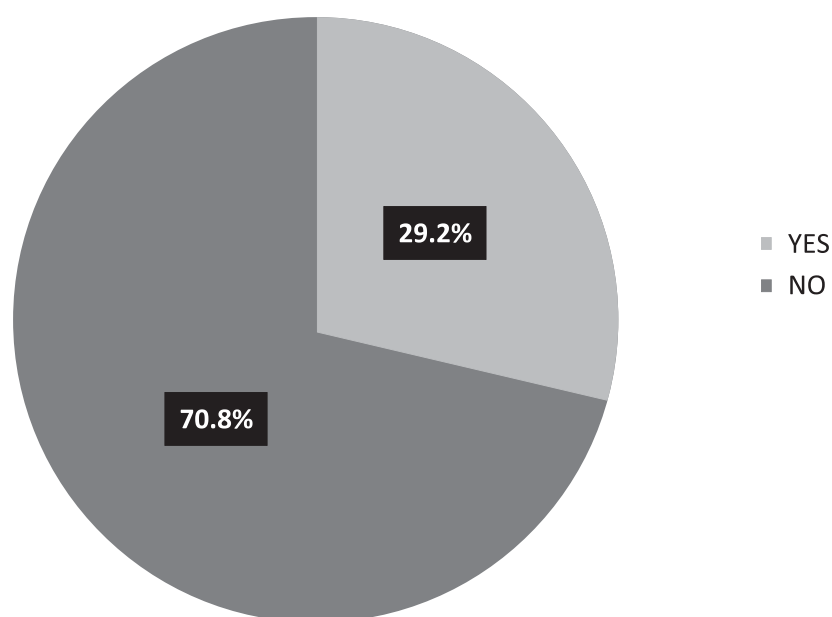
Figure 1: Prevalence of prostate disorder

Laboratory assessment of the patients

Among these diagnostic approaches, the Ultra Abdominal Scan/Prostate Scan was the most frequently (88.0 %) employed methods of diagnosis. Prostate-Specific Antigen (PSA) testing accounted for 83.7 % laboratory assessment. Kidney function tests was the least (37.0 %) diagnostic processes carried out (Figure 2).

Figure 2: Laboratory assessment of the patients

Treatment patterns of prostate disorder patients

Table 2 summarizes the treatment patterns administered to the patients. The most (80.4%) commonly prescribed medications were tamsulosin (alpha blocker), this was closely followed by finasteride (66.3 %). Out of the total antibiotics (76.1 %), ciprofloxacin accounted for 14.1 %. Additionally, surgical interventions, including prostatectomy and suprapubic catheterization, were carried out on 84.8 % of the patients. Pentazocine, an opioid analgesic was prescribed for 17.4 % of the patients.

Table 2: Treatment patterns of prostate disorder patients

Treatment options	Generic name	Frequency	Percentage (%)
Alpha Blockers	Tab Tamsulosin	74	80.4
Antifibrinolytic	Tranexemic acid	8	8.7
Tyrosine Kinase inhibitors	Sorafenib	5	5.4
Anticholinergic	Tab Tolterodine	26	28.3
Anttibiotics	Tab Amoxicilin/clavulanic acid	12	13.0
	IV gentamicin	4	4.4
	IV ceftriaxone	7	7.6
	IV levofloxacin	8	8.7
	Ciprofloxacin	13	14.1
	Doxycycline	3	3.3
	Tab Nitrofurantoin	9	9.8
Alpha Reductase inhibitors	Tab Finasteride	61	66.3
Proton pump inhibitor	Pantoprazole	23	25.0
Antiprotozoal	Tab Metronidazole 400mg	5	5.4
NSAIDs	IV Paracetamol	9	9.8
	Supp. Diclofenac	14	15.2
	Tab aceclofenac	19	20.7
Opioids	I.M pentazocine	16	17.4
Supplement and vitamins	Tab Vitamin C 100mg	33	35.9
	Tab ferrous sulphate	29	31.5
	Neurovite forte	27	29.4
Surgery	Prostatectomy	15	16.3
	Suprapubic Catheterization	10	10.9
	Nephrectomy	3	3.3
	Bilateral Orchidectomy	8	8.7
	Hydrocelectomy	7	7.6
	Varicocelectomy	6	6.5
	Biliary Orchidopexy	1	1.1
	Urethrocystoscopy	12	13.0
	Cystolithalapaxy	7	7.6
	Urethral Dilation	5	5.4
	Vesicolithotomy	4	4.4
	Total surgeries	78	84.8

Relationship of socio-demographics with prevalence of prostate disorder

There was a significant relationship between age and prevalence of prostate disorder (p = 0.016, $\chi2$ = 9.33). However, marital status and occupation were not significantly associated (p = 0.490, $\chi2$ = 5.18, and p = 0.067, $\chi2$ = 4.77) with the prevalence.

Relationship of socio-demographics with prevalence of prostate disorder

Characteristics		Diagnosis of prostate disorder		Total n (%)	P-value, (df), χ2
		Yes n (%)	No n (%)		
Age	40 – 45	9 (2.86)	39 (12.38)	48 (15.24)	0.016*, (4) 9.33
	46 – 50	12 (3.81)	51 (16.19)	63 (20)	
	51 – 55	21 (6.67)	51 (16.19)	72 (22.86)	
	56 – 60	18 (5.71)	22 (6.98)	40 (12.7)	
	60 & above	32 (10.16)	60 (19.05)	92 (29.21)	
Marital status	Single	13 (4.13)	42 (13.33)	55 (17.46)	0.490, (2), 5.18
	Married	78 (24.76)	176 (55.87)	254 (80.63)	
	Divorced/widowed	1 (0.32)	5 (1.59)	6 (1.9)	
Occupation	Civil servant	15 (4.76)	72 (22.86)	87 (27.62)	0.067, (3), 4.77
	Business men	44 (13.97)	105 (33.33)	149 (47.3)	
	Farmers	11 (3.49)	21 (6.67)	32 (10.16)	
	Unidentified (Not found in folder)	22 (6.98)	25 (7.94)	47 (14.92)	

Where χ2, = Chi square, df = degree of freedom;* = p < 0.05 is statistically significant

DISCUSSION

The study found that out of the 315 men aged 40 and above who sought medical care at Federal Medical Centre, Yenagoa during the study period, 92 were diagnosed with prostate disorder. This indicates a prevalence of 29.2 %. The relatively high prevalence underscores the importance of understanding and managing this condition, particularly in an aging population. Age appears to be a significant factor in the prevalence, with the highest rates observed in individuals aged 60 and above. This is consistent with the well-established trend of prostate disorder becoming more common with increasing age. The study findings are in line with global trends, highlighting that prostate disorder is a considerable public health concern, like the works of Ozim and coworkers[13] study focused on the prevalence of benign prostatic hyperplasia (BPH) among males over 50 years treated at Abia State University Teaching Hospital within a specific time frame. Previous study has reported prevalence of 42 % which is higher than present study. The study under consideration examined the treatment patterns of diagnosed prostate disorder cases in men aged 40 and above. While both studies shared an interest in prostate conditions among men in Nigeria, they diverged in the age range and the specific condition under investigation.

Recommendations from both studies concurred on the significance of public health campaigns and increased awareness to encourage early detection and timely intervention.

Bosland *et al.*,[14] conducted a distinctive autopsy-based study to explore the prevalence of asymptomatic prostate cancer in Nigerian men, particularly at the time of autopsy. In contrast, our study assessed the treatment patterns of diagnosed prostate disorder cases at a healthcare facility. 8.8 % prevalence was reported of subclinical prostate cancer at autopsy, revealing the existence of clinically asymptomatic cases.[7] This study, although not explicitly focusing on prostate cancer, contributed to the understanding of prostate conditions among Nigerian men, albeit with a distinct emphasis.

In 2017, Ojewola conducted a community-based crosssectional survey involving 615 male patients. The subjects were meticulously selected through a multistaged sampling technique, and they were interviewed within their residences to assess the presence of lower urinary tract symptoms (LUTS). The

severity of these symptoms was evaluated using the International Prostate Symptom Score (IPSS) questionnaire.[15] The results revealed that the overall prevalence of LUTS was 57.4 %, with 28.5 % experiencing moderate-to-severe IPSS, averaging a score of 12.3 ± 5.2. More than half of the patients (56.1%) reported a diminished quality of life (QoL), with an average score of 3.4 ± 1.3. Digital Rectal Examination (DRE) and ultrasound examinations indicated that 68.3 % and 64.9 % of patients, respectively, had an enlarged prostate. Approximately 29 % exhibited abnormal maximum urinary flow rate (Qmax). Both QoL and Qmax were found to have a significant association with IPSS (p < 0.001), while no such relationship was observed between prostate size and IPSS (p = 0.339). The overall prevalence of Benign Prostatic Hyperplasia (BPH) was 23.7 %, equivalent to 237 per 1000 men, which closely aligned with our study's finding of 29.2 %.

In a separate study by Ukoli and co-workes,[16] rural Nigerian men aged 40 and older were subjected to screening involving serum prostate-specific antigen (PSA) levels and digital rectal examinations (DRE). Those with PSA levels > 4 ng/mL and/or abnormal DRE results were referred for prostate biopsies. Out of the 200 men invited to participate, 151 (75.5 %) attended the screening16. The mean age of these patients was 56.45 ± 15.1, with 95 individuals (61.6%) being > 50 years old. Among the 140 patients who consented to a blood test, there was a correlation between PSA levels and age (r = 0.3, P < 0.01). Notably, 10.0 % had abnormal PSA levels > 4 ng/mL, with the incidence increasing from 3 (3.6 %) in men under 60 years to 4 (50%) in men aged 80 and above. The incidence was 15.7 % for men > 50 years, and there was no discernible evidence of an elevated rate of prostatitis in the community. This figure is lower than the 29.2 % prevalence identified in our study, which could be attributed to variations in the study settings, as Ukoli's research was conducted in a rural environment.

The study also examined the diagnostic methods used to identify prostate disorder. Serum creatinine, full blood count, PSA testing, urine analysis/culture, kidney function tests, and ultrasound-based scans were among the diagnostic approaches employed. The most commonly used diagnostic methods were ultrasound abdominal scans and PSA testing, which is in line with standard clinical practices. These methods are valuable for evaluating the size and condition of the prostate and assessing potential malignancy. The diversity of diagnostic methods used in this study demonstrates the importance of a comprehensive approach to diagnosing prostate disorder, ensuring accurate assessment and tailored treatment plans for individual patients.

The study observed a wide array of treatment modalities for prostate disorder. These included pharmaceutical options such as alpha blockers and alpha reductase inhibitors, antibiotics for managing associated infections, pain management strategies like NSAIDs and opioids, supplements and vitamins, and surgical interventions. The most common treatments were alpha blockers and alpha reductase inhibitors, reflecting their utility in managing the symptoms of prostate disorder. So too were the findings of Viotman-Novinuk, who also found Tamsulosin to be very prevalent in treatment of BPH.[17]

Furthermore, a substantial percentage of patients underwent surgical procedures, including prostatectomy, suprapubic catheterization, and others. This was in line with the reports by Ojewola and co-workers, who found surgery to be prevalent in majority of BPH cases in Nigeria.[18] This suggests that for a proportion of individuals, surgical interventions were necessary, possibly due to the severity of their condition. This is also in line with Badmus *et al*., which aimed to determine the pattern of presentation, prevalent age, hospital incidence, and drugs used in management of prostate cancer. Their findings indicated late presentations with advanced disease and also found tamsulosin to be one of the most widely used.[19] Both studies shared an interest in prostate health but had different primary objectives. Badmus *et al*. insights into late presentations with advanced disease have potential implications for the treatment and management of prostate conditions, including enlargement, as addressed in our study. Late presentation and advanced disease might necessitate different treatment strategies. The diverse treatment options available highlight the need for a personalized approach to prostate disorder management, considering the unique needs and preferences of each patient.

The study explored potential associations between the prevalence of prostate disorder and various demographic factors, including age, marital status, and occupation. Age emerged as a significant factor, with a clear relationship between age and the likelihood of a prostate disorder diagnosis. Patients aged 60 and above had the highest prevalence, indicating that age is a substantial risk factor. On the other hand, marital status and occupation did not exhibit strong associations with the prevalence, suggesting that these factors are less

influential in the likelihood of diagnosis within this population.

The study has shed light on several critical aspects of prostate disorder among men aged 40 and above. The prevalence of this condition was found to be substantial, with 29.2 % of the patients diagnosed with prostate disorder, reaffirming its status as a significant public health concern, especially in an aging population. The diverse range of diagnostic methods employed, with ultrasound scans and PSA testing being the most prominent, and highlighted the comprehensive approach required to accurately diagnose and evaluate prostate disorder. Treatment strategies demonstrated a multifaceted approach, emphasizing the necessity of personalized care plans tailored to individual patients. Age, notably, emerged as a significant factor associated with the likelihood of prostate disorder diagnosis, underscoring the importance of age-related risk assessment and management. Marital status and occupation, however, did not exhibit significant associations with the prevalence, suggesting their limited role as determinants in this specific population. This study's findings call for continued vigilance in prostate disorder management and reinforce the need for personalized care, taking into account the individual needs and clinical presentation of patients.

Given the high prevalence of prostate disorder among men aged 40 and above, we recommend the implementation of comprehensive public health campaigns in the study region. These campaigns should emphasize the significance of regular health check-ups and prostate screenings. They should also educate individuals about the symptoms and risk factors associated with prostate disorder. Collaborations with local healthcare providers, community leaders, and educational institutions can enhance the effectiveness of these campaigns.

CONCLUSION
There was high prevalence of prostate disorder and high level of poly-pharmacy and overuse of antibiotics in this study. Age was directly associated with prevalence of prostate disorder. The study provides information on treatment modalities and outcomes but lacks specific details on side effects, patient experiences, and the longterm impact of treatments. In-depth analysis of these aspects could contribute to a more thorough understanding of the disease management. The findings underscored the need for increased healthcare

infrastructure development and resource allocation to address the growing burden of prostate disorder. Investment in healthcare facilities, access to specialized equipment for diagnosis and treatment, and training of healthcare professionals are essential to better manage and treat this condition effectively.

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