**Prevalence of Prostate Problems among Adults in Obio/Akpor Local Government Area (LGA) of Rivers State**

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**Abstract**

**This study was carried out to provide information on the prevalence of prostate problems among adults in Obio/Akpor Local Government Area. A cross-sectional descriptive design was employed for this study. Four research questions were posed to guide the study while one research hypothesis postulated to guide the study was tested at 0.05 level of significance. The population of the study was 1,010 adult males aged forty years or older. The entire population was used as the sample size. The instrument for data collection was a self-developed and pretested Data Collection Schedule Form (DCSF).Data collected were analyzed using descriptive statistics of frequency, percentage and Chi square inferential statistic. The results showed that the prevalence of prostate problems was 32.3%. BPH had a prevalence of 57.4%, CA-Prostate had 19.3% and Prostatitis had 23.3%. The prevalence increased with age; those 70 years and above had the highest prevalence of 48.8%; P > .05 (P = .616) at .05 level of significance indicating no significant association in the prevalence of prostate problems among the different age cohorts. It was concluded that there was a high prevalence of prostate problems in the studied population. This implies that one in three apparently normal men 40 years and above had one of the prostate problems. This calls for a concerted effort to reverse this trend. Researchers should embark on research on the causes, risk factors, diagnosis and management of the conditions. This can be achieved by government and other funders making grants available to researchers.**

**Keywords: Prostatitis, Benign prostatic hyperplasia, Prostate cancer, Prevalence, Adult**

**Introduction**

 **Prostate problems constitute a lot of health burden for adult across the world. They are key health challenges that bedevil the men folk. The prostate is a small gland that lies between the penis and the bladder. It produces fluid that is mixed with sperm to create semen (Bhat et al., 2022; Anderson et al., 2006). It should be healthy enough to perform its functions properly. However, this very important gland often fails in the discharge of the functions due to certain diseases such as prostatitis, benign prostatic hyperplasia (BPH) and prostate cancer. These constitute prostate problems in this research. There are primarily four different forms of prostatitis, each with different causes and outcomes (Hjelmborg et al., 2014). Two relatively uncommon forms, acute prostatitis (category I) and chronic bacterial prostatitis (category II) are treated with antibiotics. Sekhoacha et al. (2022) showed that chronic non-bacterial prostatitis or male chronic pelvic pain syndrome, which comprises about 95% of prostatitis diagnoses, is treated by a large variety of modalities including alpha blockers, phytotherapy, physical therapy, psychotherapy, antihistamines, anxiolytics, nerve modulators, surgery and more. More recently, a combination of trigger points and psychological therapy has proved effective for category III prostatitis as well. Category IV prostatitis, relatively uncommon in the general population, is a type of leukocytosis (Anderson et al., 2006). Prostatitis can occur in males of any age unlike BPH and prostate cancer which are common among males forty years and above.**

 **According to Mayo Foundation for Medical Education and Research (MFMER) (2022), BPH, prostate gland enlargement, is a common condition as men get older. An enlarged prostate gland can cause uncomfortable urinary symptoms such as blocking the flow of urine from the bladder. It can also cause bladder, urinary tract or kidney problems. Symptoms of BPH include needing to urinate often or taking a while to get started (hesitancy). If the prostate grows too large, it may constrict the urethra and impede the flow of urine, making urination difficult and painful. In extreme cases urination is completely impossible (Bhat et al., 2022; Kevin et al. 2012). BPH is not cancer. Cancer cells are malignant and can metastasize.**

 **Prostate cancer is one of the most common cancers affecting older men in developed countries (Castillejos-Molina & Gabilondo-Navarro, 2016; Sekhoacha et al., 2022) and a significant cause of death for elderly men (American Cancer Society Guidelines, 2011). It is the second leading cause of death in men in advanced countries (Rodney et al., 2014). Jemal et al. (2011); Hust et al. (2009) reported that prostate cancer was one of the most frequently diagnosed cancers and the sixth leading cause of cancer deaths in males worldwide. According to National Health Institute (NHS) (2022), prostatitis can come at any age, but usually between 30s and 50s in USA. Adenomatous prostatic growth is believed to begin at approximately age 30. An estimated 50% of men have histological evidence of BPH by age 50 years and 75% by age 80 years. In 40-50% of these adults, BPH becomes clinically significant (Rubenstein & McVary, 2008).**

 **The term adult has meanings associated with social, legal and chronological concepts. However, physiological age is more significant in a study of this kind. This is because risk of prostate problems increases with physiological age.**

 **Prostate cancer is a common type of malignancy but it is highly treatable in the early stages. As aforementioned it is the most common cancer in men in Europe and North America. Regrettably, the incidence rate was projected to continue to increase over the coming years (Smith-Palmer et al., 2019). The authors estimated lifetime risk of being diagnosed with the disease to be 17.6% for Caucasians and 20.6% for African Americans whereas the lifetime risk of death from prostate cancer for Caucasians and African Americans are 2.8% and 4.7% respectively. From these statistics, prostate cancer is likely to impact the lives of a significant proportion of men that are alive at the present (Cittadini et al., 2021; Kevin et al., 2012). American Cancer Society (2021) posited that one man in 8 will be diagnosed with prostate cancer during his life time. Prostate cancer is more likely to develop in older men and in non-Hispanic Black men. The average age of men at diagnosis is about 66. From the report there were about 268,490 new cases of prostate cancer and about 34,500 deaths from prostate cancer USA alone. The prevalence of BPH is well documented in other parts of the world too except in Africa (Termini et al., 2020).**

 **Establishing the prevalence of a disease is one of the keys to preventing and controlling the problem. Prevalence means both new and old cases of a condition (Harvard School of Public Health, 2022). Prevalence of prostrate problem as used in this study, therefore, means the sum total of both new and old cases of prostate problems diagnosed in Obio/Akpor LGA of Rivers State. Prevalence of prostate problems is low in areas where the modifiable risk factors are under control with lifestyle modifications.**

 **Long time ago, a study in Southern part of Nigeria established a high and rising incidence of the prostate problem in the area (Osegbe, 1997). This might have resulted from certain factors such as age, family history, race (Sekhoacha et al., 2022); prostate changes, genomic changes (Cuzick et al., 2014) hormones (Hjelmborg et al., 2014) and modifiable factors (Roehrborn & McConnell, 2002). Lower urinary tract symptoms in men constitute a serious problem in industrialized countries. According to Osegbe, about 1 in 9 men in Africa would be diagnosed with prostate cancer during their lifetime. Prostate cancer was classified by Jamel et al. 2011 as one of the most common cancers with 1.28 million cases and a 26.6% incidence rate in Africa. It was found that Western Africa had the fifth highest risk for prostate cancer mortality in the world. Sadly, Ezeanyika et al. (2006) indicated that over 100,000 Nigerians are diagnosed with cancer annually. Prostate cancer for Nigerian men is both the most common and most deadly cancer with 32.8 cases and 16.3 deaths per 100,000 (Ejike & Ezeanyike, 2006; Eke & Sapira, 2002; Faridah, 2019). This is more than double the death rate in North America with an estimated 80% of Nigerians being incurable on the diagnosis, Faridah reported. Prevalence of prostate problems in Obio/Akpormay might differ by age. It is against this background that the researchers were motivated to ascertain the influence of age on prostate problems among adults in Obio/Akpor LGA.**

 **The researchers were motivated to embark on this research by a visit they made to the male surgical ward of University of Port Harcourt Teaching Hospital (UPTH). As hospital evangelists, the researchers saw some hospitalized men with urine bags which the patients might live with for a very long time. Seeing the worries, anxieties and embarrassments men face due to prostate problems; the researchers decided to carry out this study. In addition, the study delved into the role of the changing western lifestyle of the people of Obio/Akpor LGA; the level of environmental contamination in the area and their social lives in the prevalence of prostate problems among adult. Prevalence statistics of prostate problems is not so well documented in Africa as was shown earlier, especially in Nigeria. To determine prevalence of prostate problems in the area of this study in essence represent the statement of the problem.**

**Research Questions**

 **The following research questions guided the study.**

**What is the prevalence of prostate problems among adults in Obio/Akpor LGA of Rivers State from January 2018 to January 2021?**

**What is the prevalence of prostate problems among adults in Obio/Akpor LGA of Rivers State from January 2018 to January 2021, according to type of prostate problem?**

**What is the prevalence of prostate problems among adults in Obio/Akpor LGA of Rivers State from January 2018 to January 2021, according to age?**

**What is the prevalence of prostate problems among adults in Obio/Akpor LGA of Rivers State from January 2018 to January 2021, according to year of occurrence?**

**Hypothesis**

 **The single null hypothesis postulated to guide the study was tested at 0.05 level of significance.**

**H0: There is no significant difference in prostate problems among adults of various age cohorts in Obio/Akpor LGA of Rivers State from January 2018 to January 2021.**

**Methods**

**The study was a cross-sectional survey. Cross-sectional survey is a design aimed at determining the frequency of a particular attribute such as a specific exposure, disease or any other health-related event in a defined population at a particular point in time (Anderson et al., 2006). The area of this study was Obio/Akpor LGA. This LGA is highly industrialized, urbanized and the home of most of multinational companies. These companies exposed most of the residents to unhealthy life styles with the attendant exposure to modifiable risk factors to prostate problems as shown by Marc and Garnick (2012). Therefore, the researchers deemed adults of this area appropriate for this study.**

 **The population for this research was 1,010 adults who were forty (40) years and above who visited urology clinics for prostate examination in the LGA from January 2018 to January 2021 (Hospitals Registers, 2021). The sample size was the entire 1,010 adult clients who visited the urology clinics for prostate examination from January 2018 to January 2021.**

**The instrument for data collection was self-developed ‘Data Collection Schedule Form’ (DCSF). The face validity and content validity of the instrument were established through the judgment of three Urologists from UPTH. The reliability of the instrument was ascertained using inter-rater reliability test. The data obtained were analyzed using spearman rank order correlation (Spearman Rho) and the result showed a positive correlation coefficient of 0.87.**

 **The researchers together with two research assistants collected data using the DCSF. The data were collected and recorded based on the patients’ age, year of collection, examination/result and type of diagnosis. In all, 1,010 results of the diagnosis were analyzed using descriptive statistics of frequency and percentage. The raw scores were converted into percentages for the purpose of description and also for answering the research questions posed to guide the study. Chi-square statistic (χ2) was utilized to test the null hypothesis formulated to guide the study at 0.05 level of significance. For this study, PSA results lower than 4 microgram per liter(µg/L) was considered normal while those higher than 4 µg/L was indicative of the presence of prostate problem. For the interpretation of prevalence, proportion below 10% was considered low prevalence; 10 - 30% was considered high prevalence; and higher than 30% was considered very high prevalence.**

**Results**

**Table 1: Frequency Distribution of Prostate Specific Antigen (PSA) Results of Adults in Obio/Akpor L.G.A. Rivers from January 2018 to January 2021 (n=1,010)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | **PSA (µg/L)** |  |  |  |
| **Years** | **0-4** | **4-10** | **10-20** | **˃20** | **Total** |
| **2018** | **140** | **13** | **17** | **30** |  |
| **2019** | **152** | **15** | **26** | **37** |  |
| **2020** | **192** | **18** | **28** | **42** |  |
| **2021** | **200** | **21** | **32** | **47** |  |
| **Total** | **684** | **67** | **103** | **156** | **1,010** |

**Key: PSA results less than 4 µg/L is normal, while PSA results more than 4 µg/L indicates prostate problem**

**Table 1 above shows that out of 1, 010 adult males, 684 had PSA results below 4µg/L; 67 had 4 – 10 µg/L; 103 adults had 10 – 20 µg/L while 156 had more than 20µg/L**

**Table 2: Prevalence of Prostate problems among Adult in Obio/Akpor L.G.A. Rivers from January 2018 to January 2021(n=1,010)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **PSA(µg/L)** | **F(n)** |  | **Proportion (%)** |  |  |
| **0-4(normal)** | **684** |  | **67.7** |  |  |
| **˃4(prostateproblem)** | **326** |  | **32.3** |  |  |
| **Total** | **1,010** |  | **100** |  |  |

**Key: low prevalence = Less than 10%; high prevalence = 10 – 30%; very high prevalence = higher than 30%**

**The Table 2 above shows that there is a high prevalence (32.3%) of prostate problems among adult in Obio/Akpor L.G.A. Rivers from January 2018 to January 2021. Out of 1,010 patients that were examined 326 (32.3%) had prostate problems. Six hundred and eighty four (67.7%) did not have prostate problems.**

**Table 3: Frequency Distribution of Prostate Problems among Adult in Obio/Akpor LGA Rivers from January 2018 - January 2021 according to type of prostate problem (n=1,010)**

|  |  |  |
| --- | --- | --- |
|  |  **Prostate Problems** |  |
| **Years** | **BPH** | **Ca-prostate** | **Prostatitis** | **Total** |
| **2018** | **35** | **10** | **14** | **59** |
| **2019** | **46** | **12** | **18** | **76** |
| **2020** | **50** | **19** | **20** | **89** |
| **2021** | **56** | **22** | **24** | **102** |
| **Total** | **187** | **63** | **76** | **326** |

**N/B: Ca- prostate means cancer of the prostate; BPH means benign prostatic hyperplasia.**

**Table 3 shows that BPH had the highest frequency (187), followed by prostatitis (76) and lastly cancer of the prostate (63) in the studied population.**

**Table 4: Prevalence Problems among Adults in Obio/Akpor L.G.A. Rivers from January 2018 - January 2021 by type of prostate problem (N=1,010)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Prostate problems** | **F** |  | **Proportion (%)** |  |  |
| **BPH** | **187** |  | **57.4** |  |  |
| **Ca-prostate** | **63** |  | **19.3** |  |  |
| **Prostatitis** | **76** |  | **23.3** |  |  |
| **Total** | **326** |  | **100** |  |  |

**Key: low prevalence (<10%); high prevalence (10 – 30%); very high prevalence (> 30%)**

 **Table 4 shows that BPH has a prevalence of 57.4%; prostatitis (23.3%) and cancer of the prostate (19.3%). Therefore, there was a very high prevalence of BPH; high prevalence of both prostatitis and prostate cancer in Obio/Akpor L.G.A. of Rivers State.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |

**Table 5: Frequency Distribution of Prostate Problems among adult males in Obio/Akpor L.G.A. Rivers from January 2018 to January 2021according to age (n=1,010)**

|  |  |  |
| --- | --- | --- |
|  |  **Prostate Problems** |  |
| **Years** | **BPH** | **Ca-prostate** | **Prostatitis** | **Total** |
| **40- 49yrs** | **10** | **2** | **6** | **18** |
| **50–59yrs** | **30** | **8** | **10** | **48** |
| **60 -69yrs** | **63** | **18** | **20** | **101** |
| **≥ 70yrs** | **84** | **35** | **40** | **159** |
| **Total** | **187** | **63** | **76** | **326** |

**Table 5 shows that men aged 40 - 49 years have the frequency of 18 [BPH (10), Ca-prostate (2) and prostatitis (6)]. Those aged 50-59 years had 48 [BPH (30), Ca-prostate (8) and prostatitis (10)]. Men aged 60 – 69 years had 101 [BPH (63), Ca-prostate (18) and prostatitis (20)]. Men aged 70 years and above had 159 [BPH (84), Ca-prostate (35) and prostatitis (40)]. It can be seen that the problem increases as age increases.**

**Table 6: Prevalence of Prostate Problems among Adult males in Obio/Akpor LGA Rivers from January 2018 to January 2021, according to age (n=1,010)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Years** | **F** |  | **Proportion (%)** |  |  |
| **40 - 49yrs** | **18** |  | **5.5** |  |  |
| **50 - 59yrs** | **48** |  | **14 .7** |  |  |
| **60 - 69yrs** | **101** |  | **31.0** |  |  |
| **≥ 70yrs** | **159** |  | **48.8** |  |  |
| **Total** | **326** |  | **100** |  |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Key: low prevalence (<10%); high prevalence (10 – 30%); very high prevalence (>30%)** |  |  |  |  |  |  |  |  |

**Table 6 shows that the prevalence of prostate problem among men aged 40 -49 years was 5.5% (low prevalence); 50-59 years (14.7 %, high prevalence); 60 -69 years 31.0% (very high prevalence) and 70 years or more had 48.8% (very high prevalence).**

**Table 7: Prevalence of Prostate Problems among Adult males in Obio/Akpor LGA Rivers from January 2018 to January 2021, according to the year of occurrence (n=1010)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Years** | **Prostate problem (f)** |  | **Proportion (%)** |  |  |
| **2018** | **59** |  | **18.1** |  |  |
| **2019** | **76** |  | **23.3** |  |  |
| **2020** | **89** |  | **27.4** |  |  |
| **2021** | **102** |  | **31.2** |  |  |
| **Total** | **326** |  | **100** |  |  |

**Key: low prevalence < 10%; high prevalence = 10 – 30%; very high prevalence > 30%**

 **Table 7 shows that the prevalence in 2018 was 18.1% (high prevalence); 2019 was 23.3% (high prevalence); 2020 was 27.4% and 2021 was 31.2% (very high prevalence).**

**Table 8: Summary of Chi-square (χ2) analysis of no significant association in prevalence of prostate problems in Obio/Akpor LGA of Rivers State based on age (n=1010)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable** | **N** | **χ2** | **df** | **p-value** |
| **40- 49yrs** | **18** | **4.45** | **6** | **.616** |
| **50–59yrs** | **46** |
| **60 -69yrs** | **101** |
| **≥ 70yrs** | **159** |

**There is no significant association in prostate problems among adult of various age cohorts in Obio/Akpor LGA Rivers from January 2018 to January 2021 at 0.05 level of significance and degree of freedom 6. Therefore the null hypothesis was not rejected.**

**Discussion**

**Research question one sought to ascertain the prevalence of prostate problems among adult males in Obio/Akpor LGA from January 2018 to January 2021. A total of 1,010 patients were used by the researcher for this study. Out of this, a total of 326 (32.3%) had prostate problem. This is in line with the report of Marc and Garnick (2012) who opined that 80 percent of all men will eventually have prostate problems by age above fifty years. The result also agreed with Ezeanyika et al. (2006), who found a prevalence of prostate problem in their studied population of males aged forty years and above in Nsukka, Enugu State, Nigeria. Prevalence of prostate problems among males aged forty years and above in this study is expected because of Western lifestyle practices and environmental exposures of those residing in Port Harcourt metropolis. Moreover, the finding accorded with Eke and Sapira’s (2002) opinion that the increasing incidence of prostate cancer in Nigeria is partly due to worsening environmental pollution associated with increasing industrialization and urbanization. This is because the Obio/Akpor LGA is experiencing tremendous industrialization currently.**

**Research question two sought to determine the prevalence of prostate problem among adult males in Obio/Akpor LGA from January 2018 to January 2021 by the type of prostate problem. The distribution pattern of prostate problems among adult within the studied time revealed that BPH is the most prevalent prostate problem accounting for 57.4 per cent of all cases followed by prostatitis 23.3 per cent of the cases. Cancer of the prostate was the least prevalent (19.3%). The results in this study corroborated Sekhaoacha et al. (2022), who reported that benign prostatic hyperplasia (BPH) is the most prevalent of all conditions in aging men. The finding was also in line with those of Faridah (2019); Ejike and Ezeanyika (2006) that showed stated that BPH is as common in Nigeria as they are in the developed world.**

**Research question three sought to ascertain the prevalence of prostate problems among adult males in Obio/Akpor LGA from January2018 to January 2021 by their ages. Table 6 showed that age cohort 40 – 49 years had 5.5 per cent prostate problems; age 50 – 59 years 14.7 per cent had prostate problems, age 60 – 69 years 31.0 per cent had prostate problems, and finally age ≥ 70 years 48.8 per cent had prostate problems. Finding in this research concurred with that of Hurst et al. (2009): Sekhaoacha et al. (2022) which indicated that on a microscopic level, BPH can be seen in the vast majority of men as they age of 70 years, around the world. However, rates of clinically significant, symptomatic BPH vary dramatically depending on lifestyle. Men that lead a western lifestyle have a much higher incidence of symptomatic BPH than men that lead a traditional or rural lifestyle. Prostate problems are common among older men (40%) (Bhat et al., 2022; Cittadini et al., 2021; Roehrborn & McConnell, 2002; Termini et al., 2020). Kevin et al. (2012): Cuzick et al. (2014) reported that prevalence of prostate problems increases with age. The present result was, therefore, expected because as men age, prostate gland enlarges leading to BPH and probably to other prostate problems.**

**Table 8 showed no significant association in the prevalence of prostate problems among adult in Obio/Akpor LGA (P=.616). This is supported by National Health Institute (NHS) (2022) report that prostatitis can come at any age, but usually between the 30s-50s since adenomatous prostatic growth is believed to begin at approximately age 30 years.**

**Research question four sought to ascertain the prevalence of prostate problems among adult males in Obio/Akpor LGA from January 2018 to January 2021 by the year of examination. From Table 7, it was found that the prevalence increases yearly: 18.1% in 2018, 23.3% in 2019; 27.3%) in 2020 and 31.3% in 2021. This was supported by the study conducted by Faridah (2019) who found that the incidence of prostate cancer is on the increase among Africans.**

**Conclusion**

**The prevalence of prostate problems among adults in Obio/Akpor LGA was high (32.3%) from January 2018 to January 2021. BPH was the most prevalent prostate problem among adults aged forty and above in Obio/Akpor LGA followed by prostatitis, while cancer of the prostate (CaP) was the least prevalent of all cases. The highest prevalence of prostate problems was recorded among cohorts aged ≥ 70 years, while the least prevalence was among cohorts aged 40 – 49 years. The prevalence of prostate problems increased yearly. There is no significant association in prostate problems among adults of various age cohorts.**

**Recommendations**

 **On the basis of the findings and conclusions drawn from this study, the researchers made the following recommendations:**

**There is urgent need to embark on community mass education on prostate problems. Both governmental and non-governmental organizations should organize health talks, seminars, workshops and health counseling sessions for men who are forty years and above.**

**There should be patient focused information available for men before the condition arises and in the course of the problem by health care workers.**

**Proper education of health professionals by academic institutions and employers of labor through trainings and re-trainings is essential. This will assist in the proper and early diagnosis and management of prostate problems.**

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