# PATTERN OF PROSTATE CANCER AMONG A NIGERIAN POPULATION: A STUDY IN A SINGLE TERTIARY CARE CENTRE

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## ABSTRACT

### BACKGROUND
Prostate cancer has become a global health challenge because of its rising morbidity and mortality in males. It is the second cause of cancer death following lung cancer in men. It is rare under the age of 40 and its incidence has been shown to increase exponentially with age. Previously, Prostate cancer was thought to be a disease rare in blacks owing to the fact that not so much was known of the disease.

AIM AND OBJECTIVES: The objective of the study was to review the prevalence, pattern of presentation and clinic-pathologic findings of prostate cancer in the Department of Radiotherapy, Lagos University Teaching Hospital (LUTH), between January 2001 to December 2010 in comparison to previous and recent studies globally.

METHODOLOGY: Data collection for all patients histologically diagnosed with Prostate cancer at the Department of Radiotherapy, LUTH, from 1st of January 2001 to 31st of December 2010 was done.
Results: A total of 144 cases with histologically confirmed Prostate cancer seen during the ten year study were analysed. The highest frequency was seen in the year 2010 with 34 cases. The age range was 41 to 81years with a mean of 66.19 ±7.30years. Adenocarcinoma was the commonest histological type with 98.6%. 9(6.3%) patients had a positive family history of prostate cancer out of which 3(33.3%) had their brother affected the malignancy. 51(35.4%) patients presented with stage IV disease. 18(12.5%) patients had a Gleason's score of 6, 10(6.9%) patients had a Gleason's score of 7 and 2(1.4%) patients had a Gleason's score of 10. The most common presenting complaints were bone pains seen in 51(35.4%) patients, frequent night urine and difficulty with micturition seen in 50(34.7%) and 42(29.2%) patients respectively.

CONCLUSION: This study showed that prostate cancer is not as rare as it used to be. Reasons attributed to its rarity then were lack of awareness, poor screening facilities and poor diagnosing technique.

KEYWORDS: prostate cancer, presentation, tumour characteristics, Nigeria

## INTRODUCTION

Prostate Cancer is the most common malignancy in Nigerian males and also in elderly males worldwide[1,2]. It is the second cause of cancer death following lung cancer in men[3]. It is rare under the age of 40 and its incidence has been shown to increase exponentially with age[4]. The life time risk of Prostate Cancer is approximately 16%; but the lifetime risk of Prostate Cancer Death is only 3.4%[5].

Previously, Prostate cancer was thought to be a disease rare in blacks owing to the fact that not so much was known of the disease. The risk of prostate cancer among Black- Africans has a 30-50 times difference while native Japanese and Chinese men are at lowest risk of the spectrums[3]. In Nigeria, a hospital based study showed incidence of 127/100,000 cases with a national population risk of 2%[6]. This was compared to its low incidence in previous years owing to gross underestimation of the disease.

The incidence of prostate cancer in developing countries is at a surge with increased use of screening techniques using digital rectal examination(DRE) and serum concentration of prostate specific antigen (PSA). The screening techniques have led to more diagnosis of prostate cancer and early stage diagnosis.

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However, despite the increased use of screening techniques late presentation still accounts for increased morbidity and mortality rate of this disease and is still a dilemma as it is prevalent in developing countries. In Nigeria, a study showed that approximately 80% of patients present late with approximately 60% presenting with metastasis[1]. This has been attributed to the fact that most often times the diagnosis is missed and those who are diagnosed fail to come back for treatment due to socio-cultural reasons.

The histology of prostate cancer could be favourable or unfavourable. A study showed that favourable histological types (adenocarcinoma) are commoner[3]. Patients with well differentiated types and localised disease have excellent prognosis but owing to late presentation with metastasis this tends to increase morbidity and mortality rates.

The aim of this study was to report the prevalence, pattern of presentation and clinico-pathological findings seen in patients receiving treatment at LUTH which as a tertiary referral centre provides care for Uro-oncology cases.

## MATERIAL AND METHODS
This is a retrospective review study of all patients with histologically confirmed Prostate Cancer cases in the medical records register and seen in the Department of Radiotherapy, LUTH, Lagos State between 1st of January 2001 and 31st of December 2010. The data for this research was obtained from the case notes of the patients. All possible information including patients' age, clinical presentation, Gleason's score, histology and stage were evaluated.

Statistical analysis was done using the Statistical Package for the Social Sciences version [17]. Analysed data is presented in the form of frequency tables, charts and cross tabulations.

Ethical approval was obtained from the Ethical and Research committee of LUTH, Lagos State where the study was done.

## RESULTS
A total of one hundred and forty four cases met the inclusion criteria for the study and were analysed. Patients were referred from all over Nigeria to the Radiotherapy department for treatment (Table 1.0). The age range was 41 to 81years with a mean of 66.19 ±7.30years. Sixty-four (44.4%) patients were between the age ranges of 61-70years while one (0.7%) was in the age group of 41-50years (Figure 1.0). One hundred and thirty-seven (95.1%) patients were married while four (2.8%) were widowed. 44(30.6%) patients were civil servants both retired and non-retired, while 1(0.7%)

was a farmer (Table 2.0). Majority of the patients 122(84.7%) were Christians and 22(15.3%) were Muslims. 82(56.9%) patients were Yorubas by tribe while 33(22.9%) were Igbos and 29(20.1%) were from the minority, none was from the northern part of Nigeria. 79(54.9%) patients had tertiary level of education, while 9(6.3%) and 5(3.9%) had secondary and no formal level of education respectively (Table 2.0). 25(17.4%) of the patient consume alcohol while 24(16.7%) had a smoking history. Majority of the patient 109(72.2%) neither smoke nor consume alcohol (Table 2.0). 9(6.3%) patient had a positive family history of prostate cancer in which 3(33.3%) had their brothers affected while the others 6(66.7%) had a close relative eg Uncle affected by the disease. 51(35.4%) patients presented with stage IV disease, 9(6.3%) with stage III and 15(10.4%) had stage II disease. 69(47.9%) patients had no record of their staging at presentation (Table 3.0).

The most common histology was adenocarcinoma with 142 (98.6%) and 2(1.4%) had small cell carcinoma (Table 4.0).

The Gleason's score ranges from 2-10 and the mean score was 6.04±1.98. 18(12.5%) patients had a Gleason's score of 6 while 3(2.1%) patients had a Gleason score of 2, it was not recorded in 61.8% of patients (Table 5.0).

26(18.1%) patients had anaplastic/poorly differentiated adenocarcinoma and 8(5.6%) had well differentiated adenocarcinoma. 104(72.2%) had no record of their histologic grade (Figure 2.0). The most common presenting complaints were bone pain 51(35.4%), frequent night urine 50(34.7%), difficulty with micturition 42(29.2%), weak urine flow 22(15.3%), burning painful urine 22(15.3%), erectile dysfunction 6(4.2%), painful ejaculation 1(0.7%) and hematuria 10(6.9%) (Table 6.0).

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TABLES

Table 1.0: The number of Prostate cancer cases seen in the Department per year (2001-2010).

| Years of presentation | Frequency | Percentage (%) |
|---|---|---|
| 2001 | 12 | 8.3 |
| 2002 | 13 | 9.0 |
| 2003 | 9 | 6.3 |
| 2004 | 9 | 6.3 |
| 2005 | 5 | 3.5 |
| 2006 | 10 | 6.9 |
| 2007 | 15 | 10.4 |
| 2008 | 7 | 4.9 |
| 2009 | 30 | 20.8 |
| 2010 | 34 | 23.6 |
| Total | 144 | 100.0 |

Table 2.0: The Socio-demographic characteristics of patients with Prostate cancer presenting in LUTH from 2001 to 2010.

| N=144 | Frequency | Percentage (%) |
|---|---|---|
| Marital Status | | |
| Married | 137 | 95.1 |
| Separated | 3 | 2.1 |
| Widowed | 4 | 2.8 |
| Occupation | | |
| Civil servant | 44 | 30.6 |
| Trader | 21 | 14.6 |
| Farming | 1 | 0.7 |
| Teacher | 2 | 1.4 |
| Medical doctor | 3 | 2.1 |
| Others | 73 | 50.7 |
| Education | | |
| None | 5 | 3.5 |
| Secondary | 9 | 6.3 |
| Tertiary | 79 | 54.9 |
| Others | 51 | 35.4 |
| Ethnicity | | |
| Yoruba | 82 | 56.9 |
| Igbo | 33 | 22.9 |
| Others | 29 | 20.1 |
| Religion | | |
| Christianity | 122 | 84.7 |
| Islam | 22 | 15.3 |
| Social habits | | |
| Smoking | 24 | 16.7 |
| Alcohol Intake | 25 | 17.4 |
| Smoking and Alcohol | 13 | 9.0 |
| None | 109 | 72.2 |
| Family History of Prostate cancer | | |
| Yes | 9 | 6.3 |
| No | 135 | 93.7 |

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Table 3.0: The Distribution of stages of the disease.

| Presentation Stage | Frequency | Percentage (%) |
|---|---|---|
| II | 15 | 10.4 |
| III | 9 | 6.3 |
| IV | 51 | 35.4 |
| Not recorded | 69 | 47.9 |
| Total | 144 | 100.0 |

Table 4.0: Frequency Distribution of type of Histological diagnosis of Prostate cancer among patients in LUTH (2001-2010).

| Histology Type | Frequency | Percentage (%) |
|---|---|---|
| Adenocarcinoma | 142 | 98.6 |
| Small cell carcinoma | 2 | 1.4 |
| Total | 144 | 100.0 |

Table 5.0: Frequency distribution of Gleason's score.

| Gleason's Score | Frequency | Percentage (%) |
|---|---|---|
| 2.00 | 3 | 2.1 |
| 3.00 | 2 | 1.4 |
| 4.00 | 10 | 6.9 |
| 6.00 | 18 | 12.5 |
| 7.00 | 10 | 6.9 |
| 8.00 | 7 | 4.9 |
| 9.00 | 3 | 2.1 |
| 10.00 | 2 | 1.4 |
| Not recorded | 89 | 61.8 |
| Total | 144 | 100.0 |

Table 6.0: Frequency distribution of presenting complaints.

| Complaints | Frequency | Percentage (%) |
|---|---|---|
| Bone pain | 51 | 35.4 |
| Frequent night Urine | 50 | 34.7 |
| Difficulty with micturition | 42 | 29.2 |
| Weak/Interrupted Urine Flow | 22 | 15.3 |
| Burning Painful Urine | 22 | 15.3 |
| Erectile dysfunction | 6 | 4.2 |
| Painful Ejaculation | 1 | 0.7 |
| Bloody Urine | 10 | 6.9 |
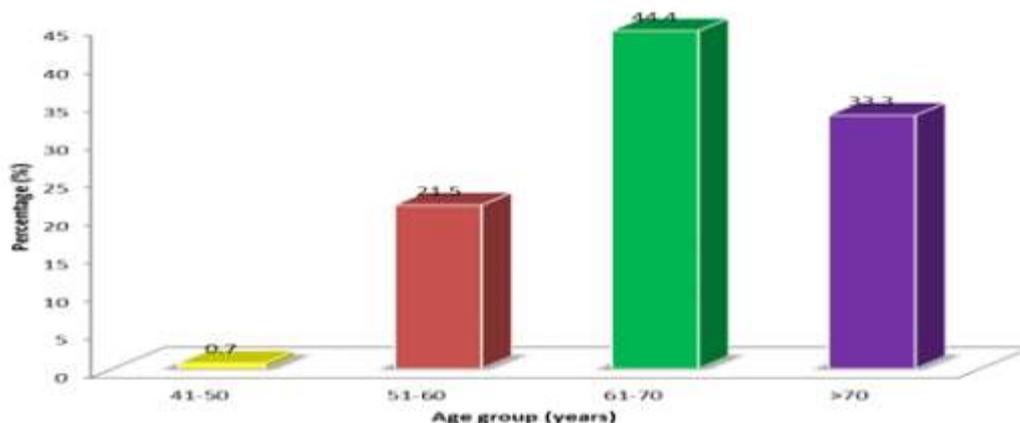
Figure 1.0: Age distribution of the 144 cases of Prostate cancer.



■ Anaplastic / poorly differentiated ■ Moderately differentiated
■ Well differentiated ■ Not recorded
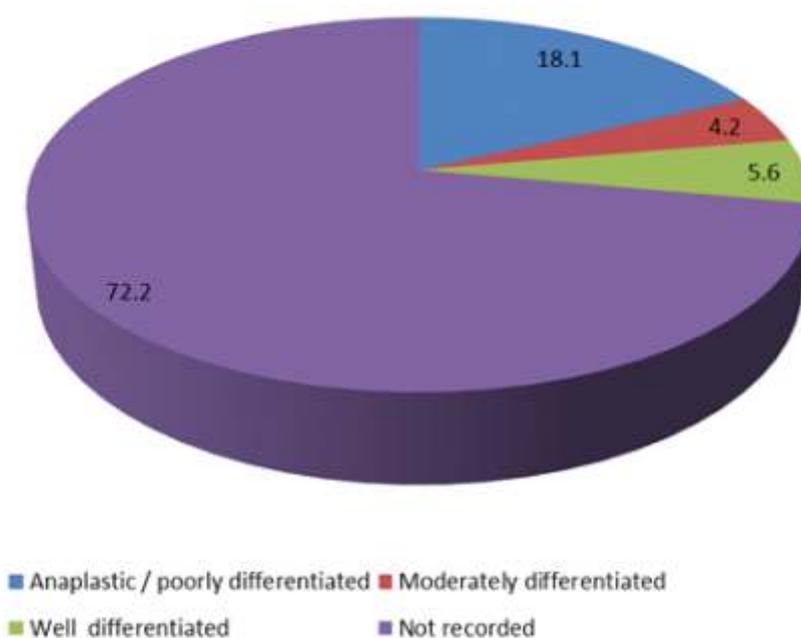
Figure 2.0: The distribution of histologic grade.

## DISCUSSION

The one hundred and forty-four prostate cancer patients analysed during the study period represented 3.1% of malignancies seen within the study period. It accounted for 12.1% of all male cancers seen over this period. The highest number of patients recorded was 34(23.6%) in 2010. The study showed arise in incidence of Carcinoma of the Prostate, this indicates that despite the paucity of screening programs in Nigeria, the number of prostate cancer casesis still on the increase[1].The incidence in this study is comparable to other studies from Kano, Zaria, Benin and Maiduguri

with incidence of 16.5%, 9.2%, 7.13% and 6.15% of all male cancers respectively[7]. These results are contrary to previous perception on the rarity of the disease in Africa. The lowest number of cases were 9(6.3%), 5(3.5%) and 7(4.9%) seen in 2002, 2005 and 2007 respectively. Low number of cases seen during this period may be due to lack of radiotherapy machine or machine break down or facility short down during strike action of health workers. It was evident that several patients treated during this period had radiotherapy at nearby facilities and still came back to continue treatment at the clinic.

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The mean age of Prostate cancer patients seen in Radiotherapy department was 66.19 ±7.30years and is comparable with what was found in earlier studies[1, 8-12]. In South-west Nigeria a study done by Ogunbiyi et al showed a median age of 67.5 years (variance 5.6), and mean age 71.4 years (variance 14.3)[1]. Mean ages of 70 and 67.1years where recorded in Eastern and Northern Nigeria respectively[12, 13]. Heavy/long-term smoking is associated with an 11–22% increase in risk of prostate cancer, and current smokers have a 14% increased risk of dying of prostate cancer, with a risk increase of 24–30% for those with the highest exposures, according to a meta-analysis[14]. The social habits of tobacco and alcohol consumption which was implicated in some studies was not specified in majority of patient case files. There is no association between alcohol consumption and prostate cancer risk[15, 16]. International Agency for Research on Cancer (IARC) does not currently classify smoking as a cause of prostate cancer[17].

A history of prostate cancer in a first-degree relative increases risk of the disease by 120–150%[18]. The risk for men with an affected father is increased by 112–140%, while those with an affected brother have a 187–230% risk increase[18]. In this study 9(6.3%) patients had a family history of prostate cancer and 3 of the patients had the disease in their brother. Previous studies reveal that the incidence of prostate cancer is hereditary in less than 5% of cases[4, 19].

The distribution of patients according to geographical region indicated that the highest number of patients seen were from the southern part of the country, with the northern region accounting for a lower incidence. This may not be a true representation as the patients may have been referred to other radiotherapy centres closer to them. The prevalence rate seen in our study done in South West Nigeria is similar to that found in Northern and South Eastern part of the country as reported by a study done by Akinremi et al[7]. This has shown that there is no ethnic variation in the prevalence of Prostate cancer in Nigeria which may be due to racial homogeneity of the country.

The majority of patients reviewed were Civil servants (both serving and retired) by occupation. This may not be due to occupational hazard they are exposed to at work but may be attributed to their literacy status (educational status) which has influenced their level of awareness and thus their decision to present for treatment.

Histologically, adenocarcinoma was the commonest cell type 142(98.6%) found in this study. Several studies have shown that adenocarcinoma is prevalent in other parts of the country[1, 20-23]. Small cell carcinoma of the prostate is rare accounting for less than 1% of prostate cancer4. We recorded 2 (1.4%) cases of small cell carcinoma of theprostate. Other studies done in Nigeria also showed low incidence of small cell carcinoma while those in Ibadan had no record of small cell carcinoma1. The prognosis of small cell carcinoma is poorthis is evident in this study. 1 of the 2 patients who had small cell carcinoma had metastatic disease. Other histological variants though rare seen in the South-south and South-western part of the country were squamous cell carcinoma and adenosquamous[21,24].

Most often early stages of Prostate cancer is asymptomatic, patients usually present with symptoms of frequent night urine, dysuria, erectile dysfunction, haematuria, bloody semen and bone pain in late or advanced stages. The commonest complaints were those of bone pain 51(35.4%) closely followed by obstructive and irritative symptoms which includes frequent night urine 50(34.7%), difficulty with micturition 42(29.2%), weak interrupted urine flow 22(15.3%), burning painful urine 22(15.3%), painful ejaculation 1(0.7%), bloody urine 10(6.9%). Ahmed et al in their study reported that 54(25%) of their study population wereAsymptomatic,126(58%) had irritative symptoms, 13(6%) Obstructive symptoms while 23(11%) Bone pain (deposits)[25]. Bone pain is a common symptom of patients with bone metastasis. Majority of the patients seen in the clinic presented in late stages and were referred for Radiotherapy.

Late presentation of patients has been reported in many studies conducted in the country which leads to unfavourable outcome. The delay in presentation is attributed to poverty and ignorance on the part of the patient, lack of adequate treatment facilities and incompetence of some primary physicians in suspecting the disease and effecting early referral.

The stage, grade and histology is considered the most important prognostic factor in prostate cancer, other factors includes PSA level, patient's age and comorbidities. Majority of patients presented with adenocarcinoma (98.6%) and had poorly differentiated carcinoma accounting for 18.1%. 104 patients had no record of their histologic grade. 51 patients had stage IV disease. PSA evaluation was not routinely done in the early part of the study as there were few skilled centres for doing the investigation. Some patients had been commenced on hormonal therapy for years before presenting to the clinic with advanced disease and had no record of previous PSA values. The Gleason score showed a predominance of scores 6 and 7 (moderately

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differentiated), patients with higher Gleason scores have more aggressive disease and tend to have worse prognosis than those with well differentiated disease[25,26].

## CONCLUSION

The burden of Prostate cancer is a global challenge because of its increasing rate of morbidity and mortality. The prevalence was seen to have increased over the years with majority of the patients presenting in late stages. Despite the advances made in trying to combat the disease with the use of screening modalities a greater number of patients still present in late stages.

The disease has also been linked to race, familial association and genetic factors. However in this study there was no strong link with familial association which could be attributed to patient's unwillingness to disclose such information or not even knowing the cause of death of their relatives.

Major Prognostic factors in this study were stage at presentation and histological type. Inadequate staging of the disease is still a challenge as several patients did not have a Gleason score, this is a significant prognostic index. Late presentation, irregular follow ups and poverty contributed to the poor outcome seen in most cases. Late presentation is still a dilemma in developing countries and the need for a collaborative effort is imperative.

## RECOMMENDATION

There is a need to collate figures and improve education and knowledge. Gleason scoring should be mandatory for all patients. Social workers, religious leaders and the community should be involved in patient care, to help reduce the rate at which patients are lost to follow up. They should be encouraged to help to improve advocacy and screening of prostate cancer.

The government should ensure funding of quality controlled population based screening programmes in all geopolitical zones in the country which will ensure that men above the age of 50years should have yearly PSA evaluation as a government policy and at subsidized rates or no cost to the individuals.

## LIMITATIONS

It was a retrospective study and some case notes were not available for study. Some information where not supplied in the case notes for analysis such PSA values.

## REFERENCES

1. Ogunbiyi JO, Shittu OB. Increased Incidence of prostate cancer in Nigerians. J Nat.Med. Assoc.1999;91:159 – 164

2. Aus G, Abbou CC, Bolla M, Heidenreich A, Joniau S, Maveev V,Schmid HP, Zattoni F. Guidelines on Prostate Cancer.Eur Urol. 2005.Oct; 48(4): 546-51 [Pubmed].

3. Perez CA,Luther WB. Principles and Practice of Radiation Oncology. 3rded, Lippincott-Raven,Philadelphia,1997, 1583-676

4. Price P and Sikora K. Treatment of Cancer. 4th ed, United Kingdom, Arnold, 2002, 633-642

5. RamaswamyGovindan. The Washington Manual of Oncology. 2nd ed, United States of America, Lippincott Williams & Wilkins,2007,236

6. OsegbeDN. Prostate cancer in Nigerians: Facts and Non–Facts. J Urol. 1997 Apr;157(4):1340 – 3.

7. Akinremi TO, Ogo CN and Olutunde OA. Review of prostate cancer research in Nigeria. Infectious Agents and Cancer 2011, 6(Suppl 2):S8

8. Dawam D, Rafindadi AH, Kakayi GD. Benign Prostatic Hyperplasia and Prostatic carcinoma in Native Africans (Br J Urol 2000; 85: 1074)

9. Akumabor P, Alighe JU, Flora AM. Management of prostatic cancer among patients presenting with prostatic disease in single Urology Practice in Southern Nigeria. UICC World Cancer Congress July 8-12,2006 Washington D.C,USA

10. Young JL Jr, Percy CL, Asire AJ. (1981) Cancer incidence and mortality in the United States 1973-77. Natl. Cancer Inst. Monogr. 57, 1-1081.

11. Glover FF, Coffey DS, Douglas LL, Cadogon M, Russel H, Tulloch T, et al. The epidemiology of prostate cancer in Jamaica J Urol 1998; 159: 1984 – 8

12. Obiorah CC, Nwosu SO. A histopathologic study of carcinoma of the prostate in Port Harcourt, Nigeria. Niger J ClinPract. 2011 July – Sept ; 14(3): 363 -7

13. Mohammed AZ, Alhassan SU, Edino ST, Chicha O. Histopathological review of prostatic diseases in Kano, Nigeria. Niger Postgrad Med J 2003 Mar; 10(1): 1-5. [Pubmed]

14. Huncharek M, Haddock KS, Reid R, Kupelnick B. Smoking as a risk factor for prostate cancer: a meta-analysis of 24 prospective cohort studies. Am J Public Health 2010; 100: 693-701.

15. Rota M, Scotti L, Turati F, et al. Alcohol consumption and prostate cancer risk: a meta-analysis of the dose-risk relation. Eur J Cancer Prev 2012; 21: 350-9.

16. Bagnardi V, Blangiardo M, La Vecchia C, Corrao G. A meta-analysis of alcohol drinking and cancer risk. Br J Cancer 2001; 85: 1700-5.

17. Cogliano VJ, Baan R, Straif K, et al. Preventable exposures associated with human cancers. J Natl Cancer Inst 2011;103: 1827-39.

18. Bruner DW, Moore D, Parlanti A, Dorgan J, Engstrom P. Relative risk of prostate cancer for men with affected relatives: systematic review and meta-analysis. Int J Cancer 2003; 107: 797-803.

19. Hayes RB, LIff JM, Pottern LM, et al.(1995) Prostate cancer risk in U.S. blacks and whites with a family history of cancer. Int. J. Cancer 60,361.

20. Malami SA, Pindiga UH, Abimiku BA, et al. A descriptive retrospective study of the pattern of malignant disease in Sokoto. Northwestern Nigeria (1999-2004). J Med Sci. 2007; 7: 1033-1038.

21. Ekwere PD, Egbe SN. The changing pattern of prostate cancer in Nigerians: Current status in the Southeastern States. J Natl Med Assoc. 2002; 94: 619-627.

22. Mandong BM, Iya D, Obekpa PO, Orkar KS. Urological tumours in Jos University Teaching Hospital, Jos, Nigeria. (A hospital-based histopathological study) Niger J Surg Res. 2000; 2: 108-113.

23. Udeh FN. Prostatic car cinoma in Nigeria: 10year retrospective study. IntUrolNephol. 1981; 13: 159-166.

24. Badmus TA, Adesunkanmi AK, Yusuf BM, et al. Burden of Prostate cancer in Southwestern Nigeria. Urology 2010; 76: 412-416

25. Elabbady A, Eid A, Fahmy A, Kotb AF. Pattern of prostate cancer presentation among the Egyptian population: A study in a single tertiary care center. Central European Journal of Urology. 2014;67(4):351-356.

26. Contran RS, Kumar V, Collins V.Robbins Pathologic Basis of Disease. 6thed, United State of America, W.B Saunders Company,1999,1029-1033.

27. Eifler JB,FengZ, Lin BM,Partin MT, Humphreys EB, Han M, Epstein JI, Walsh PC. An updated prostate cancer staging nomogram (Partin tables) based on cases from 2006-2011.PartinJames Buchanan Brady Urological Institute and the Department of Urology, Johns Hopkins Medical Institutions, Baltimore, MD, USA. Accepted for publication 23 March 2012.