

The Prevalence Rate and Age-Range of Prostate Cancer at Ndola Teaching Hospital for the Past Five Years

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Abstract

With 1.1 million known cases, prostate cancer is the second most common type of cancer among men. It is second only to lung cancer which affects over 1.2 million men worldwide. African men suffer disproportionately from Prostate cancer compared to many parts of the world. Evidence shows that mortality rates from Prostate cancer are generally higher in predominantly Black African populations compared to other races. A cross sectional study design was conducted on 77 records for patients who were subjected to prostate tissue biopsy which was collected routinely at Ndola Teaching Hospital from 2017-2019. Analysis of data was done using SPSS V 26.0. The study revealed the decrease in the incidence rate and prevalence rate of prostate cancer, no association between age of patient and prostate cancer diagnosis and majority of patients are from within, Ndola with a minute number coming from outside Ndola. Gleason score is the grading system used at NTH and the majority of malignancies were graded. The practice of prostate cancer screening was associated with age and family history of cancer.

Keywords: Prostate Cancer • Prostate specific antigen • Tumor marker • Urbanization

Introduction

Cancers are leading causes of death worldwide. Despite some remarkable advances in the early cancer detection, treatment and prevention, the incidence and mortality rates of all cancers have increased worldwide. Cancers accounted for 13% of all deaths in 2008. The incidence of all cancers is increasing in developing countries. Developing countries accounted for approximately 51% of all cancers worldwide in 1975, and this proportion has increased to 55% in 2007, and it is now projected that by 2050, developing countries will account for 61% of all cancers.

The cancers attributable to infection are almost three times higher (26%) in developing countries than in developed countries (8%) and the oncogenic infections that have been linked to the cancers are human papilloma virus (HPV), hepatitis B virus (HBV), *Helicobacter pylori*, Epstein Barr virus (EBV) [1]. The Human Immuno-Deficiency Virus predisposes people especially those of the sub-Saharan countries to AIDS-related malignancies such as cervical cancer, Kaposi's sarcoma and lymphomas.

Adenocarcinoma of the prostate gland occurs mainly in men older than 50 years. Carcinomas of the prostate arise most commonly in the outer, peripheral gland and may be palpable by rectal examination, although currently many are nonpalpable. Grading of prostate cancer by the Gleason system correlates with pathologic

stage and prognosis. Prostate cancer is a leading cancer diagnosis and cause of cancer-related deaths among men. Because of the higher incidence of and relatively good survival for prostate cancer incidence, the prevalence of this disease is high. Prostate cancer incidence rates are higher in magnitude, particularly in order age groups and among black men.

There is plausibly a large gap in data on incidence and mortality rates of prostate cancer, leading to potential underreporting of incidence rates. There are also different awareness related gaps in developing and developed countries. Improved surveillance systems need to be established in order improve early detection screening programs and prioritized interventions for evidence-based policy for prostate cancer in all countries [2]. Prostate cancer is a disease that is becoming an important public health concern worldwide. According to the World Health Organization, in 2012, prostate cancer was the second most common cause of cancer in men and fourth most common cause of cancer in both genders worldwide. About 1 man in 9 will be diagnosed with prostate cancer during his lifetime. Prostate cancer develops mainly in older men and African-American men. About 6 cases in 10 are diagnosed in men aged 65 years and above and it is very rare in men aged belongs 40 years. Prostate cancer is the second leading cause of cancer death in American men, behind lung cancer. About 1 man in 41 will die of prostate cancer.

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Materials and Methods

This is a retrospective study based on the pathology reports of specimens reviewed at the University Teaching Hospital (UTH) pathology laboratory in Lusaka, Zambia, from January 1997 to December 2005. UTH is the main reference hospital in Zambia and has a catchment area covering 1.3 million people. The most common cancer among men was Kaposi’s sarcoma followed by cancer of the eye, soft tissue sarcomas and cancer of the prostate. The most common cancer among women was cancer of the cervix, followed by cancer of the eye, cancer of the breast and Kaposi’s sarcoma. Non-Hodgkin’s lymphoma is the fifth most common cancer in both men and women. There has been a significant change in the pattern of malignancies at the UTH over the last 20 years, with an increase in Kaposi’s sarcoma, cancer of the cervix and cancer of the eye. There are significant changes in these statistics due to the change of lifestyle of the people of Zambia and due to the increase of knowledge in management of some conditions that resulted into cancer.

The incidence of Kaposi’s sarcoma has increased concomitantly with the increased prevalence of HIV, as demonstrated in Zambia. Consequently, Kaposi’s sarcoma was the most prevalent cancer in men in the current study; this is in agreement with studies in the same region and in particular in Zambia.

Factors that contribute to the development of prostate cancer in Zambia have not yet been established. In other countries, prostate cancer screening using PSA testing has reduced the incidence and mortality of this cancer. In Zambia, the incidence of prostate cancer was reported to have increased by 55% in the last 20 years, and this increase was attributed to better health education and improved urological services such as PSA testing and prostatic biopsy. Despite these findings, there is a need to further promote the importance of prostate cancer screening. Kaposi’s sarcoma is AIDS related cancer and it usually develops in the end stages of AIDS or when the CD4 counts is very low. Therefore, with this increase in HIV and AIDS treatment and sensitization, there is a decrease in cases of Kaposi’s sarcoma. Prostate cancer can be the most prevalent cancer or the second to lung cancer due to an increase in cigarette smoking in Zambia. The study was done at Ndola Teaching Hospital based in Ndola, Copper belt Province in Zambia. The site was chosen for ease accessibility by the researcher. Ndola Teaching hospital has 502 beds and 97 cots. According to CSO (2010), Ndola, district has an area of 965 square kilometers and a population of 455,194. The study was a cross sectional study that involved analysis of patients’ records of prostate cancer and screening for prostate cancer. The study design was chosen because it is simple to use, cost-effective and time economic.

Results

Demographics

Seventy seven patient’s files were entered in the study, which was made up of only males as there are no female patients with prostate gland and its associated conditions (prostate cancer). The age ranges were distributed as <40, 40-50, 51-60, 61-70, 71-80 and >80

years old. The age range with the highest number of prostate tissue biopsy results was 61-70 years with a frequency of 33 and a percentage of 42.9% followed by 71-80 years with a frequency of 28 and a percentage of 36.4% (Table 1).

Area of residence		Frequency	Percent	Valid percent	Cumulative percent
Valid	Outside Ndola	8	10.4	10.4	10.4
	Ndola	69	89.6	89.6	100
	Total	77	100	100	

Table 1: Area of residence.

According with the study it shows that the year 2019 recorded least number of cases of prostate tissue biopsy 12 (15.6%) followed by the year 2018 with 30 (39.0%). 2017 recorded the highest number of cases of prostate tissue biopsy 35 (45.5%). The figure below summarizes the number of prostate tissue biopsy done.

A lot of reasons due to which the workers step back from confessing errors committed by them were also observed and the way of approach of management towards error consequences was witnessed to be one of the reasons for it. The following charts illustrate the respective responses (Figure 1).

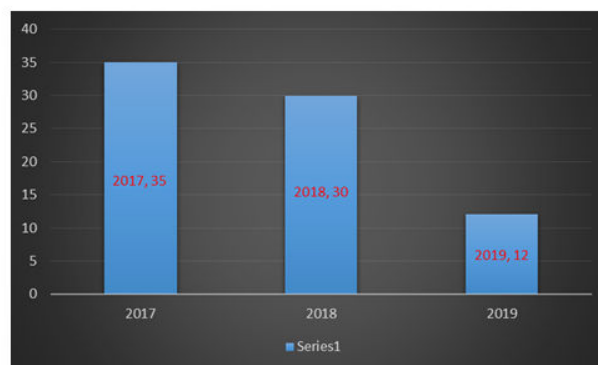


Figure 1: Year of diagnosis and change in magnitude.

Histopathological diagnosed prostate cancer

The seventy seven prostate tissue samples was biopsied, majority of the results were non-malignant and counts 42 with a percentage of 54.5%, the least was malignant and counts 35 with a percentage of 45.5%. The table and figure below shows the prostate tissue biopsy results (Table 2 and Figure 2).

	Frequency	Percent
Non malignant	42	54.5
Malignant	35	45.5
Total	77	100

Table 2: Prostate tissue biopsy cancer results.

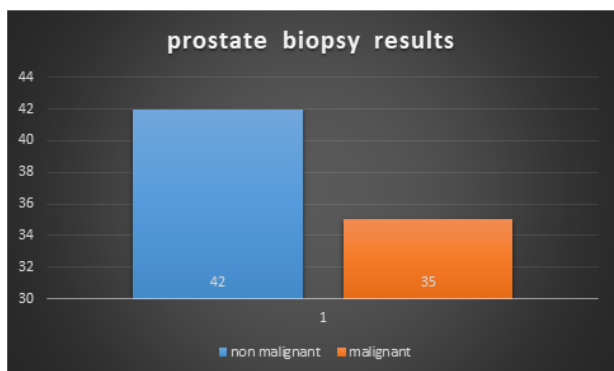


Figure 2: Prostate tissue biopsy results.

Association of age range with prostate tissue biopsy results

The study showed that 35 prostate tissue biopsies were malignant and the distribution among age groups were as follows; 61-70 years recorded the highest number malignancies with 16 (45.7%), then followed by 71-80 years with 12 (34.3%), then 51-60years with 5 (14.3%), the age groups of <40 and 40-50 years had an equal number of malignancies that is 1 each group (2.85%). The p-value is greater than 0.05 (p=0.404) (Table 3).

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Square	Chi- 5.098a	5	0.404
Likelihood ratio	6.989	5	0.221
Linear-by-Linear association	2.544	1	0.111
N of valid cases	77		

Table 3: Association of age of patient with prostate tissue biopsy.

The study further associated age of the patients and history of prostate cancer screening. The results were as follows; the age distribution was <40, 40-50, 51-60, 61-70, 71-80 and >80 years. Out of 10 patients who had history of prostate cancer screening, 2 were in the age range of 71-80 years old, 4 were in the age range of 51-60 years old, 3 were in the age range of 61-70 years old while only 1 patient was less than 40 years old. The p-value was recorded at 0.016 (p<0.05) (Table 4).

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Square	Chi- 13.906a	5	0.016
Likelihood Ratio	10.529	5	0.062
Linear-by-Linear Association	7.865	1	0.005
N of Valid Cases	77		

Table 4: Association of age of patient with prostate screening.

Discussion

The study targeted male patients who were managed as suspected cases of prostate cancer with the prostate tissue biopsy request [3]. The study found the decrease in the prostate tissue biopsy requests and incidence rate of prostate cancer in the recorded years, the calculated incidence was 45.5%.

Thus, this study showed that there was a decrease in the incidence of prostate cancer by 9.5%. These findings can be attributed to the increase in better health education and improved urological services at NTH.

The study found that 1patient among 10patients who had history of prostate cancer screening was in the age range of less than <40 years, in contrast to the available literature indicates that prostate cancer screening should start at 40 years and above.

Literature indicates that the average age of a man to be diagnosed with prostate cancer is about 66 years and above. Our study found that there was no strong association between age of the patient and prostate cancer with the p-value of 0.404.

The study further showed that the age range with the highest number of prostate malignancies was 61-70 years old with 16 (45.7%), then followed by 71-80years old with 12 (34.3%).

The study found that 19 prostate tissue malignancies out of the 35 total malignancies were graded using the Gleason scoring system.

Grade 1 (Gleason score ≤ 6) recorded the highest number of cases with 13 (68%), followed by grade 3 (Gleason score 7{4+3}) with 3 (16%), then grade 4 (Gleason score 8) with 2 (11%) and grade 2 (Gleason score 7{3+4})) recorded the least number 1 (5%).

However, other studies showed that Clinically significant cancers are defined as having a volume greater than 0.5 ml or have Gleason grades >6, or are locally invasive. Tumors that do not meet any of these criteria are thought to represent clinically insignificant.

Individuals who are at an advanced age are educated about it because of their increased risk. It could also indicate the natural history of how older patients are more likely to have information about prostate cancer as they visit healthcare centers for urologic problems like benign prostate hyperplasia which are quiet frequent.

Our study also found a stronger association between age of the patient and prostate cancer screening, with the p-value of 0.016.

The study found that patients who had a family history of prostate cancer, participated in prostate cancer screening than those with a negative family history of prostate cancer with a strong association,(p-value = 0.000).

Conclusion

The aim of the study was to determine the incidence rate and age-range of prostate cancer in men at NTH. Therefore, the study outcome revealed that there is a decrease in the incidence rate of prostate cancer at NTH by 9.5%. There was no association between age of patient and prostate cancer diagnosis and majority of patients were from within Ndola with a minute number coming from outside

Ndola. Gleason score is the grading system used at NTH and the majority of malignancies were graded. The practice of prostate cancer screening was influenced by age of the patient as well as family history of cancer.

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