PATTERN AND EPIDEMIOLOGIC CHARACTERISTICS OF MALIGNANT TUMOURS SEEN IN RIVERS STATE UNIVERSITY TEACHING HOSPITAL, PORT HARCOURT: A RETROSPECTIVE STUDY FROM JANUARY 2017 TO DECEMBER 2022

ABSTRACT

Aim: To review malignant tumours seen at Rivers State University Teaching Hospital from January 2017 to December 2022 , to assess the gender and age distribution of these tumours and to assess whether there is a correlation between ages of these patients and these malignant tumours.

Place and duration: Department of Anatomical Pathology, River State University Teaching Hospital, Port Harcourt, Nigeria. A retrospective study from January 2017 to December 2022.

Methodology: Four hundred and ninety eight (498) cases were retrieved from the archives of the hospital cancer registry; 19 cases were excluded due to incomplete data. Data were entered into excel spread sheet and analysed using Microsoft Excel (version 2019).

Result: The mean age was 51.7±15.7 years, and the modal age was 51 years. Most of these patients were females (71%). The commonest tumour in females was breast whereas the commonest tumour in males was prostate. There was a correlation between these malignant tumours and age ($\chi^2 = 4.25$; $P = .05$).

Conclusion: Majority of the cancers seen in our institution were diagnosed in females in the age bracket 30-69 years and there is a correlation between age and these tumours.

KEY WORDS: malignant, tumours, cancer, prostate, breast, epidemiologic.

1. INTRODUCTION

Cancer is presently a major public health problem and one of the leading causes of mortality from non-communicable diseases globally; it is second only to cardiovascular diseases. It accounts for 1 in 6 deaths overall globally and 1 in 4 deaths for non-communicable diseases worldwide[1]. In 2022 there were close to 20 million new cases of cancer and about 9.7 million deaths[2]. In Africa, the death rate from cancer is expected to surpass the global average of 30% by 2041[3]. In addition to shortening lifespan, it is associated with far-reaching socioeconomic consequences[4]. In Nigeria, there were 127,763 new cases of cancer and 79,452 deaths in 2022. The majority of these cancer cases were seen in females. The 3 leading cancers in males in descending order of frequency were prostate, colorectal, and liver cancers whereas in females they were breast, cervical, and colorectal cancers[2].

Rationale of this study: This institution is a recently upgraded teaching hospital. It is also a referral centre for oncology cases. There is currently no study from this institution concerning this topic. The outcome of this study will shape oncology and public health services in Rivers State.

2.MATERIALS & METHOD

Data were retrieved from the archives of the hospital cancer registry. Four hundred and ninety-eight (498) cases were seen in the archive over the period; from January 2017- to December 2022. Nineteen (19) cases were excluded due to incomplete data. Patients were anonymized by excluding their names and hospital number for ethical reasons.

This study aims to review malignant tumours seen over six years; the objectives include assessing the age and gender distribution of these tumours and assessing whether there is a correlation between these tumours and age.

Data were entered into Microsoft Excel spreadsheet and were analyzed using Microsoft Excel (version 2019).

3.RESULTS

Majority of the patients were females (71%) as shown in Fig, 1 below. The mean age was 51.7±15.7; the modal and the median ages were 50 and 51 years respectively (table 3).

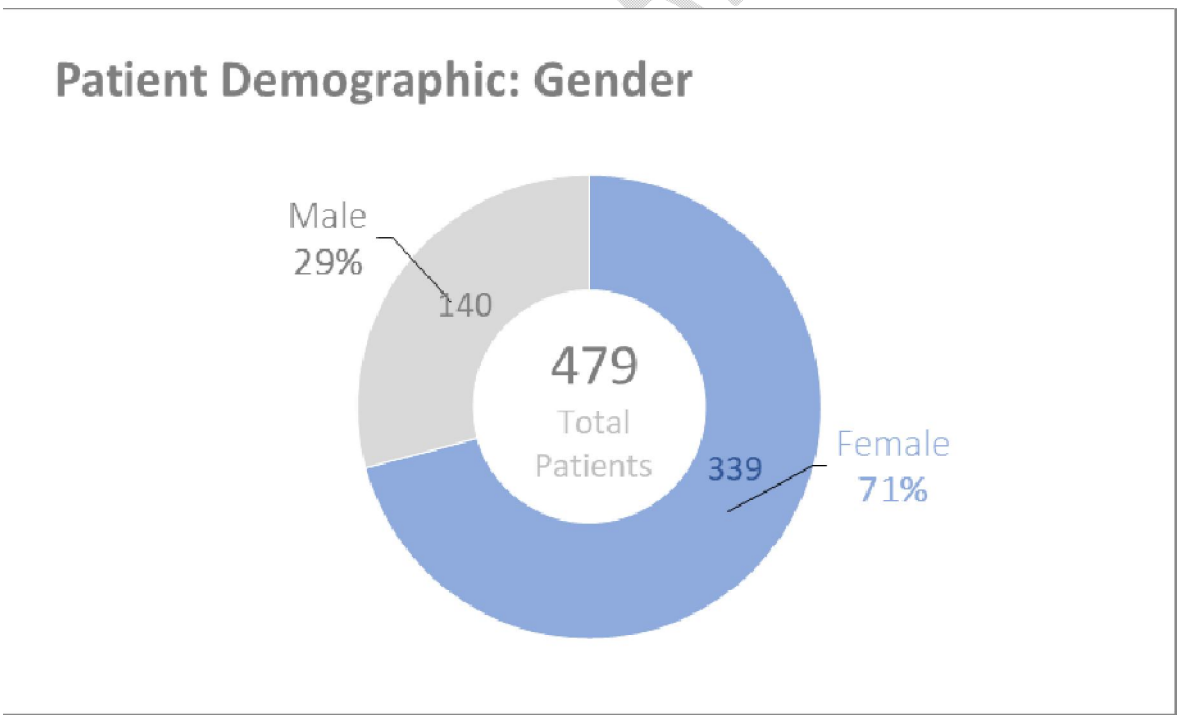

Figure 1: the gender distribution of the cancer patients

The frequency of malignant tumours increased gradually from 0-9 years and peaked in the age group 40-49 years. There was a slight dip in the age group 50-59 years, and a second peak in the 60-69 age group followed by a progressive decline beyond the age group 60-69 years (figure 2). The age groups 0-9 and 90-99 have similar and the least frequency of malignant tumours (Fig. 2).

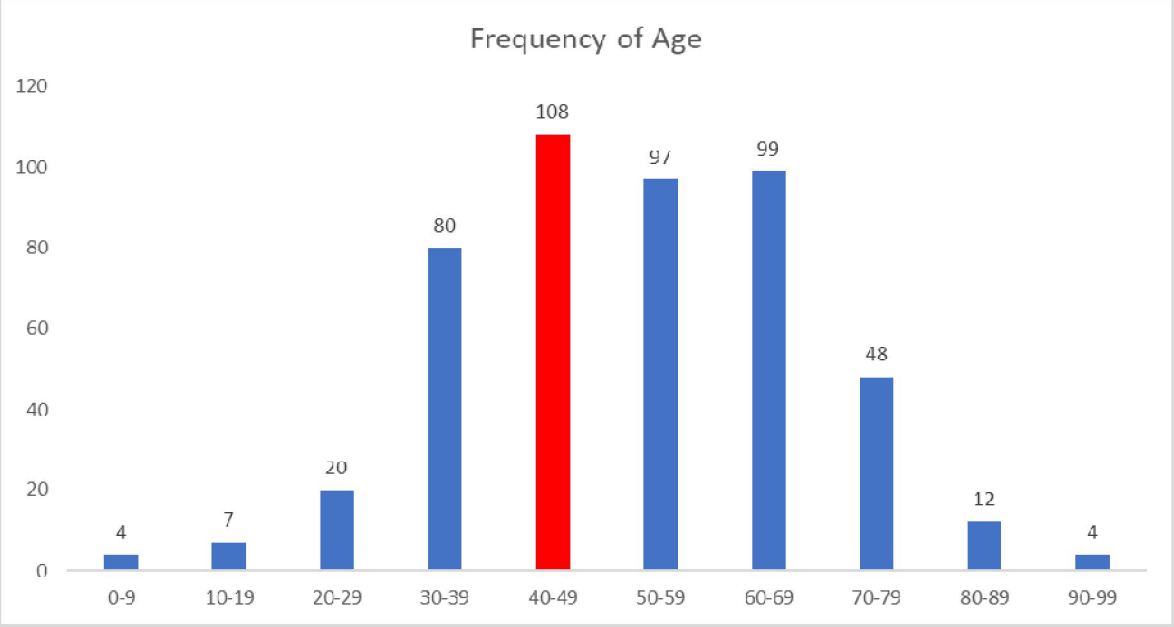

Figure 2: the age distribution of cancers and frequency of the cancers according to various age groups.

Majority of the females had breast cancer as the leading cancer (217 patients). The next common cancers in females was cancer of the female genital tracts (cervical and endometrial cancers) having frequencies of 18 each.

In the same vein, majority of the males had prostate cancer (86 patients) followed by leukemia (table 1)

TABLE 1. SEX DISTRIBUTION OF CANCER DIAGNOSIS

Diagnosis	Female	**Male**
Breast Cancer	217	3
Prostrate Cancer	0	86
Leukemia	17	18
Endometrial Cancer	18	0
Cervical Cancer	18	0
Colon Cancer	9	5
Ovarian Cancer	13	0
Lymphoma	5	8
Multiple Myeloma	8	3
Skin Cancer	6	0
Sarcoma	3	3
Bladder Cancer	3	2
Vulva Cancer	5	0
Anal Cancer	5	0
Colorectal Cancer	1	3

Renal Cancer	2	2
Pancreatic Cancer	3	1
Essential Thrombocythemia	1	2
Retinoblastoma	1	1
Gastric Cancer	1	0
Choriocarcinoma	1	0
Melanoma	0	1
Testicular Cancer	0	1
Polycythemia Vera	1	0
Liver Cancer	0	1
Lung Cancer	0	1

Breast cancer peaked in the age group 40-49 years followed by 30-39 and 50-59 age groups in descending order of frequency.

Prostate cancer peaked in the age group 60-69 followed by 70-79.

TABLE 2: CANCER DIAGNOSIS ACCORDING TO AGE GROUPS

Age	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	Grand Total
Breast Cancer	**0**	**2**	**7**	**57**	**76**	**45**	**25**	**5**	**1**	**2**	**220**
Prostate Cancer	**0**	**0**	**0**	**2**	**1**	**15**	**31**	**26**	**9**	**2**	**86**
Leukemia	**0**	**2**	**3**	**4**	**9**	**6**	**8**	**3**	**0**	**0**	**35**
Endometrial Cancer	**0**	**0**	**0**	**0**	**2**	**8**	**8**	**0**	**0**	**0**	**18**
Cervical Cancer	**0**	**0**	**0**	**2**	**2**	**5**	**7**	**1**	**1**	**0**	**18**
Colon Cancer	**0**	**0**	**0**	**2**	**0**	**4**	**5**	**3**	**0**	**0**	**14**
Ovarian Cancer	**0**	**1**	**1**	**4**	**0**	**2**	**4**	**1**	**0**	**0**	**13**
Lymphoma	**0**	**0**	**6**	**1**	**3**	**3**	**0**	**0**	**0**	**0**	**13**
Multiple Myeloma	**0**	**1**	**0**	**0**	**2**	**3**	**2**	**3**	**0**	**0**	**11**
Skin Cancer	**0**	**0**	**1**	**0**	**2**	**1**	**1**	**1**	**0**	**0**	**6**
Sarcoma	**2**	**0**	**0**	**0**	**1**	**1**	**2**	**0**	**0**	**0**	**6**
Bladder Cancer	**0**	**0**	**0**	**0**	**1**	**1**	**1**	**2**	**0**	**0**	**5**
Vulva Cancer	**0**	**0**	**0**	**2**	**0**	**1**	**2**	**0**	**0**	**0**	**5**
Anal Cancer	**0**	**0**	**0**	**1**	**3**	**0**	**1**	**0**	**0**	**0**	**5**
Colorectal Cancer	**0**	**0**	**0**	**0**	**2**	**1**	**1**	**0**	**0**	**0**	**4**
Renal Cancer	**0**	**0**	**1**	**2**	**1**	**0**		**0**	**0**	**0**	**4**
Pancreatic Cancer	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**2**	**0**	**0**	**4**

Essential Thrombocythemia	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**1**	**0**	**3**
Retinoblastoma	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
Gastric Cancer	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**
Choriocarcinoma	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
Melanoma	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
Testicular Cancer	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
Polycythemia Vera	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**
Liver Cancer	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**
Lung Cancer	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**
Grand Total	**4**	**7**	**20**	**80**	**108**	**97**	**99**	**48**	**12**	**4**	**479**

A CHI-SQUARE test revealed a value of 4.25 *(P = .05)*. This shows that there is a significant relationship between ages of these patients and these malignant tumours.

TABLE 3 (DESCRIPTIVE STATISTICS FOR AGE)

	VALUE
MEAN	**51.7**
MEDIAN	**51**
MODE	**50**
STANDARD DEVIATION	**15.7**
MIN	**2**
MAX	**94**

4.Discussion

Majority of the malignant tumours in this study occurred in women; this is in keeping with a report by World Health Organization in 2022 and other local studies in Sokoto, Benin, Kano, and Nguru (GLOBOCAN 2022, *Sahabi et al, Okobia et al, Yusuf et al, Usman et al*)[2,5,6,7,8].

The modal age in this study was 50 years; which is in keeping with a study in Sokoto by *Sahabi et al*[5]. The mean age was 51 years which is similar to a work done by *Usman et al* in Nguru, North East Nigeria[8]. The most prevalent cancer in male and females were prostate and breast cancer respectively. This is in keeping with WHO report on Nigeria in 2022 and other studies in Sokoto, Kano, Nguru (in Nigeria) and Rawalpindi, Pakistan (*Sahabi et al, Yusuf et al, Usman et al, Jamal et al)*[2,5,7,8,9].

There was a progressive increase in cancer with 2 peaks in 50-59 and 60-69 age groups and a progressive decline beyond 69 years. The gradual increase from 0-9 years with a first peak in 50-59 years is due to increased prevalence of cancer with rising age[10,11]. There was also a sharp decline beyond the age of 70 years. This is because many people do not leave beyond this age in Nigeria. According to WHO, the average life expectancy for males and females in Nigeria is 54.7 and 55.7 years respectively[12].

5.CONCLUSIONS

There was preponderance of females with cancer in this study with breast topping the list; these patients were mainly in the age group 30-69 years. This is alarming for a country dominated by a young population. There is need for a free breast screening programme through strengthening our health insurance. In males, prostate cancer was the leading cancer especially in elderly. Also there is a correlation between cancer and age in this study.

LIMITATION OF THIS STUDY

This is a retrospective study and some of the patients were excluded due to incomplete data.

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CONFLICT OF INTEREST

No conflict of interest.

AUTHORS' CONTRIBUTIONS

Both authors contributed significantly in the every stage of this work.

Ethical Approval:

As per international standards or university standards written ethical approval has been collected and preserved by the author(s).

Consent
As per international standards or university standards, patient(s) written consent has been collected and preserved by the author(s).

REFERENCES

1.World Health Organization. Global Health Estimates 2020: Deaths by Cause, Age, Sex, by Country and by Region, 2000-2019. World Health Organization; 2020.

2. Ferlay J, Ervick M, Laversanne M, Colombet M, Mery L, Pineros M, Znaor A, Soerjomataram, Bray F (2024). Global Cancer Observatory: Cancer Today. Lyon, France: International Agency for Research on Cancer: Available from: https://gco.iarc.who.int/today, accessed [18/09/2024]

3.. Mathers CD, Loncar D. Projections of global mortality and burden of disease from 2002 to 2030. PloS Med 2006;3(11):e442.

4.Chen S, Cao Z, Prettner K, et al. Estimates and projections of the global economic cost of 29 cancers in 204 countries and territories from 2020 to 2050. *JAMA Oncol*. 2023;9(4):465□472.

5.Sahabi SM, Abdullahi K. Epidemiological Survey of Malignant Neoplasms in Sokoto, Nigeria. World Journal of Research and Review (WJRR) 2017; 4(4):10-15.

6. Okobia MN, Aligbe JU. Pattern of malignant diseases at the University of BeninTeaching Hospital. Tropical Doctor 2005; 35: 91–92.

7.Yusuf I, Atanda AT, Umar AB, Imam MI, Mohammed AZ, Ochicha O, *et al.* Cancer in Kano, Northwestern Nigeria: A 10-year update of the kano cancer registry. Ann Trop Pathol 2017;8:87-93.

8.Hadiza A Usman, Bala M Audu, Ibrahim M. Sanusi, Mohammed Bukar, Pindiga U. Hamidu. Pattern of Cancers at a Rural Referral Centre in North-Eastern Nigeria. Bo Med J 2018;15(1): 21-28.

9. Jamal S, Moghal S, Mamoon N, Mushtaq S, Luqman M, Anwar M. The pattern of Malignant Tumours: Tumour registry data analysis, AFIP,

Rawalpindi, Pakistan (1992-2001). J Pak Med Assoc 2006; 56(8):359-362.

10.Laconi E,Marongiu F, DeGregori J.Cancer as a disease of old age: changing mutational and microenvironmental landscapes.British Journal of Cancer 2020;122:943–952.

11.Binu IS, Diwagar KN, Sekhar G. A Clinicopathological Study of Malignant Tumors of the Uterine Corpus in a Tertiary Care Center. *Journal of Pharmaceutical Research International 2021;* 33(49):89–96.

12.World Health Organisation 2024 data.who.int,Nigeria[country overview], accessed [03/09/2024]

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1.

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