

# Pattern of Cancer in Bauchi: Report from a Departmental Cancer Registry

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## Abstract

**Context:** Cancer ranks second among the major causes of death globally. A projection by 2020 indicated that developing countries would account for about 70% of total cancer-related death worldwide. Despite the great threat posed by cancer to this region of the world, reliable statistics on the trends and patterns of cancer are rare. **Aims:** The aim of the study is to review the cases of cancer recorded in Abubakar Tafawa Balewa University Teaching Hospital (ATBUTH), Bauchi, from January 1, 2011 to December 31, 2019. **Materials and Methods:** This is a retrospective, descriptive study. Nine years records of all pathologically diagnosed cancer cases in the ATBUTH, Bauchi were retrieved, reviewed, and grouped in accordance with the International Classification of Diseases for Oncology. The results were presented as simple frequency tables and charts. **Results:** A total of 1284 cancer cases were diagnosed during the period, an average of 142.7 cases per annum. There was a female predominance of cancer cases (male: female ratio - 1:1.53. The age range was from seven months to 95 years, with mean and median ages of 49.6 and 50 years, respectively. More than half of the cases were reported in the fifth to seventh decades of life. Prostate (14.6%) and non melanoma skin cancer (11.2%) were the most common cancers seen in males. In females, cancers of the cervix (37.9%) and the breast (22.9%) were the most common. **Conclusions:** Breast cancer and cancer of the uterine cervix were the most common cancers in women in this review while prostate cancer was the most common cancer in men. The need to establish a hospital-based and/or population-based cancer registry that will generate reliable cancer data in our environment cannot be overemphasized.

**Keywords:** Bauchi, breast, cancer, cervix, prostate, registry

## INTRODUCTION

Non communicable diseases (NCDs) are responsible for the majority of mortality worldwide. Cancer, as an NCD is expected to be the leading contributor to mortality and the number one barrier to increasing life expectancy in every country of the world in the 21<sup>st</sup> century.<sup>[1]</sup> Cancer ranks second among the major causes of death worldwide and was responsible for about 9 million deaths in 2015.<sup>[2]</sup> Globally, approximately 1 out of 6 deaths are believed to be caused by cancer.<sup>[2]</sup> In the low human development index (HDI) countries of the world, it is one of the three leading causes of death.<sup>[2]</sup>

About 60% of the world's annual total new cancer cases occur in Africa, Asia, Central, and South America, where 70% of world cancer deaths also occur.<sup>[3]</sup> The total number of cancer deaths in Africa was 72% in 2012 compared to a mortality of 42% in Europe.<sup>[4]</sup> According to the World Health

Organization (WHO), 12.5% of all deaths are due to cancer. If this ongoing pattern continues unabated, it is estimated that, by 2020, 16 million new cases will be diagnosed annually, with 70% of these cases occurring in low-HDI countries where there are poor health facilities and unreliable statistics on the patterns and trends of cancer.<sup>[5]</sup>

Despite the undisputable grave threat of cancer to Sub-Saharan Africa, many countries in this region have little or no reliable data on cancer incidence, the region accounting for only 1% of the world cancer registries in 2012.<sup>[4,5]</sup> Similarly, only five

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African countries contributed data to the International Agency for Research on Cancer by 2015.<sup>[5]</sup>

The Center for Disease Control and the WHO has stressed the importance of high-quality population-based cancer data in describing cancer burden, patterns, and outcomes to inform cancer prevention, detection and control activities.<sup>[6,7]</sup>

Cancer registration in Nigeria commenced in 1960 but has undergone severe retrogression for various reasons, especially between the 70s and 2000s.<sup>[8-11]</sup> The establishment of the Nigerian National System of Cancer Registries in 2009 has helped in attempts to resurrect cancer registration in the country; currently, there are 13 population-based cancer registries in the country.<sup>[12,13]</sup> Data from departmental or hospital cancer registries, though largely inferior to population-based registries, could be used to extrapolate the likely cancer burden in the community.<sup>[14,15]</sup>

## MATERIALS AND METHODS

This is a retrospective descriptive study of all records of cancer cases entered into the register of the Department of Histopathology, Abubakar Tafawa Balewa University Teaching Hospital (ATBUTH), Bauchi, between January 1, 2011 and December 31, 2019. The hospital is a 700-bed capacity tertiary health facility located in Bauchi, Bauchi state in North-eastern Nigeria. It is the only health institution in the state offering Pathology services and it receives specimens and referred patients from all the state-owned hospitals, private hospitals, as well as hospitals from bordering towns and villages in neighboring states.

All records of patients diagnosed with any form of cancer within the period of study were retrieved from the departmental cancer registers. The stored histology and cytology slides were retrieved and reviewed by the pathologists. The cases were cross-checked to see which patients benefited from both services so that such were counted as single cases. The malignant cases were grouped according to ages, sex, and body organs and the data analyzed for age, sex, yearly trend, and histological types. The results were presented as simple frequency tables and charts.

Ethical clearance was obtained from the Research and Ethics Committee (REC) of ATBUTH, Bauchi.

ATBUTH REC No: 001/2018.

## RESULTS

A total of 1284 cases of cancer were recorded over the nine years of study, with an average annual frequency rate of 142.7 cases per annum. The total annual cases ranged from 39 in 2011 to 206 cases in 2019, with a steady increase in the number of cancer cases, as depicted in Figure 1. Females accounted for 61.2% (786 cases) of the total cases, while 38.8% (498 cases) were males. The male: female ratio was 1:1.6. The age range of cancer cases ranged between seven

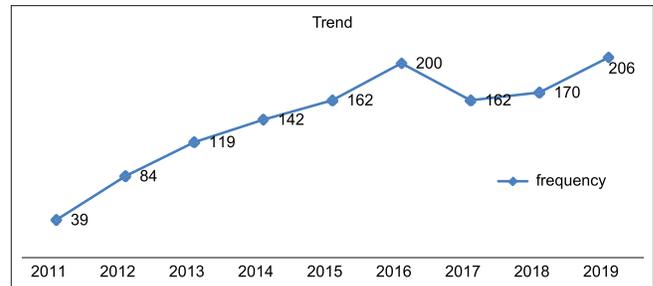


Figure 1: Annual frequency of cancer cases

months and 95 years, with a mean of  $49.6 \pm 18$  years and a median age of 50 years.

The age was unspecified in 30 cases. The modal age group of occurrences was the age group 40–49 years, accounting for 18.9% of cases.

The three most frequent age groups of cancer occurrence were the 40–49, 50–59, and 60–69 years age groups (fifth to seventh decades of life), accounting for a combined frequency of 712 (55.5%) cases [Figure 2]. Furthermore, children and adolescent (teenage) cancer cases (0–19 years) accounted for 4.4% of cases.

The top five common cancers irrespective of sex were cancers of the cervix (18.1%), breast (14.9%), prostate (13.9%), nonmelanoma skin (7.7%), and ovary (4.8%).

The five most common cancers in females are cancers of the cervix uteri (29.6%), breast (23.5%), ovary (7.8%), placenta (5.7%), and nonmelanoma skin (4.8%). In males, the five most common cancers are those of the prostate (35.7%), nonmelanoma skin (12.2%), colorectum (7.8%), urinary bladder (6.6), and soft tissue (6.0%). Table 1 and Figures 3, 4 show the distribution of total cancer cases by sex and site of occurrence.

In children and adolescents, the top five commonly diagnosed cancer cases were cancers of the lymph nodes, soft tissue, skin, eye, and kidneys in descending order of frequency [Figure 5].

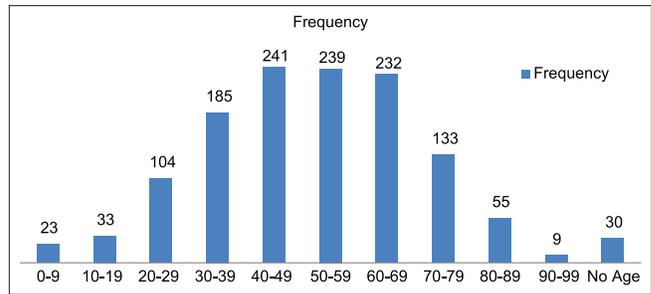
## DISCUSSION

The present study demonstrated an upward trend in the prevalence of cancer for over nine years. While this can be attributable to an improvement in diagnosis and treatment facilities, especially the recent increase in awareness and screening of cervical, breast and prostate cancers in the state, other yet to be determined factors might be responsible for the recent upsurge in other types of cancers. Zayyan *et al.*<sup>[16]</sup> in 2017 reported an increasing trend in cases of ovarian cancer in Zaria between 2004 and 2013. Jedy-Agba *et al.*,<sup>[10]</sup> in their comparative analysis of Abuja and Ibadan population-based cancer registries data from 2009 to 2010, also observed increasing incidence rates of cancer from the two centres compared to previous data. A study from Kano also showed

**Table 1: Distribution of cancer cases by site**

Site	Frequency (%)
Cervix	233 (18.1)
Breast	191 (14.9)
Prostate	178 (13.9)
Skin-nonmelanoma	99 (7.7)
Ovary	61 (4.8)
Soft tissue	59 (4.6)
Colorectum	54 (4.2)
Stomach	45 (3.5)
Placenta	45 (3.5)
Urinary bladder	41 (3.2)
Lymph node	37 (2.9)
Uterus (corpus, nongestational)	32 (2.5)
Skin-melanoma	31 (2.4)
Eye (and ocular adnexa)	27 (2.1)
Anus/anorectum/perianal	23 (1.8)
Abdominal cavity/wall	17 (1.3)
Bone	15 (1.2)
Thyroid	12 (0.9)
Oesophagus	9 (0.7)
Kidney	9 (0.7)
Nasopharynx	7 (0.5)
Salivary gland	7 (0.5)
Nasal cavity/sinus	5 (0.4)
Liver	5 (0.4)
Small intestine	4 (0.3)
Testis	4 (0.3)
Vagina	4 (0.3)
Larynx	3 (0.2)
Lips/oral cavity/tongue	3 (0.2)
Penis	3 (0.2)
Vulva	3 (0.2)
Ear	2 (0.2)
Oropharynx	2 (0.2)
Pancreas	2 (0.2)
Adnexa	1 (0.1)
Lung	1 (0.1)
Retroperitoneum	1 (0.1)
Ureter	1 (0.1)
Unknown site	8 (0.6)
Total	1284 (100.0)

increasing trends of cancer in the population.<sup>[17]</sup> The increase in rates was particularly remarkable for breast cancer which recorded >100% increase within a decade.<sup>[17]</sup> Available literature also supports an increasing trend of breast cancer in sub-Saharan Africa, with most of the increases in incidence in the region being thought to be a reflection of the increasing lifespan of women and adoption of lifestyles that favor higher incidence rates.<sup>[18]</sup> Even though some of the general increase in cancer incidence rates can be attributed to improving health care delivery system that aids early diagnosis through screening, as well as improved access to health care and awareness made possible through health education in recent years, cases of a real increase due to an expanding prevalence



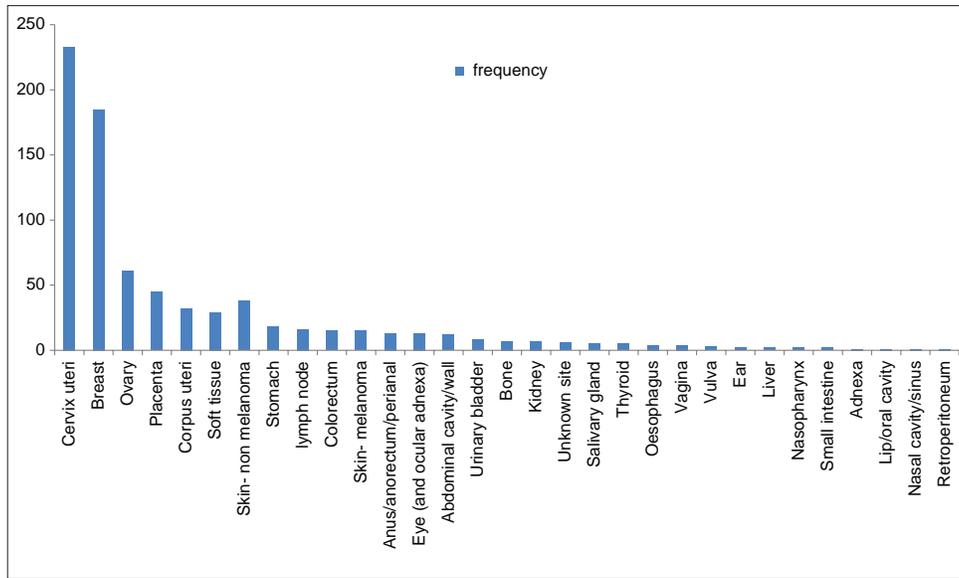
**Figure 2: Age distribution of cancer cases**

in risk factors for some of these hitherto low incidence cancers, are a possibility.

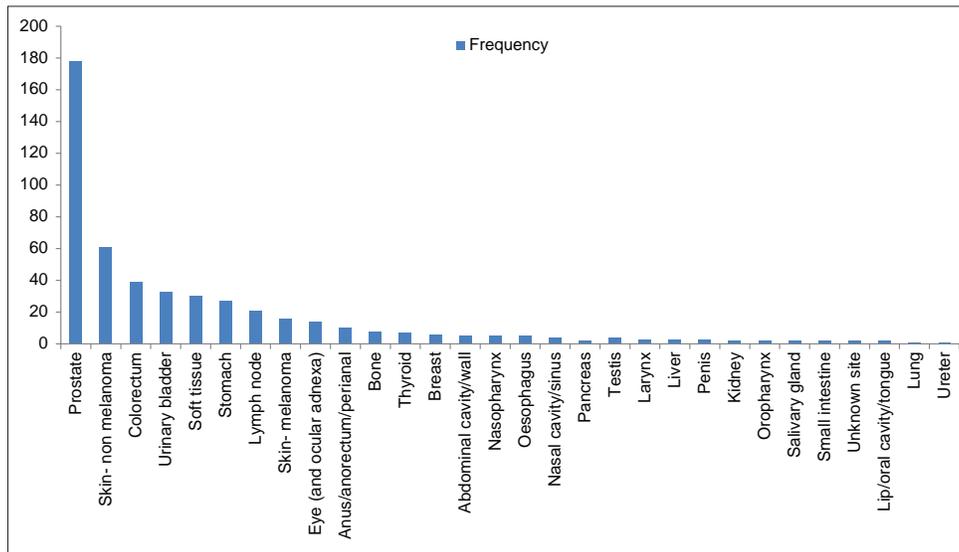
A majority (61.2%) of the cancer cases were diagnosed in females with male cancers accounting for 38.8% of cases. This is not unexpected considering that the two commonest cancers, namely, those of the cervix and breast, occur either exclusively in females (cancer of the cervix) or occur only negligibly in males (breast cancer). Our finding is in agreement with reports from other parts of Nigeria. The National Cancer Incidence studies that were based on data from population-based registries show that the distribution of cancers in females and males were 61.5% and 38.5%, respectively.<sup>[13]</sup> Several hospital-based cancer registries across the country also reported figures that show the predominant occurrence of cancers in females compared to those of males.<sup>[13]</sup> This is in sharp contrast to reports from high-HDI countries of the US and UK, where in addition to prevalence, the mortalities are also more in males than females.<sup>[19,20]</sup> This contrast may not be unconnected with the organ distribution of the most common cancer cases in these two economies. While cervical cancer cases have reduced significantly in the high-HDI countries over the past five decades due to effective screening programs for detection and treatment of precancerous lesions as well as immunization programs for the human papillomavirus, the majority of the low-HDI nations of the world are yet to have such organized programs in place.<sup>[21]</sup>

The age range in this study is from seven months to 95 years of age with the modal age of cases in the fifth decade of life, about two decades earlier than what is obtainable in the UK where >50% of their cancer cases are seen after the age of 70 years.<sup>[20]</sup>

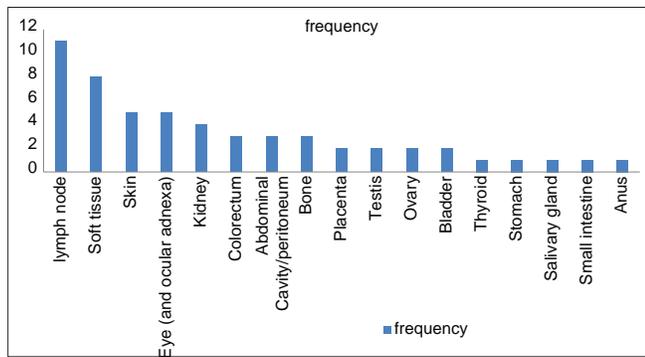
The findings from this study show that the five most common cancers in women were cervical, breast, ovarian, placental choriocarcinoma, and nonmelanoma skin cancers, in descending order of frequency. This finding only partially agrees with the national incidence statistics (2009–2013) that showed that the top five cancers in Nigerian women were breast, cervical, ovarian, colorectal, and soft-tissue cancers.<sup>[13]</sup> Furthermore, the most common cancer in females in this study was cervical cancer, in contrast to the national incidence statistics and several other institutional-based reports across the country that showed that breast cancer was the most common cancer in females ahead of cervical



**Figure 3:** Distribution of cancer cases in females by sites of occurrence



**Figure 4:** Distribution of cancer cases in males by sites of occurrence



**Figure 5:** Distribution of cancer cases in children and adolescents (0–19 years)

While most hospital-based registries report breast cancer as the most common cancer in females, reports from Kogi and Nasarawa states show that cancer of the cervix is the most common female cancer in those areas.<sup>[13]</sup> Researchers from a few Sub-Saharan African countries also reported cancer of the cervix to be the most common cancer in women.<sup>[14,26]</sup> Thus, it would appear that there are variations in the prevalence of breast and cervical cancer between states in Nigeria. In addition, while the exact position of breast and cervical cancer may vary, it is undoubtedly clear that these two cancers account for the overwhelming majority of cancers in women in Nigeria. In this study, for example, they together accounted for more than half of cancers in women.

cancer, as reported by Ogunbiyi in Ibadan,<sup>[22]</sup> Malami *et al.* in Sokoto,<sup>[23]</sup> Yusuf *et al.* in Kano,<sup>[24]</sup> and Mandong *et al.* in Jos.<sup>[25]</sup>

The most common cancers in males in this report are prostate, nonmelanoma skin, colorectal, urinary bladder, and soft-tissue

cancers in descending order of frequency. This agrees to some extent with the national incidence statistics that list the top five male cancers to be cancers of the prostate, colorectum, nonmelanoma skin, liver, and soft tissues. In males, the most common cancer is that of the prostate, accounting for about 14% of all cancers and 36% of male cancers in this report. The national incidence statistics and several studies within the country, as well as reports from other countries of sub-Saharan Africa, are in agreement with our findings.<sup>[13,17,22,23]</sup> Liver cancer, which is the 4<sup>th</sup> commonest cancer in men, according to the national data, is distinctly uncommon in our report, with liver cancer being the 20<sup>th</sup> most common cancer in men. The reason for this wide disparity may be because a substantial proportion of cases of suspected liver cancer are diagnosed clinically and biochemically without liver biopsy and very little if any postmortem examination for patients who die of chronic liver disease, resulting in an underrepresentation of liver cancer.

Lung cancer, which is the most common cancer in men worldwide, is extremely rare in this report, with only a single case documented over nine years. The reason for the very low level of lung cancer recorded, apart from the paucity of experts in cardiothoracic surgery in the region, might be as a result of a relatively low level of tobacco smoking among the people in our area of study.

## CONCLUSIONS

Departmental cancer registries, while providing useful information on cancers, are deficient in reflecting the total number of cancer cases within an institution or community. The diagnoses of certain cancers, such as leukaemias, are usually not based on tissue histology or cytology and are likely to be grossly under-represented in departmental pathology registers.

There is a need to have an organized hospital-based cancer registry in ATBUTH, Bauchi, to better document cancer cases in the institution. This could be later expanded to a population-based cancer registry to fulfil the ultimate goal of having accurate data on cancer in our environment to allow for the formulation of relevant policies and planning for cancer prevention and control in the region.

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## Conflicts of interest

There are no conflicts of interest.

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