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Epidemiological trends of cancer in Nigeria; An excerpt from David Umahi Federal University Teaching Hospital: Trends and pattern study

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Abstract

Background: Knowledge about the causes, distribution, pattern and preventions of malignant neoplasms has been largely based on the development of cancer epidemiology, novel treatment, prevention and screening modalities. Hospital-based cancer registry (HBCR) and Population-based cancer registry (PBCR) which are designed to monitor trends, inform the public on health strategies, and evaluate the effectiveness of cancer control programs have been the major sources of epidemiology reportage of cancer in Nigeria. However, data on reports from LMICs are believed to be underreported as it is common to see such countries with unreliable cancer registries and reporting system, poor resource allocation, including underemphasizing service delivery (from bilateral and multilateral partners and donors). The study of epidemiology of cancer helps to enable the required knowledge on the burden and the devastating effect of cancer for adequate resource allocation to prevention, control and effective treatment in our locality. Sadly, this knowledge is scarcely found in our locality and scanty even in Nigeria at large. This research will help to bridge the knowledge gap by providing the needed exposition concerning the epidemiology, distribution and the pattern of cancer occurrence in Uburu, Ohaozara, Ebonyi, South East and Nigeria at large.

Aim: To evaluate the epidemiology and trends of cancer in Nigeria, using David Umahi Federal University of Teaching hospital Uburu between January 2023-June 2025 as a focal point.

Objective: To determine the demography, and the trends and pattern of cancer patients in DUFUTH between January 2023 to June 2025

Methodology: Data from patient's file, registers, summary sheets, doctors' medical and referral notes of cancer patients in DUFUTH were extracted and analyzed between January 2023 to June 2025

Result: A total of 253 cancer cases were received and treated between January 2023 to June 2025 in DUFUTH, out of which, 145 (57.3%) were males while 108(42.7%) were females. Prostate cancer served as the major presenting pattern of malignant condition among all the patients followed by breast cancer and cervical cancers. Majority of the patients were from Enugu state, followed by Imo then Ebonyi state.

Conclusion: Although cancers of all type are common, prostate cancer, breast cancer, cervical cancer, colorectal and skin cancers are very rampant in our environment and dominate cancer prevalence in Nigeria. These cancers are assuming a worrisome state and combine and concerted efforts must be made for early diagnosis, screening and treatment for these common cancers in our environment.

Keywords: Cancer epidemiology, Nigeria, hospital-based cancer registry, epidemiological trends, cancer pattern, malignant neoplasms, prostate cancer

Introduction

Cancer, a malignant neoplastic disease, is one of the challenging major causes of morbidity and mortality in Nigeria counting for the 2nd most common cause of mortality after cardiovascular diseases. Globally, there were about 18.1 million new cancer cases and 9.6 million cancer deaths in 20186 [1]. Malignant neoplasms are characterized by progressive growth of tissue with structural and functional alterations and a peculiarity of ability to metastasize via blood and lymph vessel penetration [2]. Cancer therefore, is defined by rapid creation of abnormal cells that grow beyond their usual boundaries, invade adjoining parts of the body and spread to other organs.

Knowledge about the causes, distribution, pattern and preventions of malignant neoplasms has been largely based on the development of cancer epidemiology, novel treatment, prevention and screening modalities [3].

Cancer causation can be genetic or environmental. Several inherited conditions carry a very high risk of one or several cancers genes which are identified through family-based and other linkage studies. These conditions are rare and explain only a small proportion of human cancers. Genetic factors are also likely to play an important role in interacting with non-genetic factors to determine individual's susceptibility to cancer, although the observation of changes of incidence in migrant groups after they have moved to a new living environment suggests a major role of non-genetic factors [4].

In a comprehensive study on cancer epidemiology done in Italy, the cancer- related burden was slightly higher in men than in women (9.6% vs 8.6%) with Leukemia (37%) serving as the highest prevalence followed by brain and nervous system cancers (16%). Lymphomas (13%) were the most prevalent malignant diseases in subjects aged 14 years or younger. In the age range 15–49 years, breast cancer (13%) was the most common malignancy, followed by liver (12%) and lung (9%) cancers. In the age range 50–59 years,

lung cancer is the most frequent malignant disease (18%), followed by liver (11%) and breast (9%) cancers, while the most frequent malignancies in subjects aged 60 years or older were lung (21%), colorectal (9%), stomach (9%), and liver cancers (9%) [5].

The list of the most frequent cancers from the WHO global cancer observatory (GLOBOCAN) 2018 registry revealed 18.08 million new cases of cancer diagnosed in 2018 in which lung (with trachea and bronchus, 2.09 million cases), breast (2.09 million cases), and prostate (1.28 million cases) being the three most frequent. In men, lung (1.37 million cases) and prostate (1.28 million cases) cancers are still in the first and second positions, while stomach (0.68 million cases) is third, followed by liver (and intrahepatic bile ducts, 0.60 million cases) cancer. In women, breast cancer is by far the most frequent (2.09 million cases), followed by lung (0.72 million cases), cervix uteri (0.57 million cases) and colon (0.58) cancers [5]

Breast cancer reaches the highest age-standardized frequency (46.3 per 100,000), followed by prostate (29.3 per 100,000), lung (22.5 per 100,000), colorectal (19.2 per 100,000), cervix uteri (13.1 per 100,000), and stomach (11.1 per 100,000). The overall risk of developing cancer between the age of 0–74 years is 20.2% (22.4% in men and 18.2% in women, respectively); the highest risk of malignancy is for lung (3.80%), prostate (3.73%), and colorectal (2.71%) cancers in men and for breast (5.03%), colorectal and lung (both 1.77%), and cervix uteri (1.36) in women. Beside sex-specific malignancies, the ratio of frequency in men and women is >1 for all cancers, except thyroid (i.e., 0.30). The highest men/women ratio is for bladder (3.38), liver and intrahepatic bile ducts (2.44), and esophagus [5]

Hospital-based cancer registry (HBCR) and Population-based cancer registry (PBCR) [6] which are designed to monitor trends, inform the public on health strategies, and evaluate the effectiveness of cancer control programs, however, data on reports from LMICs are believed to be underreported as it is common to see such countries with unreliable cancer registries and reporting system [7], poor resource allocation, including underemphasizing service delivery (from bilateral and multilateral partners and donors) [8].

In 2020, Africa recorded around 1.1 million new cancer cases and 700,000 deaths, accounting for 5.7 % of global cancer incidence. Cancer death rates in Africa are projected to exceed the global average by 30% in the next 20 years [9,10]. Similarly, Nigeria recorded a total of 124,815 new cases of cancer with 51,398 occurring in male (prostate cancer being the commonest at 29.8%) and 73,417 occurring in females (with breast cancer being the commonest, 38.7% followed by cancer of the cervix, 16.47%) [10]. Excluding non-melanoma skin cancer, prostate, colorectal, non-Hodgkin lymphoma, liver, and leukemia remains the top five most frequent cancers in males while breast, cervical, non-Hodgkin lymphoma, ovarian, and colorectal are the top five in females [11]. Surprisingly, skin cancers like basal and squamous cell carcinoma were reported by Ehidiamhen *et al* (2024) to a percentage of 24.7% for cutaneous SCC and 15.8% for cutaneous BCC in a south eastern hospital in Nigeria [12].

Studies have shown that 30% to 50% of all cancers are preventable [13, 14] if appropriate screening and early diagnosis and treatment is taken seriously. In 2008, the population attributable factors (PAF) for infectious agents were 16.1% out of the 12.7 million new cases with LMICs accounting for 22.9% compared to 7.4% in HICs. Although this varied from 3.3% in Australia and New Zealand to 32.7% in Sub-Saharan Africa (SSA)[15], yet 15.4% of the 14 million new cancer diagnosis were attributed to infectious agents [16, 17] with some SSA countries having 50% PAF compared to 5% in the United States and Canada [16]

The study of epidemiology of cancer helps to enable the required knowledge on the burden and the devastating effect of cancer for adequate resource allocation to prevention, control and effective treatment in our locality; sadly this knowledge is scarcely found in our locality and scanty even in Nigeria at large. This research will help to bridge the knowledge gap by providing the needed exposition concerning the epidemiology, distribution and the pattern of cancer occurrence in Uburu, Ohaozara, Ebonyi, South East and Nigeria at large.

Aim

To evaluate the epidemiology and trends of cancer in Nigeria, using David Umahi Federal University Teaching hospital Uburu between January 2023-June 2025.

Objectives

1. To determine the age and sex of cancer patients in DUFUTH
2. To determine the geographical locations of cancer patients in DUFUTH
3. To determine the trends and pattern of cancer cases in DUFUTH.

Methodology

Study setting

This retrospective study was carried out amongst cancer patients diagnosed in Cancer Research Institute, DUFUTH, Uburu, Ebonyi state, South East Nigeria, between January 2023 to June 2025.David Umahi Federal University Teaching Hospital is a 500 bedded tertiary referral hospital in Ebonyi State, South East Nigeria, with a well equipped radiology and radio-oncology department. Equipment present include a linear accelerator, Brachytherapy machine which are used for the various cancer treatment that meet the criteria. For diagnostic and simulative purposes, the radio-diagnostic department has a 1.5 tesla MRI, a 64 slides CT scan, a digital and mobile x-ray machine, a mammogram and several 4ds ultra sound scanners.

Study Design

All Cancer cases treated at DUFUTH cancer center were collated and analyzed along side with their demography and pattern studied. National Cancer Registry Guidelines was applied.

Description of Material

Records used included data from patients' file, registers, summary sheets, doctors' medical and referral notes.

Data Analysis

Data was analyzed using SPSS version 20, IBM Corp Armonk, NY. All continuous variables were summarized using medians with interquartile ranges, while categorical data were recorded as proportions with percentages. Pearson's Chi-square test was used to examine the

associations between dependent variables and the timing of diagnosis among cancer patients. Modified Poisson regression with robust variances was used at bi-variable and multi variable analysis to identify factors associated with the timing of diagnosis among cancer patients. Prevalence ratios (PRs) were used to estimate the strength of association between the outcome and indicator variables, and associations was tested at a 95% confidence interval (CI).

Inclusion criteria

All diagnosed cancer cases were used for this study analysis

Exclusion criteria

All cases with missing record of treatment and diagnosis were excluded

Ethical Approvals

Ethical clearance for this research was obtained at Ethics and research department of David Umahi Federal University Teaching hospital, Uburu.
Approval number is HREC/20/09/25/002

Result

General Result

DUFUTH received and treated 343 number of patients with neoplastic diseases between January 2023 to June 2025, out of which, 253 (74%) were malignant cases while 92 (26%) were benign growth. Gender preponderance was 145 (57.3%) males and 108(42.7%) females respectively. Prostate cancer served as the major presenting malignant condition among all the patients followed by breast cancer, cervical cancers, colorectal cancers and squamous cell carcinoma.

Age Distribution

Greater percentage of cancer patient fell within ages 61 and above accounting for 53.4% (135), this was closely followed by ages 31-60 years with a percentage of 41.1%. (104). Ages 15-30 years have a prevalence of 5.5% (14).
See table 1 for the distribution.

Table 1: showing the age distribution of cancer patients in DUFUTH

Age range	Number	Percentage
15-30	14	5.5
31-60	104	41.1
61+	135	53.4
Total	253	100

Sex Distribution

Male cancer patients accounted for 57% (145) while female accounted for 43% (108). see figure 1 below for the distribution.

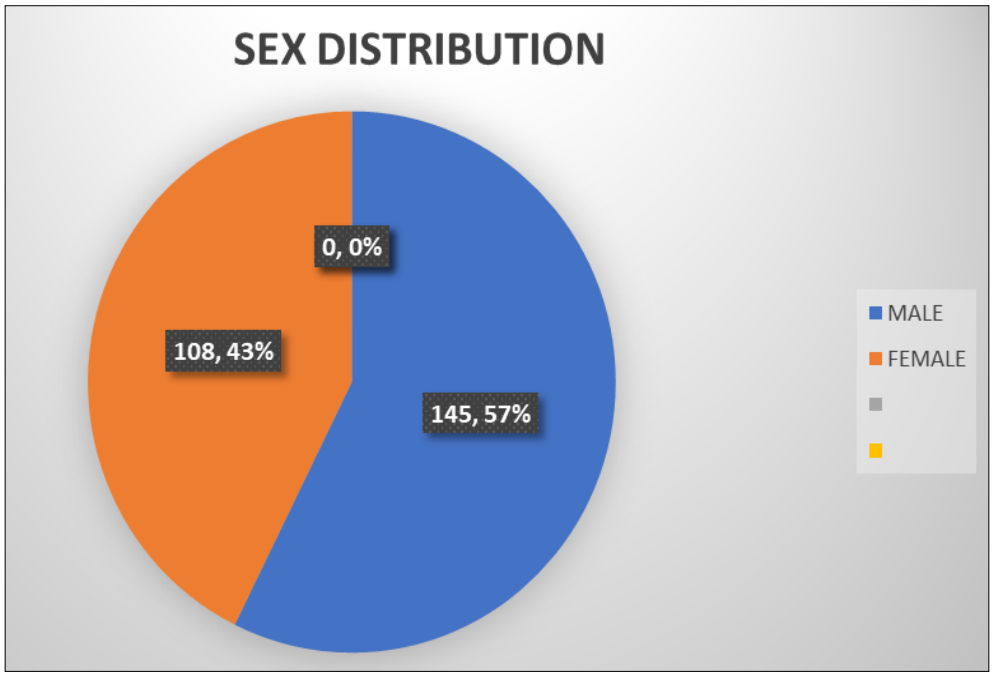


Fig 1: showing the set distribution of cancer patients in DUFUTH

Epidemiological Analysis of Cancers in Dufuth

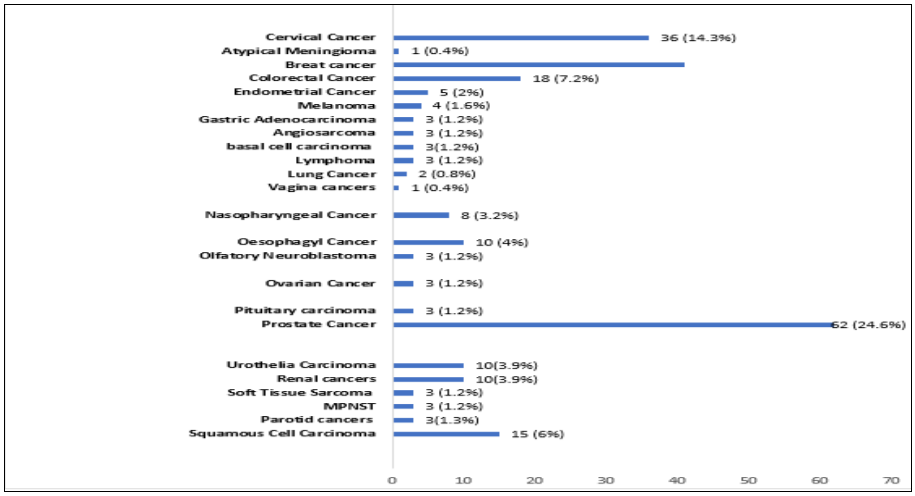
A total number of 253(12.7%) malignant cases were recorded in DUFUTH during the study period against the total number of 2,000 cases admitted and presented within the study period.

Prostatic carcinomas accounted for 24.5%(62) while breast cancer, cervical cancer, colon cancer and squamous cell carcinoma accounted for 16%(41), 14%(36), 7.2%(18) and 6%(15) respectively. Oesophageal cancers, renal cancers, and urothelial carcinoma all stood at a frequency of 4%(10) respectively. Nasopharyngeal carcinoma accounted and endometrial carcinoma accounted for 3.2%(8) and 2%(5) respectively. Parotid cancers, gastric cancers, ovarian cancers, lymphomas, basal cell carcinoma, angiosarcoma, olfactory neuroblastoma, soft tissue sarcoma, pituitary carcinoma, MPNST all stood at percentage of 1.3%(3) respectively while Melanoma accounted for 1.6%(4).Lung cancers accounted for 0.8%(2) and vagina cancers accounted for 0.4%(1).

Table 2a: showing the trends and frequency of cancer patients in DUFUTH

Traeted cancers	Frequency	Percentage
Cervical cancers	36	14.0
Breast cancers	41	16.0
Renal cancers	10	4
Endometrial cancers	5	2
Oesophageal cancers	10	4
Prostate cancers	62	24.5
Melanoma	4	1.6
Parotid cancers	3	1.3
Squamous carcinomas	15	6
Urothelia carcinomas	10	4
Gastric carcinomas	3	1.2
Colorectal cancers	18	7.2
Lung cancers	2	0.8
Ovarian cancers	3	1.2
Vaginal cancers	1	0.4
Lymphomas	3	1.2
Basal cel carcinomas	3	1.2
Angiosarcomas	3	1.2
Nasopharyngeal cancers	8	3.2
Olfatory neuroblastoma	3	1.2
Malignant peripheral nerve sheet tumours (mpnst)	3	1.2
Pituitary carcinomas	3	1.2
Soft tissue sarcomas	3	1.2
Total	253	100

Table 2b: showing the epidemiology of cancers in DUFUTH



Location and State of Residence of Cancer Patients

Majority of cancer patient that presented within the study period were form Enugu and accounted for 43.9%(111). This was followed by Imo state accounting for 26.1%(66) and Ebonyi State 18.6%(47). Patients from Anambra State accounted for 7.5%(19) while Abia State accounted for 9.1%(23). Abuja and Rivers State accounted for 1.2%(30). Patients whose state of residence was not documented accounted for 3.6% (9).

Table 3: Showing the location and state of residence of cancer patients that presented in DUFUTH

Location	Frequency	Percentage
Ebonyi	47	18.6
Enugu	111	43.9
Anambra	19	7.5
Abia	23	9.1
Imo	66	26.1
Abuja	3	1.2
Rivers	3	1.2
No record	9	3.6
Total	253	100

Social Status and Economic Ability of Participants

Majority of the cancer patient presented in DUFUTH within the study period are indigent with a 30% trader and fashion designers, followed by retiree accounting for 17. 4%. Farmers accounted for 14.0% while clergy accounted for 7.1%. see figure 3 for the distribution

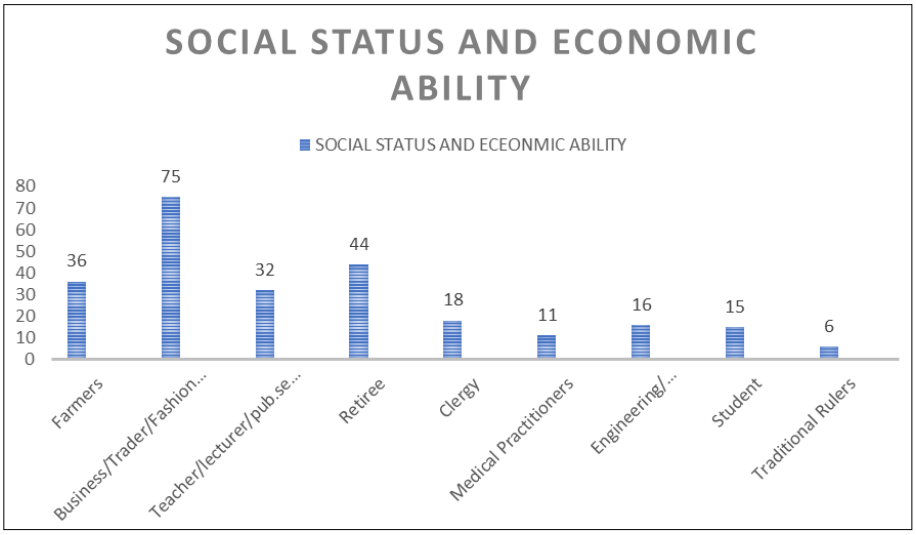


Fig 2: showing the social status and economic ability of treated cancer patients in a DUFUTH

Discussion

Under-reporting of cancer cases and lack of proper documentation has made the general knowledge of epidemiology of cancer in Nigeria to be less unified. Cancer is a major public health issue affecting all age group. Cancer was more predominant in age group greater than 61 years and above in this research, a finding similar to that of Warri, delta state and Lagos State Nigeria were geriatric cancer accounted for 33.7% of all cancers, affecting 871 males and 593 females serving as the commonest age group affected by cancer. Cancer in geriatric age group is on the increase worldwide with male predominance in most cases [18, 19, 20, 21].

The prevalence of cancer in this research stands at 12.7% out of the 2,000 medical diseases admitted and managed at DUFUTH within the study period, with prostate cancer, breast cancer, cervical cancer, colorectal cancer and skin cancer (squamous cell carcinoma) in the order of decreasing prevalence. According to globocan 2022, breast, cervix, prostate, colorectal and NHL served as the most common 5 cancers worldwide which is similar to the findings in this research except NHL which assumed a distant position [20]. However, although slight variabilities exist among the prevalence on the spectrum of 5 most common cancer across many regions in Nigeria and Africa in comparison with other findings, prostate, breast, cervical, colorectal and skin cancers as found in this research stood at and are rampant across many studies [18, 19, 20, 21, 22, 23].

Other cancers like soft tissue sarcoma, urothelial carcinoma, angiosarcoma etc, although not so common are also cancers to reckon with in our region and even in Lagos and across some places in Nigeria as documented by Abdulkareen 2009 [24]

Although lymphoma does not assume a significant prevalence position in this research, on the contrary, studies done in Lagos and some other studies in Nigeria showed lymphoma especially NHL as one of the 5th most common cancers around [25]

On the overall, the most common cancer in females remain undoubtedly breast and cervical cancers while that of male remain prostate cancer. This is similar to most findings across the world [26].

Conclusion

Although cancers of all types are common, prostate cancer, breast cancer, cervical cancer, colorectal and skin cancers are very rampant in our environment and dominate cancer prevalence in Nigeria. These cancers are assuming a worrisome state and combine and concerted efforts must be made for early diagnosis, screening and treatment for these common cancers in our environment.

Recommendation

The Government in Nigeria should place priority on cancer in budgeting for cancer care, screening, prevention, and treatment

International agencies and NGOs should pay attention to the issues of cancer in developing countries through establishment of more screening and treatment centers

The National health insurance agency in Nigeria should cover cancer care in all forms

Specific endowment fund should be made available for mass fund mobilization for cancer care.

Conflict of Interest

The authors declare no conflict of interest.

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