

## Original Research Article

### **The pattern of cancer cases in the rest of Cross River State not covered by the Calabar cancer registry between 2004 and 2013**

#### **ABSTRACT:**

**Aims:** This study aims to find out the prevalence of cancer in the different age groups in the rest of Cross River state not covered by the Calabar cancer registry.

**Study Design:** Descriptive retrospective study involving a trend analysis of the cancers incident in the University of Calabar Teaching Hospital, and persons from the rest of Cross River State not covered by the Calabar cancer registry. Such cases as occurred between 1st of January 2004 to December 31st, 2013 were included.

**Place and duration of study:** The Department of Pathology, University of Calabar Teaching hospital; between April and May 2019.

**Methodology:** A trend analysis of cancer cases from the rest of Cross River State outside the range of the Calabar cancer registry over the period was studied.

**Results:** Nine hundred and forty-one (941) cases of cancer were seen outside Calabar in Cross River State, within January 2004 and December 2013. Mean age was  $49.18 \pm 18.9$  years, ranging from 1 to 100 years, and female: male ratio was 1: 0.97. The commonest age range cancer occurred is 40 to 64 years overall, 40 to 64 years in males and 40 to 64 years in females. The commonest cancers sites were breast cancer (21.9%), prostate (21.3%), lymphohematopoietic (9.2%). The commonest cancers in males were prostate (43.1), lymphohematopoietic (12.9%), soft tissue (11.4%). In females' breast 41.1% and cervix, 15.9% were the dominant sites. Cancer in the 0 to 17 age range was remarkably similar and was dominated by lymphohematopoietic sites, soft tissue, eye and urinary system. Cancer in the older ages 65 years and above is overwhelmingly dominated by prostate 60% followed by breast 18%

**Conclusion:** Cancer in the rest of Cross River State is dominated by breast, prostate and cervical sites. This is like the GLOBOCAN estimates for Nigeria.

**Keywords:** *Cancer, age range, Cross River.*

**1 INTRODUCTION:** Cancer data in sixteen out of eighteen local governments areas of Cross River is not population-based. The only cancer registry in the State covers two local governments 100%; these are Calabar Municipality and Calabar South both in the capital city(1) Cross River State is located in the Niger Delta region of Nigeria, it is bounded to the south by the Atlantic coast and the east by the Republic of Cameroun. The climate is tropical and the vegetation ranges from a mangrove forest in its southernmost reaches, through tropical rainforest spanning the south through the central zone and guinea savanna in its northern reaches. Endowed with high rainfall and populated by Ekoi tribes of the Bantoid classification and has many linguistic groups. This is a topographical survey of cancer prevalence in the different age ranges in the rest of Cross River State, outside the coverage of the Calabar cancer registry.

In the United States, it was reported that in the 15 to 30 age range, cancer occurs 2.7 times more common than in the first fifteen years of life, but the incidence is much lower than in older age groups(2). In all, cancer in this age range accounts for 2% of the cancer incidence(2). Hodgkin's, melanoma, Testicular, female genital, thyroid, soft tissue, NHL, leukaemia, brain and spinal cord, breast, bone, sarcomas and non-gonadal germ cell cancers accounted for 95% of cancers in this age range(2). In this age range, the frequency of cancers changes dramatically from the youngest 15 to the oldest in that age range( 30 ), such that the pattern at 15 does not resemble the pattern at 30(2). This underscores the need to study the prevalence of different cancers in different age segments. In the United Kingdom, cancer incidence in the different age strata was presented in a detailed House of Commons report. Notably, they reported that cancer incidence is substantially higher among, the older population. Between ages 29 to 60, women are more likely to contract cancer, after 60, men become more likely(3). In the same study, prostate cancer was the commonest cancer in men, breast cancer in women, while lung and colorectum were common in both genders (3). They reported that although cancer is less common in those age 15 to 29, testicular cancer is common in males of this age range, Hodgkin lymphoma in both sexes, while the incidence of cervical cancer in 25 to 29 age group has been increasing(3). That a man 80 to 88 years is 27 times more likely to have cancer than a man 40 to 44 years while a woman 80 to 88 years, is 8 times more likely to have cancer than a woman 40 to 44 years(3).

Developing countries share a high cancer burden and unusually high case fatalities (4-6). WHO report on developing countries, has observed that with the progress achieved in the control of infectious diseases and attendant improvement in life expectancy, the incidence of cancers is rising (6, 7). In the United States it is reported that the incidence of cancers such as lung, prostate, colorectum and female breast is decreasing, by comparison in developing countries rates of these cancers are increasing due to adoption risky lifestyles like physical inactivity, tobacco smoking and high-calorie diets(8, 9). Added to these problems are weak health institutions and policy implementation. A typical example is the lack of population-based cancer registration, which militates against cancer control programmes in resource-poor settings(6, 10-14). GLOBOCAN 2018 fact sheet on Nigeria estimates that 115,950 new cases of cancers occurred in Nigeria in 2018 with more than 70,000 deaths (15). Breast cancer, cervix, prostate cancer, Non-Hodgkin lymphoma, liver and colon are the commonest cancers in both sexes combined. (15). Prostate, colorectum are top in males while breast, cervix and colorectum are the top three in females(15).

Only about 5% of Nigeria is covered by population-based cancer registration. Ekanem and Parkin 2013 published cancer incidence in Calabar municipality indicating that, women were on the average younger than men at diagnosis (43.6 vs 52.3)(1). They found out that the commonest age range of diagnosis of cancer in women was 30-39(46%), while in males 50-59(41%); and that 6% of cancers occurred in childhood 0-14(1). Work from the other two population-based cancer registries in Abuja- north-central Nigeria and Ibadan south-west also show that the mean ages for the diagnosis of cancer in males and female in both registries was 49.1 vs 45.4 and 51.1 vs 49.9 respectively(16). In both registries, breast and cervical cancers were the commonest cancers in females while prostate cancer was the commonest in males(16). A survey of institutional registries cutting across 15 states in the 6 geopolitical zones of Nigeria, reported that in both sexes, breast cancer, cervical, liver prostate and colorectum in that order were the commonest among Nigerians(17). In males, prostate cancer, liver, Non-Hodgkin lymphoma colorectum and pancreas in that order, while in females, breast cancer, cervical, liver, colorectum and Non-Hodgkin lymphoma in that order were the commonest(17). The pattern of childhood

cancer in Nigeria is somewhat similar in most of the reported cases; Lymphomas(Hodgkin and Non-Hodgkin), are the commonest followed by Retinoblastomas and or Soft tissue tumours, or nephroblastoma(1, 18-23). This study was aimed to get a trend analysis of cancer cases from the rest of Cross River State, not covered by the population-based Calabar cancer registry.

**2 MATERIALS AND METHODS:** A retrospective study involving a trend analysis of cancers from the rest of Cross River State, not covered by the population-based Calabar cancer registry. Cancer cases incident in the departments of Pathology and Hematology of the University of Calabar Teaching Hospital, between 1st of January 2004 to 31st December 2013 were selected. The data extraction forms were entered for each of the selected cases and each contained clinical, demographical and pathology information. The data so collected is entered the Statistical package for social sciences (SPSS) version 21 for analysis.

**3 RESULTS:** Nine hundred and forty-one (941) cases of cancer were seen outside Calabar in Cross River State, within January 2004 and December 2013. Mean age was  $49.18 \pm 18.9$  years, ranging from 1 to 100 years, and female: male ratio was 1: 0.97. Overall, the commonest age group was 40 to 64 years (46.3%), followed by 18 to 39 years (25.5%), and 65 years or greater (23.0%) (Table 1). Among males, the commonest age group was 40 to 64 years (40.1%) followed by 65 years or greater (35.1%). Among females, the commonest age group was also 40 to 64 years (52.4%) and followed by 18 to 39 years (32.7%). The significantly higher proportion of females compared with males were less than 40 years old (36.5% vs. 24.8%), while males were more commonly 65 years or older compared with females (75.2% vs. 63.5%,  $p=0.00$ ).

Table 1: Age distribution of all cancer cases by gender (N=941)

	Male n (%)	Gender Female n (%)	Total n (%)	Chi- square (p-value)
<b>Age groups (in years)</b>				
0-4	10 (2.2)	6 (1.3)	16 (1.7)	Fisher's Exact 0.00
5-12.	14 (3.0)	7 (1.5)	21 (2.2)	
13-17	7 (1.5)	5 (1.0)	12 (1.3)	
18-39	84 (18.1)	156 (32.7)	240 (25.5)	
40-64	186 (40.1)	250 (52.4)	436 (46.3)	
≥65	163 (35.1)	53 (11.1)	216 (23.0)	
Total	464 (100)	477 (100)	941 (100)	
<b>Age group (at 18 years)</b>				
<18	31 (6.7)	18 (3.8)	49 (5.2)	4.0
≥18	433 (93.3)	459 (96.2)	892 (94.8)	0.05
Total	464 (100)	477 (100)	941 (100)	
<b>Age groups (at 40 years)</b>				
<40	115 (24.8)	174 (36.5)	289 (30.7)	15.1
≥40	349 (75.2)	303 (63.5)	652 (69.3)	0.00
Total	464 (100)	477 (100)	941 (100)	

Considering both sexes for all ages, the common sites for cancer were breast (21.9%), prostate (21.3%), and lymphohematopoietic tissue (9.2%) (Table 2). Other less common sites were cervix (8.1%), soft tissue (8.0%), skin (5.4%), and head and neck (4.9%). Among males, common sites for cancer were prostate (43.1%), lymphohematopoietic tissue (12.9%), and soft tissue (11.4%). Other sites were head and neck (6.7%), skin (5.0%), and colorectal (4.1%). Among females,

common sites were breast (41.1%), cervix (15.9%), and skin (5.9%). Other less common sites were lymphohematopoietic (5.7%), soft tissue (4.6%), and head and neck (3.1%).

**Table 2: Frequency distribution of cancer by sites for all ages by gender (N=941)**

s/n	All cases		Male cases only		Female cases	
	Organ/tissue site	n (%)	Organ/tissue site	n (%)	Organ/tissue site	n (%)
1	Breast	206 (21.9)	Prostate	200 (43.1)	Breast	196 (41.1)
2	Prostate	200 (21.3)	Lymphohaematopoetic	60 (12.9)	Cervix	76 (15.9)
3	Lymphohaematopoetic	87 (9.2)	Soft tissue	53 (11.4)	Skin	28 (5.9)
4	Cervix	76 (8.1)	Head and Neck	31 (6.7)	Lymphohaematopoetic	27 (5.7)
5	Soft tissue	75 (8.0)	Skin	23 (5.0)	Soft tissue	22 (4.6)
6	Skin	51 (5.4)	Colorectal	19 (4.1)	Head and Neck	15 (3.1)
7	Head and Neck	46 (4.9)	Hepatobiliary	11 (2.3)	Colorectal	14 (2.9)
8	Colorectal	33 (3.5)	Eye	10 (2.2)	Ovarian	13 (2.7)
9	Eye	21 (2.2)	Breast	10 (2.2)	Uterus	11 (2.3)
10	Hepatobiliary	19 (2.0)	Urinary tract	9 (1.9)	Eye	11 (2.3)
	Unknown primary site	34 (3.6)	Unknown primary site	19 (4.1)	Unknown primary site	15 (3.1)
	Others	93 (9.9)	Others	19 (4.1)	Others	49 (10.4)
	Total	941 (100)	Total	464 (100)	Total	477 (100)

Among all cases of under-5 children, lymphohematopoietic (37.5%), eye (25.0%), and soft tissue (12.5%) were the common sites of cancer (table 3). These were also common sites for male and females within 0-4 years old.

**Table 3: Frequency distribution of cancers for 0-4 years age group by gender (n=16)**

s/n	All cases		Male cases only		Female cases	
	Organ/tissue site	n (%)	Organ/tissue site	n (%)	Organ/tissue site	n (%)
1	Lymphohematopoetic	6 (37.5)	Lymphohematopoetic	4 (40.0)	Lymphohematopoetic	2 (33.3)
2	Eye	4 (25.0)	Eye	2 (20.0)	Eye	2 (33.3)
3	Soft tissue	2 (12.5)	Soft tissue	1 (10.0)	Soft tissue	1 (16.7)
4	Urinary tract	1 (6.2)	Urinary tract	1 (10.0)	-	-
	Unknown primary site	3 (18.8)	Unknown primary site	2 (20.0)	Unknown primary site	1 (16.7)
	Total	16 (100)	Total	10 (100)	Total	6 (100)

Among children that were 5 years and older (5-12 years), lymphohematopoietic tissue (52.4%), eye (14.2%), urinary tract (9.5%), and soft tissue (9.5%), were the common sites for cancer (table 4). These were also common sites among teenagers within 13-17 years old (table 5).

**Table 4: Frequency distribution of cancers for 5-12 years age group by gender (n=21)**

s/n	All cases		Male cases only		Female cases	
	Organ/tissue site	n (%)	Organ/tissue site	n (%)	Organ/tissue site	n (%)
1	Lymphohematopoetic	11 (52.4)	Lymphohematopoetic	7 (50.1)	Lymphohematopoetic	4 (57.1)
2	Eye	3 (14.2)	Eye	2 (14.3)	Eye	1 (14.3)
3	Urinary tract	2 (9.5)	Soft tissue	2 (14.3)	Urinary tract	1 (14.3)
4	Soft tissue	2 (9.5)	Urinary tract	1 (7.1)	Skin	1 (14.3)
5	Skin	1 (4.8)	Small intestine	1 (4.8)	-	-
6	Small intestine	1 (4.8)	-	-	-	-
	Unknown primary site	1 (4.8)	Unknown primary site	1 (7.1)	-	-
	Total	21 (100)	Total	14 (100)	Total	7 (100)

**Table 5: Frequency distribution of cancers for 13-17 years age group by gender (n=12)**

s/n	Organ/tissue site	All cases		Male cases only		Female cases	
		Organ/tissue site	n (%)	Organ/tissue site	n (%)	Organ/tissue site	n (%)
1	Lymphohematopoetic	5 (41.7)		Lymphohematopoetic	2 (28.6)	Lymphohematopoetic	3 (60.0)
2	Soft tissue	2 (16.7)		Soft tissue	1 (14.3)	Soft tissue	1 (20.0)
3	Urinary tract	1 (8.3)		Urinary tract	1 (14.3)	-	-
4	Skin	1 (8.3)		Skin	1 (14.3)	-	-
	Unknown primary site	3 (25.0)		Unknown primary site	2 (28.6)	Unknown primary site	1 (20.0)
	Total	12 (100)		Total	7 (100)	Total	5 (100)

Among adults that were at least 18 years old for both sexes, the common sites for cancer were breast (23.1%), prostate (22.4%), and cervix (8.5%) (Table 6). Among male adults, common sites were prostate (46.2%), soft tissue (11.3%), and lymphohematopoietic tissue (10.9%). Among female adults' common sites were breast (42.7%), cervix (16.6%), and skin (5.9%).

**Table 6: Frequency distribution of cancers by sites for ≥18 years age group by gender (n=892)**

s/n	Organ/tissue site	All cases		Male cases only		Female cases	
		Organ/tissue site	n (%)	Organ/tissue site	n (%)	Organ/tissue site	n (%)
1	Breast	206 (23.1)		Prostate	200 (46.2)	Breast	196 (42.7)
2	Prostate	200 (22.4)		Soft tissue	49 (11.3)	Cervix	76 (16.6)
3	Cervix	76 (8.5)		Lymphohematopoetic	47 (10.9)	Skin	27 (5.9)
4	Soft tissue	69 (7.7)		Head and Neck	31 (7.2)	Soft tissue	20 (4.4)
5	Lymphohematopoetic	65 (7.3)		Skin	22 (5.1)	Lymphohematopoetic	18 (3.9)
6	Skin	49 (5.5)		Colorectal	19 (4.4)	Head and Neck	15 (3.3)
7	Head and Neck	46 (5.2)		Hepatobiliary	11 (2.5)	Colorectal	14 (3.1)
8	Colorectal	33 (3.5)		Breast	10 (2.3)	Ovarian	13 (2.8)
9	Eye	14 (1.6)		Eye	6 (1.4)	Uterus	11 (2.4)
10	Hepatobiliary	14 (1.6)		Stomach	6 (1.4)	Genitalia	10 (2.2)
	Unknown primary site	27 (3.0)		Unknown primary site	14 (3.2)	Unknown primary site	13 (2.8)
	Others	93 (10.6)		Others	18 (4.1)	Others	46 (9.9)
	Total	892 (100)		Total	433 (100)	Total	459 (100)

Among young adults within 18 to 39 years old, breast (32.5%), soft tissue (16.2%), and head and neck (9.6%) were the common sites of cancer (table 7). Among males, the common sites were soft tissue (34.5%), head and neck (16.7%), and lymphohematopoietic tissue (14.3%). Among females, breast (48.7%), skin (9.0%), and cervix (6.4%) were the common sites.

**Table 7: Frequency distribution of cancers sites for 18-39 years age group and gender (n=240)**

s/n	Organ/tissue site	All cases		Male cases only		Female cases	
		Organ/tissue site	n (%)	Organ/tissue site	n (%)	Organ/tissue site	n (%)
1	Breast	78 (32.5)		Soft tissue	29 (34.5)	Breast	76 (48.7)
2	Soft tissue	39 (16.2)		Head and Neck	14 (16.7)	Skin	14 (9.0)
3	Head and Neck	23 (9.6)		Lymphohematopoetic	12 (14.3)	Cervix	10 (6.4)
4	Skin	19 (7.9)		Colorectal	6 (7.1)	Soft tissue	10 (6.4)
5	Lymphohematopoetic	15 (6.2)		Hepatobiliary	5 (6.0)	Head and Neck	9 (5.8)
6	Colorectal	12 (5.0)		Eye	5 (6.0)	Colorectal	6 (3.8)
7	Cervix	10 (4.2)		Skin	5 (6.0)	Ovary	5 (3.2)
8	Hepatobiliary	9 (3.8)		Breast	2 (2.4)	Hepatobiliary	4 (2.6)
9	Eye	8 (3.3)		Lung	1 (1.1)	Urinary tract	4 (2.6)
10	Ovary	5 (2.1)		Urinary tract	1 (1.1)	Lymphohematopoetic	3 (1.9)
	Unknown primary site	9 (3.8)		Unknown primary site	4 (4.8)	Unknown primary site	5 (3.2)

Others	13 (5.4)	-	-	Others	10 (6.4)
Total	240 (100)	Total	84 (100)	Total	156 (100)

Among older adults within 40 to 64 years breast (25.5%), prostate (16.3%), and cervix (11.7%) were the common sites for cancer (11.7%) (Table 8). Among males, common sites were prostate (38.2%), lymphohematopoietic (15.6%), and soft tissue (10.2%). Among females, common sites were breast (42.0%), cervix (20.4%), and lymphohematopoietic tissue (5.2%).

**Table 8: Frequency distribution of cancers for 40-64 years age group by gender (n=436)**

s/n	Organ/tissue site	All cases		Male cases only		Female cases	
		n (%)		Organ/tissue site	n (%)	Organ/tissue site	n (%)
1	Breast	111 (25.5)		Prostate	71 (38.2)	Breast	105 (42.0)
2	Prostate	71 (16.3)		Lymphohematopoietic	29 (15.6)	Cervix	51 (20.4)
3	Cervix	51 (11.6)		Soft tissue	19 (10.2)	Lymphohematopoietic	13 (5.2)
4	Lymphohematopoietic	42 (9.6)		Head and Neck	11 (5.9)	Skin	8 (3.2)
5	Soft tissue	27 (6.2)		Skin	11 (5.9)	Soft tissue	8 (3.2)
6	Skin	19 (4.4)		Colorectal	11 (5.9)	Ovary	8 (3.2)
7	Colorectal	17 (3.9)		Hepatobiliary	6 (3.2)	Colorectal	6 (2.4)
8	Head and Neck	16 (3.7)		Breast	6 (3.2)	Lungs	6 (2.4)
9	Hepatobiliary	9 (2.2)		Stomach	3 (1.6)	Head and Neck	5 (2.0)
10	Ovary	8 (1.8)		Urinary tract	3 (1.6)	Hepatobiliary	3 (1.2)
	Unknown primary site	14 (3.2)		Unknown primary site	7 (3.8)	Unknown primary site	7 (2.8)
	Others	51 (11.6)		Others	9 (4.9)	Others	30 (12.0)
	Total	436 (100)		Total	186 (100)	Total	250 (100)

Among the elderly that were 65 years or older, prostate (59.7%), breast (7.9%), and cervix (6.9%) were the common sites of cancer (table 9). Males had a prostate (79.1%), skin (3.7%), lymphohematopoietic (3.7%), and head and neck (3.7%), as the common sites. Common sites among females were breast (28.3%), cervix (28.3%), skin (9.4%), and eye (5.7%).

**Table 9: Frequency distribution of cancers for ≥65 years age group by gender (n=216)**

s/n	Organ/tissue site	All cases		Male cases only		Female cases	
		n (%)		Organ/tissue site	n (%)	Organ/tissue site	n (%)
1	Prostate	129 (59.7)		Prostate	129 (79.1)	Breast	15 (28.2)
2	Breast	17 (7.9)		Skin	6 (3.7)	Cervix	15 (28.2)
3	Cervix	15 (6.9)		Lymphohematopoietic	6 (3.7)	Skin	5 (9.4)
4	Skin	11 (5.1)		Head and Neck	6 (3.7)	Eye	3 (5.7)
5	Lymphohematopoietic	8 (3.7)		Stomach	3 (1.9)	Lymphohematopoietic	2 (3.8)
6	Head and Neck	7 (3.2)		Colorectal	2 (1.2)	Colorectal	2 (3.8)
7	Colorectal	4 (1.9)		Urinary tract	2 (1.2)	Soft tissue	2 (3.8)
8	Eye	4 (1.9)		Breast	2 (1.2)	Uterus	2 (3.8)
9	Stomach	3 (1.4)		Eye	1 (0.6)	Pancreatic	2 (3.8)
10	Urinary tract	3 (1.4)		Lung	1 (0.6)	Head and Neck	1 (1.9)
	Unknown primary site	4 (1.9)		Unknown primary site	2 (1.2)	Unknown primary site	2 (3.8)
	Others	11 (5.0)		Others	3 (1.9)	Others	2 (3.8)
	Total	216 (100)		Total	163 (100)	Total	53 (100)

**4 DISCUSSIONS:** Cancer occurs in a relatively younger average age range in the rest of Cross River State  $49.18 \pm 18.9$ , this compares with the Calabar data where Ekanem and Parkin reported 43.6 in females and 52.3 in males(1). This pattern is commonly reported in many Nigerian studies (16, 24-26) and some African studies as well as among Blacks in the diaspora (27, 28). It has been argued that African populations are generally young and this is reflected in the mean populations affected by non-communicable diseases such as cancer. It appears the main driver of the reduced age of cancer incidence in our study is breast cancer in females. The mean age reported for female breast cancer in Nigerian women and black women are low (29-31). In our study, the 40 to 60 years age group and 18 to 39 year age ranges which dominated the cancer prevalence in women (52% vs 33% )were accounted for by mainly breast cancer. The aetiological factors accounting for the observed lower age of incidence of breast cancer in our women is beyond the scope of this study. Although Anyanwu et al in Southeast Nigeria in their series reported an increasing age of occurrence(70 )(32) as is often the case in western countries.

Considering both sexes, breast cancer, prostate cancer, Lymphohaematopoietic and cervical cancer are the commonest in that order, in the rest of Cross River. This is similar to the report by GLOBOCAN 2018 Fact sheet on Nigeria(15). It is also similar to other Nigerian studies from the south of the country with a few variations (1, 16, 26). Although the pattern is somewhat different from that seen in the North of the country in which bladder cancer alternates with prostate cancer in some centres (33, 34). Our pattern is different from literature from the western world which often features prominence of lung cancers in both sexes(4). The pattern of cancer in males in our study show Prostate, lymphohematopoietic, soft tissue and head and neck and females, breast cancer, cervix, skin and lymphohematopoietic as the commonest. These are similar to the pattern in Calabar(1). Our pattern appears to conform with most developing countries where the so-called infection/poverty associated cancers( cervix, Kaposi, some lymphomas and hepatocellular carcinoma ) are occurring side by side with the so-called cancer of affluence( Prostate, breast and colorectal). (27, 35).

The pattern of cancer revealed in our study, is similar in the 0 to 4 age range as well as 5 to 12-year age range. In both sexes, cancer of the lymphohematopoietic, eye and soft tissue or urinary tract are the commonest in both sexes and either males or females. The pattern in the 13 to 17 age group is similar to the 0-4 and 5 to 12, except that eye cancers do not feature in this age group. The eye is replaced in the second position by soft tissue cancers and lymphohematopoietic tumours maintain the first position in overall and in both sexes. This pattern is similar to the report from Calabar, the capital city of Cross River State(1). The pattern is also similar to reports from other Nigerian studies(18-20), except that CNS tumours are not seen in the rest of Cross River perhaps because Neurosurgical units are underdeveloped in the reference Hospitals these data is collated from.

Among adults 18 to 39 in both sexes, breast, prostate, cervical, soft tissue and Lymphohaematopoietic cancers are the dominant cancers, with skin cancer, head and neck hepatobiliary following in that order. Among adult males in this age range, prostate cancer, soft tissue, lymphohematopoietic and head and neck is dominant cancer, with breast and stomach cancer featuring in the 8th and 9th positions. In adult females, breast, cervix, skin and soft tissue are dominant and differ from males in that hepatobiliary cancers are not in the first ten and ovary, uterine and cancer from the rest of the genitalia feature in the first ten. The cancers of affluence (Breast, prostate) seems to have marginally overtaken infection(36) /poverty-related

cancers (cervix and hepatobiliary cancers) in our environment. This is the pattern reported in many African and Caribbean studies(5, 27, 37, 38). Perhaps due to the changing economic outlook(5). A notable difference from the reports in western countries is the rarity of lung cancer which may be due to low tobacco use in contrast to the west. In the 18 to 39 age group, a notable difference in both sexes, prostate cancer is not seen, breast cancer still dominates, while cervical cancer occupies the 7th position and ovarian cancer is in the first ten. The dominance of breast cancer in this age range is keeping with the widely reported low mean age of occurrence in Nigeria(29, 39, 40). In males 18 to 39, soft tissue, head and neck lymphohematopoietic, and colorectal are dominant while breast, skin, cervix and soft tissue are dominant in females. In contrast, an American report in a 15 to 29 age group found lymphomas, skin male genital and endocrine were the commonest in that age range(2).

The pattern in the 40 to 64 years age range resembles the adult pattern 18 to 39 years in both sexes combined and in males and females. In the 65 years and above (both sexes) Prostate cancer dominates. Why prostate cancer is a disease of the old and breast cancer a disease of relatively younger subjects in Calabar is unknown for now. But the tumour biology may be different in both cases. It is also possible that population dynamics may be responsible. Both scenarios are beyond the scope of this work.

**5 CONCLUSION:** Cancer in the rest of Cross River state occurs at a relatively early age. Breast cancer occurs early, and infection-associated cancers such as cervical cancer and hepatocellular cancers are equally common. Efforts at prevention of cervical and hepatocellular carcinoma through vaccination and screening programme should be put in place. Other effort aimed at early detection and treatment should be instituted.

**RECOMMENDATION:** Population-based cancer registration should be extended to the rest of Cross River State.

**ETHICAL APPROVAL:** Ethical approval was granted by the institutional ethical review board.

**CONSENT:** NA

**COMPETING INTEREST:** The authors declare no competing interest.

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