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Pattern of Admissions and Institutional Incidence of Breast Cancer at the Rivers State University Teaching Hospital, Port Harcourt, Nigeria

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ABSTRACT

Background: Disease pattern varies in different parts of the world due to differences in interactions of prevalent environmental and other factors. The aim of this study was to evaluate the pattern of admissions and incidence of breast cancer at the Rivers State University Teaching Hospital from January 2024 to December 2024.

Materials and Methods: A retrospective observational study was done among admitted breast cancer patients using admission registers and records from the cancer registry, and data obtained was formed into tables and analysed using the Microsoft Excel Spreadsheet.

Results: There were 120 newly diagnosed cases of breast cancer in the year 2024, out of which 116 were female breast cancer. Patients aged 40 – 59 years were mostly affected (n=65, 54.1%), followed by 60-79 years (n=27, 22.5%), and 20-39 years (n=24, 20%). Out of the 500 female surgical ward admissions, 77 (15.4%) were due to breast cancer. Stage IV breast cancer disease comprised 42 (54.5%) of all breast cancer admissions, followed by stage III disease (n=34, 44.2%). Female breast cancer incidence was 209.5 per 100,000 adult population and the institutional incidence of breast cancer therefore was 144.09 per 100,000 adult population. Out of the 120 new cases of breast cancer seen, 33 patients (27.5%) died, and breast cancer mortality was 39.6 per 100,000 adult population in year 2024.

Conclusion: Rising number of breast cancer cases was observed. Breast cancer accounted for more than a sixth of female surgical ward bed occupancy, and metastatic breast cancer was the most common. Action is needed from relevant governmental and non-governmental agencies to stem the rising tide.

Keywords
Admissions, Breast Cancer, Pattern, Presentations, Port Harcourt, Nigeria.

Introduction
Disease pattern varies in different parts of the world due to differences in interactions of prevalent environmental factors, access to healthcare/health system factors, cumulative lifestyle preferences, individual socioeconomic status, and genetic predispositions. This thought has been echoed in previous researches [1-3], and is also true concerning breast cancer [4]. Global data from 185 countries in five continents using the GLOBOCAN database had revealed occurrence of 2.3 million new cases and 670,000 breast cancer deaths in the year 2022, and a projected 38% increase in incidence and 68% rise in mortality breast cancer by year 2050 [5]. Breast cancer incidence is also found to be higher in developed countries probably due to improved screening services and early detection rates. but mortality rate is

rather higher in countries with low-medium human development indices for multiple reasons [6,7]. Heterogeneity exist in the pathological characteristics of breast cancer in different parts of the world, in terms of clinical presentation, morphology, molecular features, biological behaviours, and response to therapy. Reports in research works clearly emphasized this statement [8-11].

A meta-analysis of breast cancer in Africa published in year 2021 reported that stage I invasive breast tumours comprised 7% of the distribution, stage II disease was 26%, stage III was 50%, and stage IV cancer was 17% [12]. This finding was also corroborated by the observations in another systematic review [13]. Countries in Africa with higher human development indices are observed to have higher breast cancer survival rates [14]. Additionally, patients in lower socio-economic groups, especially users of complementary and alternative medicine were found to be in the majority of women who had untreated breast cancer in sub-Saharan Africa, as reported in a prospective observational study [15]. Socioeconomic and cultural factors therefore exercise a huge influence on early detection, management, and outcome of breast cancer in Africa, as revealed from reports emerging from different parts of Africa [11,16-20]. In Nigeria, a study reported that the median cancer diagnosis - from onset of symptoms to first presentation to a healthcare professional averaged 12 months in Northern and Southern Nigeria [21]. The reasons for delay were described as patient factors - financial constraint, use of alternative therapy, fear and denial, social roles and family commitments, role of informal caregivers; and health system and service provider factor - misdiagnosis and inconclusive results, delayed biopsy-histology reports, limited access to healthcare specialities, obstacles in the administrative process, hospital equipment and infrastructure deficiencies as well as distance to the health facility. Additionally, the effectiveness/participation in breast cancer screening services have been reported to be hampered by education, household income, availability, and affordability in resource-limited setting [22].

In our area of practice, the University of Port Harcourt Teaching Hospital was the foremost tertiary healthcare center servicing the health of residents in Port Harcourt and its environs, and earlier publications based on data collected from 1991-1995 and thereafter had emphasized the occurrence of advanced breast cancer in Port Harcourt [23,24]. A retrospective review of breast cancer admissions at the University of Port Harcourt Teaching Hospital from 2019 to July 2020, published in year 2021 revealed that ward admission rate was 1:137, and all the cases admitted were advanced [25]. Subsequent publications from the same center in Port Harcourt had also reported the burden of advanced breast cancers [26-28]. There had been advocacies on breast cancer from published researches and also from non-governmental organizations and governmental agencies [29-32]. There is therefore need to ascertain progress made in these advocacies, screening and therapeutic services from the lenses of the experiences at our relatively new and active tertiary center. The aim of this study was to evaluate the pattern of admissions and institutional incidence of breast cancer at the Rivers State University Teaching Hospital from January 2024 to December 2024.

Materials and Methods

Research Design: A retrospective observational study was done.

Study Area: The study was carried out in Port Harcourt, the capital of Rivers State, South-South of the Federal Republic of Nigeria.

Study Setting: The Female Surgical Ward, Accident & Emergency Department, and Cancer Statistics Registry of the Rivers State University Teaching Hospital - a tertiary healthcare facility in Port Harcourt City, was the study setting.

Study Population: All breast cancer patients who were admitted and treated at the Accident and Emergency Department, Female Surgical Ward; and record of new cases at the Cancer Registry/ Statistics office of the Rivers State University Teaching Hospital within the study period were included in the study.

Sample Size Determination: All identified admitted breast cancer patients were included in the study.

Sampling Method: Total population of breast cancer cases found in the registers were used.

Study Instrument: The registers of the Emergency Department, female surgical wards, and hospital cancer registry were used to obtain data imputed into a proforma designed for the study.

Study Variables: Total number of new breast cancer cases seen in the hospital in year 2024, number of breast cancer deaths in year 2024, number of breast cancer cases admitted into the Female Surgical Ward, number of all surgical admissions in the Accident and Emergency Department, number of emergency breast cancer admissions, indications for emergency breast cancer admissions.

Data Analysis: Data obtained was formed into tables and analysed using the Microsoft Excel Spreadsheet.

Reliability of Instrument: The study data was scrutinized by all the authors for authenticity or otherwise before use.

Ethical Considerations: The approval of the Research Ethics Committee of the Rivers State University Teaching Hospital was obtained, and confidentiality of information was maintained in the process of data collection. This study involved only contact with medical records with no contact with the individual patients.

Table 1 shows breast cancer admissions into the female surgical ward in year 2024. Out of the 500 patients that were admitted, 77 (15.4%) were due to breast cancer. December was the month with the highest number of breast cancer admissions (n=15), which was 71.43% of the total number of bed space occupied.

Results

Table 1 shows breast cancer admissions into the female surgical ward in year 2024. Out of the 500 patients that were admitted, 77 (15.4%) were due to breast cancer. December was the month with

Table 1: Breast Cancer Admissions into the Female Surgical Ward in Year 2024.

S/N	Month of Admission	Total Admissions (Breast Cancer and Others)	Breast Cancer Admissions	Percentage of Admissions (%)
1	January	23	7	30.43
2	February	27	9	33.33
3	March	52	9	17.31
4	April	66	6	9.09
5	May	61	7	11.46
6	June	41	2	4.87
7	July	47	5	10.64
8	August	59	3	5.08
9	September	35	3	8.57
10	October	36	5	13.89
11	November	32	6	18.75
12	December	21	15	71.43
	Total	500	77	15.4

Table 2: Female Surgical Ward Breast Cancer Admissions and Stages in Year 2024.

S/N	Month of Admission	Stage O Breast Cancer	Stage I Breast Cancer	Stage II Breast Cancer	Stage III Breast Cancer	Stage IV Breast Cancer
1	January	-	-	-	3	4
2	February	-	-	-	4	5
3	March	-	-	-	4	5
4	April	-	-	-	2	4
5	May	-	-	-	4	3
6	June	-	-	-	1	1
7	July	1	-	-	1	3
8	August	-	-	-	1	2
9	September	-	-	-	2	1
10	October	-	-	-	2	3
11	November	-	-	-	3	3
12	December	-	-	-	7	8
	Total	1 (1.3%)	-	-	34 (44.2%)	42 (54.5%)
	77					

Table 3: Breast Cancer Admissions in the Accident and Emergency Department in Year 2024.

S/N	Month of Admission	Total Surgical Admissions (General Surgery, Urology, Orthopaedic, Cardiothoracic, and Plastic Surgery)	Breast Cancer Admissions	Percentage of Monthly Admissions (%)	Indications for Admission in Descending Order of Occurrence
1	January	77	4	5.2	
2	February	78	6	7.7	
3	March	37	3	8.1	• Pleural Effusion with Respiratory Distress
4	April	57	3	5.3	• Severe Anaemia with Respiratory Distress
5	May	101	5	5.0	• Loss of consciousness with Fungating Ulcer
6	June	101	7	6.9	• Paraplegia with incontinence
7	July	109	6	5.5	• Bleeding Breast ulce
8	August	143	6	4.2	
9	September	104	2	1.9	
10	October	147	9	6.1	
11	November	125	5	4.0	
12	December	132	8	6.1	
	Total	1,211	64	5.3	

Table 4: Breast Cancer New Cases from the Hospital Statistics Office in Year 2024.

Age Range→	0 -19		20 - 39		40 - 59		60 - 79		80+		TOTAL		
Month↓/Sex→	M	F	M	F	M	F	M	F	M	F	M	F	T
January	2	0	0	1	1	10	0	4	0	0	3	15	18
February	0	1	0	3	0	5	0	2	0	0	0	11	11
March	0	0	0	2	0	5	0	7	0	0	0	14	14
April	0	0	0	1	0	4	0	4	0	1	0	10	10
May	0	0	0	1	0	7	0	2	0	0	0	10	10
June	0	0	0	1	0	2	0	1	0	0	0	4	4
July	0	0	0	5	0	6	0	1	0	0	0	12	12
August	0	0	1	1	0	3	0	0	0	0	1	4	5
September	0	0	0	1	0	7	0	0	0	0	0	8	8
October	0	0	0	4	0	6	0	3	0	0	0	13	13
November	0	0	0	1	0	3	0	2	0	0	0	6	6
December	0	0	0	2	0	6	0	1	0	0	0	9	9
Total	2	1	1	23	1	64	0	27	0	1	4	116	120

Table 5: Breast Cancer Mortality from the Statistics Office of the Hospital in Year 2024.

Breast Cancer Deaths 2024				
Month↓	**Total Number of Breast Cancer New Cases**	**Total Number of Breast Cancer Deaths**		
Sex →		M	F	Total / Month and % of New Cases
January	18	1	3	4 (22.2%)
February	11	0	3	3 (27.3%)
March	14	0	1	1 (7.1%)
April	10	0	1	1 (10%)
May	10	0	5	5 (50%)
June	4	0	1	1 (25%)
July	12	0	2	2 (16.7%)
August	5	0	5	5 (100%)
September	8	0	1	1 (12.5%)
October	13	0	3	3 (23.1%)
November	6	0	0	0 (0%)
December	9	1	6	7 (77.8%)
Total	120	2	31	33 (27.5%)
Breast Cancer Mortalit $x = \frac{Breast\ Cancer\ Death}{Total\ Population\ at\ Risk} \ x\ 100,000 = \ x = \frac{33}{83,278} \ x\ 100,000 \ = 39.6\ per\ 100,000$				

the highest number of breast cancer admissions (n=15), which was 71.43% of the total number of bed space occupied.

Table 3 shows breast cancer admissions in the Accident and Emergency Department in year 2024. There were 64 breast cancer admissions out of 1211 surgical admissions, amounting to 5.3% (range of 1.9%-8.1%). The most common reason for admission of breast cancer patients into the Emergency Department was respiratory distress following pleural effusion, followed by respiratory distress following severe anemia, then unconsciousness and paraplegia with incontinence, etc.

Table 4 shows breast cancer new cases obtained from the hospital statistics office for year 2024. There were 120 newly diagnosed cases of breast cancer, out of which 4 were male breast cancer, and 116 were female breast cancer. A variation of 4-18 new breast cancer cases was seen on a monthly basis. Patients aged 40 – 59 years were mostly affected (n=65, 54.1%), followed by 60-79 years (n=27, 22.5%), and 20-39 years (n=24, 20%).

Table 5 shows breast cancer mortality for each month of the year 2024, and the percentage of breast cancer new cases from the statistics office of the hospital. Out of the 120 new cases of breast cancer seen, 33 (27.5%) patients died. The institutional breast cancer mortality was 39.6 per 100,000.

Table 5 shows overall adult hospital attendance and the incidence of breast cancer for year 2024. The overall adult hospital attendance for the year 2024 was eighty-three thousand, two hundred and seventy-eight patients (83,278), out of which adult male attendance was 27,900 and adult female attendance was 55,378. The institutional incidence of breast therefore was 144.09 per 100,000 adult population.

Discussion
Breast cancer is a global subject as it takes the lead as the most common cancer among women globally [33,34]. It is a key aspect of Goal Number 3 of the United Nations' Sustainable Development Goals (SDGs) [35], accented to by 191 United Nations Member

Table 6: Overall Adult Hospital Attendance and the Incidence of Breast Cancer for Year 2024.

Month	Male						Female						Grand Total
	20-39 Years	40-59 Years	60-79 Years	80-99 Years	≥100 Years	Total	20-39 Years	40-59 Years	60-79 Years	80-99 Years	≥100 Years	Total	
Jan.	676	1145	620	66	0	2507	2677	2001	725	87	0	5490	7997
Feb.	554	989	624	55	0	2222	2225	1737	700	46	0	4708	6930
March	512	857	589	64	0	2022	1283	1458	686	65	0	3492	5514
April	666	1190	652	75	0	2583	2654	2114	761	54	0	5583	8166
May	594	1057	592	77	0	2320	2422	1679	771	61	0	4933	7253
June	463	754	555	54	1	1827	2025	1245	697	54	0	4021	5848
July	822	1372	717	61	1	2973	2859	2126	952	65	0	6002	8975
Aug.	627	934	597	63	1	2222	1570	1439	750	68	1	3828	6050
Sept.	572	1008	609	46	1	2236	2070	1467	725	64	3	4329	6565
Oct.	712	1159	671	58	0	2600	2463	1803	773	73	0	5112	7712
Nov.	665	1079	660	66	0	2470	1599	1615	800	64	0	4078	6548
Dec	469	829	565	55	0	1918	1976	1171	592	62	1	3802	5720
Total	7332	12373	7451	740	4	27900	25823	19855	8932	763	5	55378	83278

Total New Female Breast Cancer = 116; Total New Breast Cancer Cases = 120

$$Breast\ Cancer\ Incidence\ x = \frac{New\ Cases}{Total\ Population\ at\ Risk} x100{,}000 = x = \frac{116}{55{,}378} x100{,}000 = 209.5$$

Female Breast Cancer Incidence = 209.5 per 100,000 adult female population

$$Breast\ Cancer\ Incidence\ x = \frac{New\ Cases}{Total\ Population\ at\ Risk} x100{,}000 = x = \frac{120}{83{,}278} x100{,}000 = 144.09$$

Breast Cancer Incidence = 144.09 per 100,000 adult population

States and at least 22 international organizations from its inception as Millennium Development Goals (MDGs), which was aimed at addressing poverty, hunger, disease, illiteracy, environmental degradation, and discrimination against women. The Federal Republic of Nigeria, the 99th (7th October 1960) Member of the United Nations [36,37], is also concerned about issues of breast cancer among her citizens. The patients in the study were reported from Port Harcourt in Rivers State, in the Niger Delta Region of Nigeria. Patients at middle age (40-59 years) comprised 54.1% of the new cases of breast cancer seen, followed by the old and elderly (60-79 years) involved in 22.5%. Our finding is similar to the observed age range of 49.8 ± 12.2 years reported from institutional data from most Nigerian centers [38,39]. However, our study differs from a previous report in Port Harcourt which indicated that the second age range affected was 20-40 years [26], whereas older age group (60-79 years) was next in our study.

One hundred and twenty new cases of breast cancer were seen in this study in the year 2024. This figure is alarming for new cases alone in a single centre. In a study of cancer cases using cancer registries in Nigeria between 2009 and 2016 and published in 2022, researchers from the University of Port Harcourt Teaching Hospital had reported 581 total (new and old cases) breast cancer cases in 7 years. Our observation of 120 new cases in one year therefore implies that if this pace is sustained, there could be 840 new cases by 2030 from this centre. This noticeable change in Port

Harcourt that occurred within a 10-year period is exclusive of the old cases of breast cancer and therefore worrisome. It is unlikely that improvement in screening services may have resulted in improved detection of breast cancer in Port Harcourt, as advanced cases were being admitted. Our observation is similar to global findings of increasing incidence of breast cancer [40,41], and similar increase reported in Nigeria and Africa [42,43]. That 116 (96.7%) breast cancer cases involved were females is rather not surprising as this disease is universally commoner among females (97-99%) [12,44,45].

As the number of new cases of breast cancer appear to rise, breast cancer on the average was responsible for 15% bed occupancy in the female surgical ward in the year 2024. We also observed however, that there were few instances in some months when the percentage bed occupancy for breast cancer increased to 71.43%. Patients with breast cancer stay longer on admission than other surgical patients, and at metastatic stage, are unable to keep pace with the unending financial demand. Some loose their of means of livelihood, and family support dwindle or get outrightly exhausted. Hence, prolonged hospital stay is often associated with inability to pay for health care resulting in bedspaces being occupied for longer than usual, depriving other patients of needed bedspace for other surgical diseases. This has been reported in other studies conducted within [25,26], and outside Nigeria [47]. The society is therefore negatively impacted by this sad phenomenon. Although

it is already known that breast cancer in Nigeria and Africa present at advanced stages (mostly stage III) [12,26,48], the observations in our study differs as purely metastatic breast cancer admissions (stage IV disease) accounted for 54.5%, while stage III disease was 44.2% of all breast cancer admissions. Our study is similar to previous report on breast cancer at the University of Port Harcourt Teaching Hospital published in year 2021 where stage IV disease also dominated the ward admissions [25]. The reasons for this sustained pattern of late stage presentations of breast cancer could among others possibly be due to patronage of alternative care services, and the high cost of screening, diagnosis, and treatment services which most patients are unable to afford. This reasoning has also been echoed in previous studies in Nigeria [25,26,49,50].

There were 64 emergency breast cancer admissions, amounting to 5.3% of broad surgical admissions, and the common indications for admission were due to complications of metastatic breast cancer including pleural effusion, severe anemia, unconsciousness, paraplegia, jaundice. Our study finding is similar to the observations of researchers from Benin in Nigeria where the most common indication for emergency admission of breast cancer was due to metastatic disease [51]. This clinical picture or presentation of breast cancer does not speak well of the effectiveness and efficacy of control measures for breast cancer. While it is an easy way out to put the blame probably at the door-step of the patients, it should be noted that it is akin to a school where most of the students perpetually fail their examinations, for which accusing fingers will also be directed to the teachers, the teaching process, and the education system. In similar fashion the observations in this study therefore rather directs attention to some failure in public health education and community engagement of the citizens, failure in breast cancer screening services, failure in the treatment and other preventive measures for breast cancer, and cast aspersions on political will and health budgeting. It is a test of the sincerity of the healthcare system in addressing the challenges, and calls for urgency in re-evaluation of the prevalent breast cancer control measures.

Two third (66.4%) of total adult hospital attendees in the year 2024 were women, and female breast cancer incidence was 209.5 per 100,000 while the institutional incidence (male and female) of breast cancer therefore was 144.09 per 100,000. These findings are far higher than the reported incidence of breast cancer in Sub-Saharan Africa (SSA) reported at 22.4 per 100 000, and 23.6 per 100,000 overall pooled crude incidence from hospital-based registries, as reported in a study published in year 2018 [52]. It is also higher than the value of 116/100,000 reported for breast cancer in Nigeria in the year 2001 [53]. Even the global age-standardized breast cancer incidence rate was 46.3 per 100,000 population [7]. A rising incidence could explain this observation as similar observations of rising breast cancer incidence have been reported in Nigeria [54-56]. We observed that thirty-three patients (27.5%) died in the year 2024 out of the 120 new cases seen, the institutional breast cancer mortality in year 2024 was therefore 39.6 per 100,000. Although this report is close to the reported 30% mortality (626,679 global mortality versus 2,088,849 global new cases) reported in year 2021 [7], it is still worrisome. In a cancer study conducted in 53 countries in Africa from 2016 and 2020, it was observed that Nigeria had the "highest number of women per 100,000 women" dying from cancer [57,58]. We observed an institutional breast cancer mortality of 39.6 per 100,000. Although this is an institutional data, it is higher than the 2023 reported value for the Caribbean (18.9/100,000), Western Africa (22.3/100,000), and Melanesia (37.5/100,000) [59].

Study Limitations
This is a retrospective study whose data were sourced from registers of admissions. Some of the needed information were incomplete or improperly documented (especially the Emergency Department Register where the indication for admissions may not have been properly documented).

Conclusion
Rising number of breast cancer was observed. Breast cancer accounted for more than a sixth of female surgical ward bed occupancy, and metastatic breast cancer was the most common. Action by relevant governmental and non-governmental agencies is needed to stem the rising trend.

Recommendations
The above data shows how common and serious the issue of breast cancer is in our area of practice. The following actions are therefore needed for improvement:
1) It should be made mandatory (if possible, through legislation) for any case of breast cancer (and any other cancers) to be referred and treated in only designated centers to eliminate the hold-up that occurs in primary and secondary centers.
2) There should be compulsory free screening at dedicated centers for breast cancer, to ensure early detection and early treatment.
3) The cost of investigations and treatment for breast cancer should be taken over or subsidized by government at all levels. This however requires strong political commitment.

Acknowledgement

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