

Article Identifier: <https://identifier.visnav.in/1.0006/cmr-22i-00201/>

Age distribution and histo-epidemiological profile of breast cancer cases in Bauchi, North-eastern Nigeria: A five-year review

Jude Amechi Nnaka ^{1*}, Amdo Likkason ², Kogi Myiriah Prudence ³, Etonu Victor Ojima-Ojo ⁴

¹ Department of Anatomy, Faculty of Basic Medical Science, College of Health Sciences, Nnamdi Azikiwe University, Nnewi Campus, Nigeria.

² Department of Biochemistry, Faculty of Life Science, Ahmadu Bello University, Zaria, Nigeria.

³ Department of Anatomy, Faculty of Basic Medical Science, Bingham University, Karu, Abuja, Nigeria.

⁴ Department of Anatomy, University of Illorin, Kwara State, Nigeria.

* For correspondence: nnakajude@gmail.com

Received on: 02 September 2022

Published on: 12 October 2022

ABSTRACT

Breast cancer cases in Nigeria are often characterized by late presentation, representing the primary cause of cancer-related deaths in the region. This study is a retrospective review of all breast cancer specimens submitted to the histopathological department of Abubakar Tafawa Balewa University Teaching Hospital, Bauchi State, Nigeria. A total of 199 confirmed cases were retrieved in 5 years (2017-2021). Out of the 199 cases that were analyzed, 7 (3.5%) were males, and the remaining 192 (96.5%) were females with a male to female ratio of 1:27. The most common histological type of breast cancer recorded is the Invasive Ductal Carcinoma (Non otherwise specified) which represented 89% of all cases. Six (6) deaths were recorded across the males and females patients, with no significant gender-based difference in death outcome ($p=0.635$). Only one case of Ductal Carcinoma In Situ was diagnosed within the period under review, with an average of about 3.3 diagnosis per month. Programs and health outreaches that promote and encourage better health-seeking attitude and routine breast screening is highly recommended.

Keywords: Nigeria, retrospective study, breast cancer, histological profile, age distribution, histo-epidemiology

1. INTRODUCTION

The 2020 Global Cancer Statistics report shows that breast cancer has surpassed lung cancer as the most prevalent cancer globally, with an estimated 2.3 million new cases in 2020 [1]. Breast cancer is the fifth-leading

cause of cancer-related death, and the primary cause of cancer-related mortality in women worldwide [1]. In 2019 alone, breast cancer was responsible for about 700,660 deaths, with over 2 million disabilities-adjust life years [2]. Epidemiological data show that Africa has

a low number of breast cancer cases compared to high-income North America and European regions [3], even though breast cancer represents the primary cause of cancer-related deaths in the region [4]. While it is true that factors relating to western diet and lifestyle choices like breast implants and hormone therapy after menopause may contribute to the high prevalence of breast cancer seen in high-income North America and Europe [5], the current low prevalence of breast cancer in Africa is most likely due to poor or limited diagnosis, with the screening rates pegged between 3.1% and 10.2% [6-7].

In Nigeria, the majority of diagnosed breast cancer cases are characterized by late presentation, contributing to the low survival and high mortality of the disease [8, 9]. The risk of dying from breast cancer, among other factors, is also determined by the aggressiveness of the tumor which is largely dependent on its histopathological subtype. More so, studies have shown that women of African descent are more likely to develop a more aggressive form of breast cancer with particular genetic and histopathological characteristics.

Studies that describe the histological profiles of breast cancer cases are few in Nigeria, and even more scarce in the North-eastern region. To the best of our knowledge, Bauchi state in North-eastern Nigeria has not been the subject of any such research. Therefore, the objective of this current study is to review the histological profile of breast cancer cases in Bauchi state, North-eastern Nigeria, as well as the age distribution of breast cancer patients in the state.

2. METHODS AND MATERIALS

2.1. Research design

This study is a retrospective review of all breast cancer specimens submitted to the histopathological

department of Abubakar Tafawa Balewa University Teaching Hospital, Bauchi State.

2.2. Sample and data collection

A total of 199 confirmed breast cancer cases (192 females and 7 males) were retrieved from the histopathological records, and data on patients' age, gender, histologic type, and fatality (dead or alive at the time of leaving the hospital) were collated and analyzed. The collated data covered a period of (5) five years; from 2017 to 2021. All the patients were treated as in-patients and later discharged. Data on tumor grading, stage, and immunohistochemical profile for estrogen receptor (ER), progesterone receptor (PR), and human epidermal growth factor receptor 2 (HER2) were either missing or very scanty and as such were not included in this present study.

2.3. Data analysis

Data were analyzed using SPSS version 25.0, and the result was presented in tables and charts.

3. RESULT AND DISCUSSION

The mean ages for male and female patients in this study are 56.98 and 44.98 respectively. The median age for the male patients was 55.0 and that for female patients was 43.50. The minimum and maximum ages were similar in males and females, with the age of both groups ranging from 20 to 86 years. The data is slightly skewed to the right, with a positive skewness of 0.438 (table 1). The result shows that the majority of female breast cancer patients fall between the ages of 40-55, while the majority of male breast cancer are older than 55 years (table 2). Invasive ductal carcinoma (Non otherwise specified) was the most common histotype of breast cancer found, representing 89% of all cases. Invasive lobular carcinoma and invasive papillary carcinoma are the second and third most common

Table 1. Age analysis of study participants

	Age (years)		
	Gender		Total
	Female	Male	
Mean	44.98	56.43	45.39
N	192	7	199
Std. Deviation	12.933	22.486	13.459
Minimum	20	28	20
Maximum	80	88	88
Skewness	0.331	0.050	0.438
Median	43.50	55.00	44.00

Table 2. Age distribution of male and female breast cancer patients

		AGE (YEARS)			Total
		<40	40-55	>55	
Gender	Female	68	87	37	192
	Male	2	2	3	7
Total		70	89	40	199

Table 3. Histological types of breast cancer in patients

Identified breast cancer histotypes				
	Frequency	Percent	Valid Percent	Cumulative Percent
Carcinoma with medullary features	1	0.5	0.5	0.5
Ductal carcinoma in situ	1	0.5	0.5	1.0
Invasive carcinoma with apocrine features	1	0.5	0.5	1.5
Invasive ductal carcinoma (NOS)	178	89.4	89.4	91.0
Invasive lobular carcinoma	6	3.0	3.0	94.0
Invasive papillary carcinoma	4	2.0	2.0	96.0
Liposarcoma	1	0.5	0.5	96.5
Malignant phyllodes tumor	2	1.0	1.0	97.5
Malignant spindle cell tumor	1	0.5	0.5	98.0
Mixed invasive ductal & lobular ca	1	0.5	0.5	98.5
Mucinous carcinoma	1	0.5	0.5	99.0
Poorly differentiated carcinoma	2	1.0	1.0	100.0
Total	199	100.0	100.0	

histotypes with a prevalence of 3% and 2% respectively (table 3). Six (6) of the 199 patients were confirmed dead from 2017 -2021, with no significant difference ($p = 0.635$) in death outcomes for male and female patients (table 4), or between the three age groups ($p = 0.960$) (table 5).

Previous studies on the age-specific difference in breast cancer incidence show that Black or African-American women are more likely to develop breast cancer earlier than their Caucasian counterparts [10-11]. Our study

appears to support this assertion, as the median age at diagnosis (43.5) observed in our study is over a decade lower than that reported for Caucasians in the United States (59) [10]. While the reason for this difference remains unclear, demography with younger population are likely to have breast cancer presentation at a younger age [12]. More so, the median age seen in our study is also more than a decade lower than that reported for African-Americans (56) [10], suggesting that Nigeria's young population (over 70% of the Nigerian population is under the age of 30) could be

Table 4. The fatality outcome of male and female breast cancer patients during their time in the hospital facility

		Outcome		Total	X ²
		Alive	Dead		
Gender	Female	186	6	192	0.635
	Male	7	0	7	
Total		193	6	199	

Table 5. The fatality outcome of patients of different age groups during their time in the hospital facility

		Age (years)			Total	X ²
		<40	40-55	>55		
Mortality	Alive	68	86	39	193	0.960
	Dead	2	3	1	6	
Total		70	89	40	199	

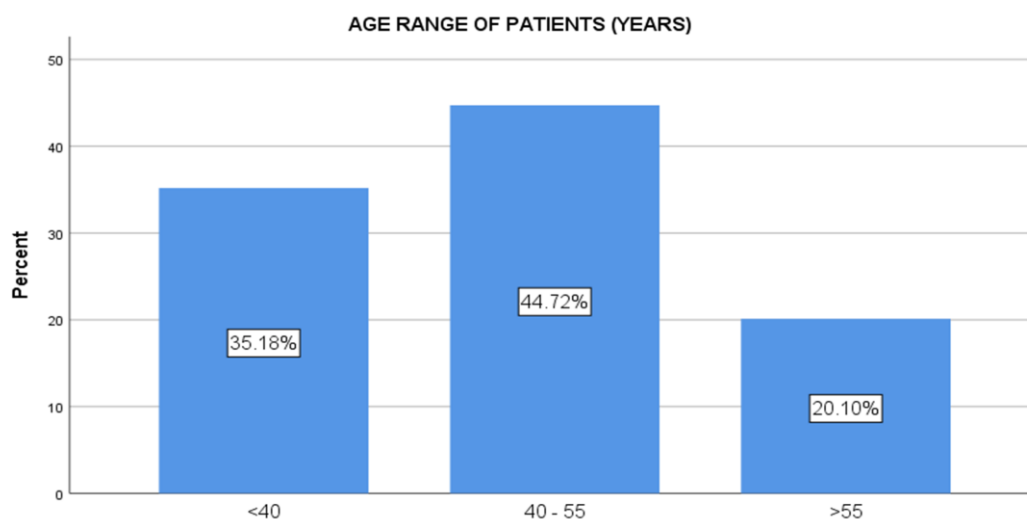


Fig 1. Age distribution in all breast cancer patients

responsible for the observed outcome [13]. Additionally, differences in factors such as life expectancy, breast cancer awareness, and screening of women over the age of 50 among the different demography of women is likely to affect the median age of breast cancer presentation [14]. Almost all (96.4%) of the breast cancer patients in our study are female, with a male-female ratio of approximately 1:27. Also, a majority (44.72%) of the breast cancer patients in our study are aged between 40-55, followed by the patients below 40 years (35.18%).

In our study, Invasive Ductal Carcinoma (Non otherwise specified) accounted for 89% of all cases of breast cancer, making it the most common histological type of breast cancer. The next two most common cancers are Invasive Lobular Cancer (3%) and Invasive Papillary Cancer (2%). This finding is consistent with the evidence in the literature which shows that Invasive Ductal Carcinoma is the most common histological type of breast cancer [15, 16]. Although similar to previous findings, the prevalence of Invasive Ductal Carcinoma seen in our study (89%) is higher than that observed in countries like Central African Republic (64.9%) [15], Brazil 65.88% [16], and Rwanda (81.9%) [17], but

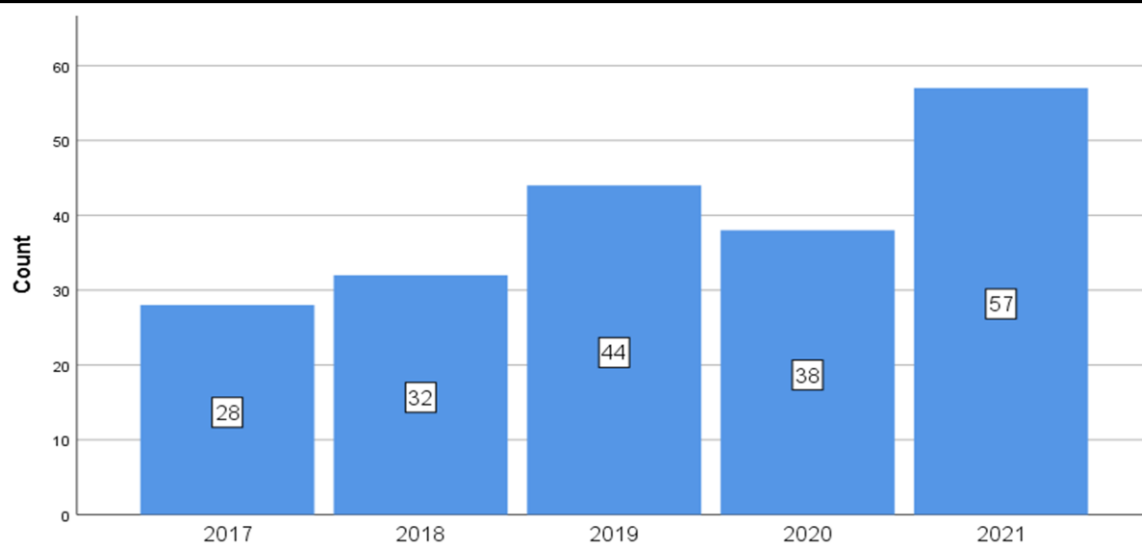


Fig 2. Diagnosed cases of breast cancer from 2017 – 2021

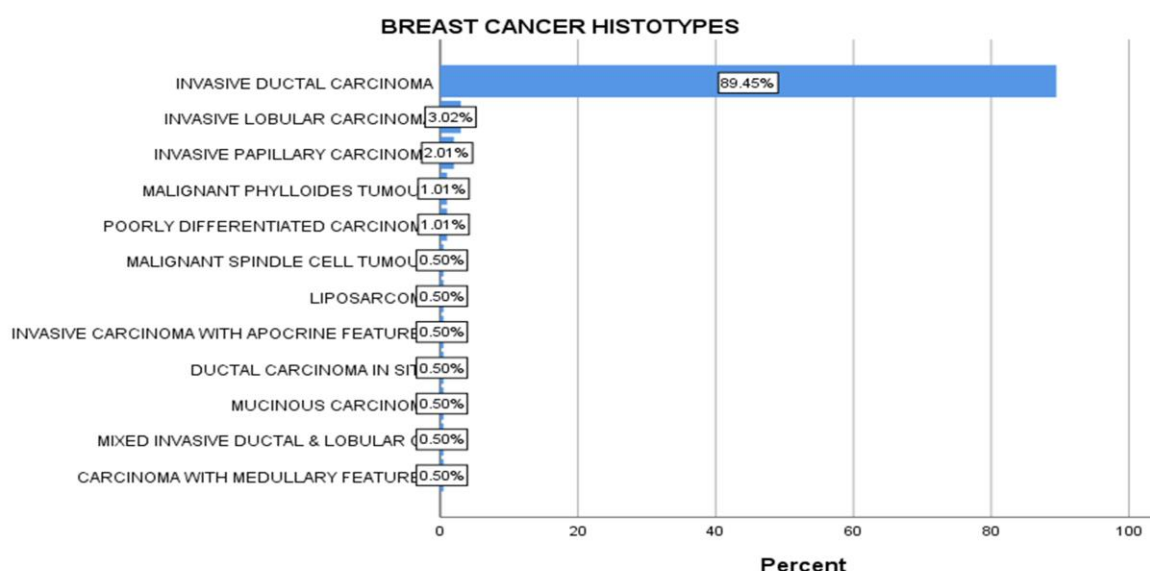


Fig 3. Breast cancer histotypes

lower than that reported in Ghana (91.6%) [18]. Only one case of Ductal Carcinoma In Situ (DCIS) (0.5%) was observed within the study period under review, corroborating the previously low breast cancer awareness and early screening in Nigeria [6, 7].

Our result shows 199 diagnosed cases of breast cancer within the five year period under review, translating to about 3.3 diagnosed cases per month.

This outcome is quite low when compared to the number of diagnosed cases seen in high-income regions

with about 24 diagnosed cases per month [19]. This is possibly due to factors relating to general attitude towards health, financial constraint, fear, preference for alternative medicine, myths/misconceptions, and health inaccessibility [20, 15]. Six (6) of the breast cancer patients were confirmed while 193 patients were discharged alive, with no recorded cases of remission. In addition, no gender- or age-based difference on mortality was observed in this study.

Overall, this present study shows that the prevalence of invasive breast carcinoma is high in North-eastern Nigeria amidst poor screening rates. It also demonstrated that women in Bauchi, like in other places in Nigeria, are presented with breast cancer at a younger age when compared to women in other developed regions.

4. CONCLUSION

Breast cancer is diagnosed at a low rate of 3.3 cases per month in North-eastern Nigeria, with a high prevalence of Invasive Ductal Carcinoma. Breast cancer affects women in Nigeria at a younger age than those in high-income America and Western Europe. Health programs and outreaches that promote and encourage routine breast screening and better health-seeking attitude are highly recommended.

5. ACKNOWLEDGEMENT

NA

6. CONFLICT OF INTEREST

The authors have declared that there is no conflict of interest.

7. SOURCE/S OF FUNDING

NA

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