# DEMOGRAPHICS AND HISTOPATHOLOGY OF LOCALLY ADVANCED PRE-MENOPAUSAL BREAST CANCER IN AWKA, NIGERIA.

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## ABSTRACT

**Introduction:** Breast cancer in Nigerian and African women is characterized by young age at presentation. They present approximately a decade earlier than patients in western countries.

**Objective:** The aim of the study is to evaluate the demographic and histopathological features of pre-menopausal women with locally advanced breast cancer.

**Methodology:** All premenopausal patients who presented with histologically confirmed locally advanced breast cancer were counseled and recruited into the study. The patients were evaluated demographically and clinically. The data were analyzed using the SPSS statistical software version 23.0 (Statistical Package for Social Sciences SPSS Inc.) 2015.

**Results:** A total of 49 patients had confirmation of breast carcinoma via core needle biopsy of their breast lesions. The age of the study population ranged from 24 - 54 (40.92±7.98) years. The majority of the patients, 41 (83.7%) out of 49, gained secondary education. All had primary education.

Only 6 (12.2%) of the patients were nulliparous. Thirty (61.2%) had parities of 4 and above.

Invasive ductal carcinoma was confirmed in 45 (91.8%) of the patients. The duration of breast lump before presentation ranged from 1 - 36 months with a mean duration of 10.02±8 months.

The size of the breast masses ranged from 3.0 - 25.0cm with a mean of 9.70±4.33cm. The size of the breast masses and the duration showed a positive correlation, Pearson's correlation +0.575(0.00).

**Conclusion:** There is a 100% literacy level among the patients in our study population yet there is still a general delay in hospital presentation. The invasive ductal carcinoma is the predominant histological type of breast cancer in our centre.

**Key words:** Premenopausal breast cancer, Histology, Demography, Features.

## INTRODUCTION

Breast disease ranges from benign to malignant varieties. Benign breast diseases are commoner than the malignant ones.[1] Breast cancer however, is the most common malignancy affecting women in many parts of the world.[1] The incidence of breast cancer in sub-saharan Africans has been rising with majority presenting at advanced stages.[2-7] Anyanwu in a 10-year prospective adult found that patients with breast cancer made up 30% of patients with breast disease.[3] Oluwole et al reported 21%.[8] Breast cancer in Nigerian and African women is characterized by young age at presentation. They present approximately a decade earlier than patients in western countries.[5-10] Anyanwu in the year 2000 noted the mean age for breast cancer in Eastern Nigeria to be 44 years and later in another study in 2008 observed that the mean age had increased to 46.2 years.[2,3] He concluded that the increase was due to a higher representation of older

women above 70 years in the later study.[2]

Breast cancers in Nigerian women are mainly premenopausal. Anyanwu in Eastern Nigeria and Adesunkanmi in Ile Ife reported premenopausal breast cancers as comprising 69% and 66.7% respectively in their series.[3,10] Also in the same report, Anyanwu documented 64% of cases as presenting with advanced breast cancer while in a more recent prospective study, he noted an increase to 72% of patients presenting with advanced breast cancer.[2,3] Adesunkanmi et al in Ile Ife noted 80.6% with advanced disease and 39% had fungating lesion.[10] The presentation of breast cancer at advanced stages in Nigerian women results in poor outcome for these patients. The high mortality from breast cancer in African women has been attributed to the advanced stages of the disease at presentation. From South-Western Nigeria, a study on 211 breast cancer patients of whom 80.6% presented with stages III and IV disease, 39% were known to be dead and 48% lost to follow up within a year of diagnosis.[10]

The aim of this survey is to evaluate the demographic and histopathological features of pre-menopausal women with locally advanced breast cancer in our centre.

## MATERIALS AND METHOD

All premenopausal patients presenting with histologically confirmed locally advanced breast cancer (LABC), $T_3N_0M_0$ subset of Stage IIB and Stage III (A, B and C) breast disease who had not received any form of intervention except core needle biopsies were enrolled. All eligible patients presenting to the specialist breast clinic were counseled and their consent obtained. The patients were evaluated demographically and clinically. With the caliper, the size of the primary breast tumour was measured in its two greatest diameters and recorded. The clinical regional lymph node assessment was also made. The breast tumours and the regional lymph nodes were graded according to the American Joint Committee on Cancer (AJCC TNM) system of staging of breast cancer.[11]

The staging investigations done included chest X-ray, liver function test, abdomino-pelvic ultrasound scan and X-ray of the bone site if bone pain was present. All premenopausal women with evidence of distant metastasis demonstrable before the commencement of the study were excluded. The eligible patients were adequately prepared and core needle biopsy done. The histology results were obtained when ready. Immunohistochemistry was not done because the facility for hormone receptor and human epidermal growth factor receptor-2 (HER-2) neu status was not available in our Institution. The study was carried out over a 12 month period (1st February 2021 to 31st January 2022).

The data collected were recorded initially in the proforma used for the study and subsequently analyzed using the SPSS statistical software version 23.0. (Statistical Package for Social Sciences SPSS Inc.). The data were presented in simple frequency and graphic statistics.

## RESULTS

A total of 62 patients were recruited into the study but only 49 had confirmation of breast carcinoma via core needle biopsy of breast masses. These 49 patients constituted the study cohort.

**Age Of Subjects:** The age of the study population ranged from 24 to 54 years with a mean of 40.92±7.98 years. The age group distribution of the patients is as shown in the bar chart in figure 1. One (2%) of the patients was within 20-25 years age group; 5 (10.2%) between 26-30 years and 5 (10.2%) within the 51-55 years age group (figure 1).

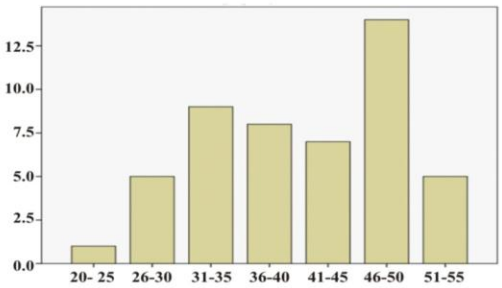


***Figure1: Bar chart showing age group distribution of patients.***

**Highest Educational Level:** The patients' highest educational attainment were: primary 8(16.3%), secondary 26(53.1%) and tertiary 15(30.6%). Majority of the patients, 41 (83.7%) out of 49, attained at least a secondary education. All the patients had basic primary education.

**Parity:** Of 49 cases, only 6 (12.2%) were nulliparous. Thirty (61.2%) others had parity of 4 and above (table 1).

| Parity | Frequency | Percentage frequency | Cumulative Percent |
|---|---|---|---|
| 0 | 6 | 12.2 | 12.2 |
| 1 | 4 | 8.2 | 20.4 |
| 2 | 1 | 2.0 | 22.4 |
| 3 | 8 | 16.3 | 38.8 |
| 4 | 12 | 24.5 | 63.3 |
| 5 | 12 | 24.5 | 87.8 |
| 6 | 6 | 12.2 | 100.0 |
| Total | 49 | 100.0 | |

**Table 1: Frequency distribution of patients' parity.**

**Histopathological Type:** Out of 49 patients, forty-five (91.8%) was confirmed as invasive ductal carcinoma. The rest were: invasive lobular carcinoma 2(4.1%), metaplastic carcinoma 1(2.0%) and papillary carcinoma 1(2.0%).

**Side Of Breast Involved:** Thirty (61.2%) of the breast cancers involved the right side while the left side was involved in 19(38.2%).

**Duration Of Breast Mass:** At presentation, the duration of breast lump ranged from 1 – 36 months with a mean duration of 10.02±8.06 months. Thirteen (26.5%) presented within five months of noticing a lump in their breast, and 12 patients out of the 13 cases had breast masses within 10cm in size. Thirty-six (73.5%) patients presented six months and above after noticing a lump, with 17 of them having breast masses greater than 10cm in widest diameter (table 2).

| | Duration grouping(months) | | | | | | |
|---|---|---|---|---|---|---|---|
| Size grouping(cm) | 0-5 | 6-10 | 11-15 | 16-20 | 21-25 | >25 | tal |
| 0-5 | 4 | 2 | 1 | 0 | 0 | 0 | 7 |
| 6-10 | 8 | 12 | 3 | 0 | 1 | 0 | 24 |
| 11-15 | 1 | 6 | 2 | 2 | 2 | 2 | 15 |
| 16-20 | 0 | 0 | 2 | 0 | 0 | 0 | 2 |
| >20 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| Total | 13 | 20 | 8 | 2 | 4 | 2 | 49 |

**Table 2: Cross-tabulation of size grouping of breast masses and duration before presentation.**

The size of the breast masses and the duration showed a positive correlation, Pearson's correlation +0.575(0.00).

**Sizes Of Breast Masses:** The sizes of the breast masses ranged from 3.0-25.0cm (table 3).

| Size of breast mass(cm) | Frequency | Percentage frequency | Cumulative Percent |
|---|---|---|---|
| 3.0 | 3 | 6.1 | 6.1 |
| 4.0 | 2 | 4.1 | 10.2 |
| 5.0 | 2 | 4.1 | 14.3 |
| 6.0 | 5 | 10.2 | 24.5 |
| 7.0 | 5 | 10.2 | 34.7 |
| 8.0 | 4 | 8.2 | 42.9 |
| 8.5 | 1 | 2.0 | 44.9 |
| 9.0 | 1 | 2.0 | 46.9 |
| 10.0 | 8 | 16.3 | 63.3 |
| 11.0 | 2 | 4.1 | 67.3 |
| 11.5 | 2 | 4.1 | 71.4 |
| 12.0 | 4 | 8.2 | 79.6 |
| 14.0 | 2 | 4.1 | 83.7 |
| 15.0 | 5 | 10.2 | 93.9 |
| 16.0 | 1 | 2.0 | 95.9 |
| 17.0 | 1 | 2.0 | 98.0 |
| 25.0 | 1 | 2.0 | 100.0 |
| Total | 49 | 100.0 | |

**Table 3: Frequency distribution of size of breast masses.**

The mean size of the breast masses was 9.70±4.33cm.

**Nodal Status:** Twenty (40.8%) of the patients had a nodal status of $N_1$ according to AJCC (TNM) staging while 26(53.1%) others were classified as $N_2$ (table 4).

| Nodal status | Frequency | Percentage frequency |
|---|---|---|
| $N_0$ | 0 | 0% |
| $N_1$ | 20 | 40.8% |
| $N_2$ | 26 | 53.1% |
| $N_3$ | 3 | 6.1% |
| Total | 49 | 100% |

**Table 4: Frequency distribution of nodal status.**

**Clinical staging:** Under the AJCC staging system, 19(38.8%) were stage IIIA whereas 24(49.0%) were stage IIIB (table 5).

| Staging (AJCC) | Frequency | Percentage frequency |
|---|---|---|
| 0 | 0 | 0% |
| I | 0 | 0% |
| IIA | 0 | 0% |
| IIB | 3 | 6.1% |
| IIIA | 19 | 38.8% |
| IIIB | 24 | 49.0% |
| IIIC | 3 | 6.1% |
| Total | 49 | 100% |

**Table 5: Frequency distribution of staging (AJCC).**

## DISCUSSION

The age of the patients in the current study ranged between 24 - 54 years with a mean of 40.92±7.98

years. This correlates with a mean of 42.1 years and an age range of 26 to 51 years documented in a similar survey at Nnewi.[12] This is also similar to a mean of 42.8 years and a range of 30-49 years recorded by Anyanwu et al.[13] The similarity of the current study to these two reports is most likely because all the studies were done on premenopausal women. Other audits, including the one done in Shiraz, Iran, noted a mean age of 41.0±8.61 years.[14] The above findings differ from what was documented by Olatoke et al. who recorded an age mean of 47.9±13.1 years with a range of 28-85 years.[15] This difference is obviously due to the inclusion of both pre-and post-menopausal women in their series. The peak age group for the current study was noted in the fifth decade (figure 1). This peak age corresponds with 40-49 years peak incidence documented by a survey in Lagos, although the report also included post-menopausal women.[16]

The literacy level of the patients in this study is quite high. All had basic primary education. This finding is because the study was conducted among premenopausal women and also in a state capital with expected higher literacy level. At least 41(83.7%) of the patients obtained a minimum of secondary school education. This value is much higher than 61.4% and 52.0% recorded by Egwuonwu et al. and Ibrahim et al. respectively for patients with a minimum of high school education.[12, 16] In the present study, 15(30.6%) of the patients achieved tertiary education. This value correlates with 27% and 29% documented elsewhere.[16,17] Unlike the current study, which recorded 100% literacy level, a number of workers in different parts of Nigeria recorded 18 - 22% illiteracy levels.[12,13,16]

The parity of the patients in this audit was relatively high, with only 6(12.2%) being nulliparous. Thirteen (26.5%) patients had between 1-3 children while 30(61.2%) had parity of 4-6 (table 1). In Lagos, the parity of their patients were nulliparous (4%), 1-4 (57%) and >4 (39%).[16] This high parity correlates with the findings in other audits involving Nigerian women, which showed high levels of fertility.[13,16,17] This contrasts sharply with low parity in a similar work done by authors in Shiraz, Iran.[14]

There are several histological variants of breast cancer. In this study, invasive ductal carcinoma was the most common variant constituting 91.8%. Other types recorded in the current report were invasive lobular carcinoma at (4.1%), metaplastic carcinoma (2.0%) and papillary carcinoma (2.0%). The findings in the study correspond with the histological patterns documented in other reports on breast cancers.[16-18] In the work by Salem et al. from Egypt, the histological pattern was 92.8% for invasive ductal carcinoma and 7.2% for invasive lobular carcinoma.[18] Ibrahim et al. in their study in Lagos, Nigeria, documented 93% for invasive ductal carcinoma and 3% for invasive lobular carcinoma.[16] Lee et al., reporting on 588 Korean women with breast cancer, noted the following histological patterns: invasive ductal carcinoma 86.9%, papillary carcinoma 5.2%, invasive lobular carcinoma 3.2%, mucinous carcinoma 2.3%, metaplastic carcinoma 2.2% and 0.2% for tubular carcinoma.[19] In all these studies, invasive ductal carcinoma is the most predominant histological variant, which correlates with the finding in the present audit.

Our study revealed that the right breast was involved in 30(61.2%) of the cases. The left breast was affected in 19(38.8%) others. There were no records of bilateral breast disease in the current survey. However, in a study by Ibrahim et al., they noted 45% for right breast alone, 41% for the left breast and 14% for bilateral involvement.[16] Egwuonwu in a report from Nnewi indicated that the left breast was predominantly affected in 51.6%, the right breast alone in 41.9% and bilateral disease in 6.5% of the cases.[17] In a study by Anyanwu in eastern Nigeria, he observed that right and left breast were involved equally with bilateral disease in 2% of the total.[3] Clegg-Lamptey et al., in their work on Ghanaian women, indicated that the right breast was slightly more affected than the left with no record of bilateral disease.[20] In all these studies, there seems to be no consensus regarding which breast is more affected by breast cancer.

At presentation, the duration of breast lump in this study ranged from 1 month to 36 months with a mean of 10.02±8.06 months. This shows a general delay in the presentation and correlates with the findings in other reports from sub-Saharan

Africa.[3,10,16,17,20,21] Majority 36 (73.5%) of the patients presented 6 months and beyond after noticing a lump in their breasts (table 2). Egwuonwu, in a study at Nnewi, noted a range in the presentation between 3 weeks and 108 months with a mean of 19.9 months.[17] Anyanwu recorded a delay in presentation ranging from 2 weeks to 9 years.[3] Adesunkanmi et al. documented a mean duration of 11.2 months with a range of 9 days to 7 years.[10] Ibrahim et al. in Lagos recorded a range of 3 weeks to 6.5 years with a mean of 46.48±51.97 weeks.[16] Clegg-Lamptey et al. in Ghana noted that on the average, their patients presented 10 months after noticing symptoms, with a range from 2 weeks to 5 years.[20] Okobia et al. in Benin stated that 78% of their patients reported after 3 months of symptoms.[21] In all the above reports, there was a general delay in presentation which correlates with the advanced stages of the disease at the time of hospital presentation. In the current study, the size of the breast masses and the duration showed a positive correlation, Pearson's correlation +0.575 ($p<0.00$). This validates the above assertion that late presentation correlates with the advanced stages at which breast cancer presents in our environment.

The current study recorded breast tumour size ranging from 3.0 - 25.0cm (table 3).

The mean size of the breast masses was 9.70±4.33cm. This corresponds with a range of 7 - 35cm and mean of 13.5cm documented by Anyanwu et al.[13] It also correlates with the range of 5 - 25cm and mean of 11.5cm recorded by Egwuonwu.[17] These two studies, like the current study, were done on premenopausal women.

The AJCC (TNM) nodal staging in the current study were 20(40.8%) for $N_1$, 26(53.1%) for $N_2$ while 3(6.1%) were classified as $N_3$. Also the AJCC clinical stage grouping for the patients was classified as stage IIB 3(6.1%), IIIA 19(38.8%), stage IIIB 24(49.0%) and 3(6.1%) for IIIC (table 5). Both the nodal staging and clinical stage grouping in the current study correlates with the findings elsewhere.[13,17]

**Conclusion:**

There is a 100% literacy level in this study yet there was still a long delay in hospital presentation. The invasive ductal carcinoma is the predominant histopathological type of breast cancer in our centre.

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**Conflicts of interest**: None.

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