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IP International Journal of Medical Paediatrics and Oncology

Journal homepage: https://www.ijmpo.com/

Original Research Article

Pattern of presentation and treatment outcome of breast cancer among female patients in tertiary health institutions in Anambra State, Nigeria: A five-year review

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Abstract

Background: In Nigeria, breast cancer is currently the commonest malignancy with about 40% of all cancer in women.
Aim: To assess the pattern of presentation, and treatment outcome of breast cancer among female patients in tertiary health institutions in Anambra State within five years.
Materials and Methods: A retrospective cross-sectional study with 173 female breast cancer patients who had histological diagnosis and had received at least four courses of chemotherapy with a follow-up visit. Data was analysed using SPSS version 25.
Results: The mean age (in years) was 48.5±12.2. The commonest presenting complaint amongst the participants was breast lump 96.5% (167), while 1.16% (2) presented with symptoms of metastasis, 44.5% (79) were lost to follow up, 25.4% (44) were dead while 19.1% (33) were still alive with the disease. The mean duration of survival (in years) is 2.36±1.54, 95.4% (165) had a survival duration of <5 years. Compliance was significantly associated with being alive with disease and remission.
Conclusion: With most of the participants having completed secondary school and still presenting with stage III and IV of the disease it becomes glaring that education may not be the only barrier to breast cancer awareness and early presentation to the hospital. There is poor outcome in the management of breast cancer. We therefore recommend institution of screening and early detection programmes can help ensure early presentation.

Keywords: Breast cancer, Pattern of presentation, Treatment outcome, Histology.

Received: 22-01-2025; **Accepted:** 05-03-2025; **Available Online**: 16-04-2025

1. Introduction

Breast cancer is the most common non-skin malignancy in women and is second only to lung cancer as a cause of cancer deaths globally, it accounts for 25% of cancers in females. The incidence rate varies across the world, with a rate ranging from 38/100000 in West Africa to 96/100000 in Western Europe; in Nigeria, it is currently the commonest malignancy with about 40% of all cancer in women.[1]

Unfortunately, there exists a significant difference in breast-cancer-specific outcomes between high-income countries and many low- and middle-income countries due to varieties of factors. In Nigeria, the incidence of breast cancer which is currently 54.3/100000, has increased dramatically over the last 10 to 20 years.[2]

The cause of breast cancer remains unknown; however, certain risk factors are associated with the disease such as; age, gender, genetic predisposition, age at menarche and

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http://doi.org/10.18231/j.ijmpo.2025.003

menopause, age at first live birth, radiation exposure, and breastfeeding.

In developing countries like Nigeria, late presentation with advanced disease when treatment offers little or no benefit is common.[3] Socio-demographic factors such as level of education, age, marital status, history of breast disease, and family history of breast disease among others are related to a delayed presentation which affects the pattern of presentation and ultimately the treatment outcome.[3,4]

Not taking initial symptoms of breast cancer seriously, the patients' reliance on traditional medicines, competing priorities, financial hardship, older age, fear of diagnosis of cancer, and weak health systems (e.g delay in referral and long waiting period for consultation) were noted as the main contributors to late diagnosis.[3,4] In contrast, persuasion by family members and friends, higher educational attainment, and prior experience of neighbouring women with breast cancer were mentioned to be facilitators of early diagnosis of breast cancer.[5] This study therefore aimed to assess the socio-demographic, the pattern of presentation, and treatment outcome of breast cancer among female patients in tertiary health institutions in Anambra State within five years.

2. Materials and Methods

2.1. Study area

The study was carried out in two tertiary health institutions in Anambra State (Chukwuemeka Odumegwu Ojukwu University Teaching Hospital (COOUTH), Awka and Nnamdi Azikiwe University Teaching Hospital (NAUTH), Nnewi).[6]

Chukwuemeka Odumegwu Ojukwu University Teaching Hospital Awka, and its annexes since its inception have provided specialized and comprehensive medical care to the immediate community and beyond. It is also responsible for undergraduate training as well as research.[7] Nnamdi Azikiwe University Teaching Hospital (NAUTH), a tertiary institution located in Nnewi, Nnewi North, Anambra state.[8]

Being a tertiary training institution, it boasts of a number of resident doctors, nurses, medical and paramedical students at various levels of learning in different specialties. This includes well-structured General Surgery Units, that have had years of experience in caring for patients with breast cancer through multidisciplinary approach with other departments that may be involved with their care. The hospital also receives referrals from other hospitals and healthcare facilities.

2.2. Study population

Female breast cancer patients who accessed care in these tertiary health institutions in Anambra State from 1st of August, 2016 – 31st July, 2021.

2.3. Inclusion and Exclusion criteria

All histologically confirmed breast cancer patients, patients who received has received at least four cycles of chemotherapy and patient who had at least one follow-up visit were included while suspected breast cancer cases with conflicting histology were excluded.

2.4. Study design

This was a retrospective cross-sectional study.

2.5. Sampling technique

Total population sampling was used; all folders that fell into the inclusion criteria within the study period were used with a collected data feed.

The minimum sample size **N** calculated was 168 as shown below
This was calculated using the Cochran formula;[9]
$N=Z^2pq/d^2$
Where N= minimum sample size
Z= standard normal deviate
p= Prevalence of breast cancer from a previous study in south west Nigeria[4]
d= degree of precision
q= 1- p
Z= 1.96
d= 0.05
p= 0.125(prevalence of breast cancer from a previous study)[4]
q= 1- p Therefore; q= 1- 0.125 = 0.875
Using $N=Z^2pq/d^2$
$N= (1.96)^2 \times 0.125 \times 0.875 /(0.05)^2$
N= 0.4202 / 0.0025 =168.08 ~ 169
Therefore, minimum sample size N = 169

2.6. Data collection

After permission was granted, records of women with breast cancer were identified, studied, and the required data retrieved with the proforma that was designed to record the patient's profile which included; age, highest educational qualification, occupation, marital status, parity, social status, menarche, menopause, lactation, social habits like and alcohol intake, examination findings; obesity, tumour assessment, and staging, histologic studies treatment, whether the patient was compliant or not and outcome.

For the purpose of this study, patient was termed compliant if she completed one chemotherapy regimen as at when due or followed the treatment protocol religiously but died or lost to follow up before the completion of the protocol.

Duration of Survival was defined as the period from the onset of the disease to a specified outcome, thus patients who were lost to follow up were excluded in calculating mean duration of survival.

2.6. Data analysis

The data was cleaned, coded, and analysed using appropriate statistical format and statistical package for social sciences (SPSS) version 25.0 was used in the analysis of data. Categorical variables were analysed using percentages and proportions and presented in form of frequency tables, pie charts, and simple bar charts while continuous variables were analysed using mean and standard deviation and presented in form of histogram. The association between categorical variables was analysed using the chi-Squared test (fisher's exact where applicable). Test of significance was set at P-value <0.05.

2.7. Ethical consideration

Permission was obtained from the Head of the Department of medical records, COOUTH, Awka, and NAUTH Awka and the ethical approval from the Ethics committee of NAUTH Nnewi (NAUTH/CS/66/VOL.16/VER.3/174/2022/062) before the patient's case files were retrieved for collection of data. Information obtained from case notes were only used for this project, and patients' identities were kept confidential.

3. Results

3.1. Sociodemo graphic determinants of breast cancer

The socio-demographic determinants shows that the mean age of the participants was 48.5+/-12.12 years and age range was from 19-80 with most being between 36 to 45 years, 90.2% were literate having at least primary education, 82.7% (143) were married. (**Table 1**)

3.2. Distributions of risk factor for breast cancer among participants

Table 2 shows that the mean age of menarche is 13.89 +/-1.73. About half of participants (58.4%) were post-menopausal while 41.6 % were premenopausal. Also, about half (52.6) were multiparous while 27.7% were nulliparous, 15% took alcohol while 2.9% of the subjects smoked cigarette at a point in their lives, 6.9% had positive family history of breast cancer while 10.4% had positive history of use of oral contraceptive pills.

3.3. Pattern of presentation of breast cancer

Table 3 shows that majority of the participants presented with breast lump (96.5%), 0.58% had ulceration, nipple retraction, pain, discharge while 1.16% presented with symptoms of metastasis. Slightly below half of the participants, 49.7% had the breast cancer on the right breast while 46.2% had it on the left breast; bilateral breast cancer was seen in 4.1% of patients. The mean lump size on the left breast was 9.67± 6.07cm while the mean lump size on the right breast was 8.37 ±5.89. The minimum duration of illness before presentation was one week while the maximum was 3 years.

Table 1: Sociodemo graphic determinants of breast cancer.

Variables		**Frequency (173)**	**Percent (100%)**
Mean age	48.5±12.12	-	-
Minimum	19	-	-
Maximum	80	-	-
Modal age range	36-45	-	
Level of education	No formal	17	9.8
	Primary	39	22.5
	Secondary	73	42.2
	Tertiary	44	25.4
Occupation	Civil servant	43	24.9
	trader	98	56.6
	Dependent	17	9.8
	Retired	8	4.6
	Farmer	7	4
Marital status	Single	25	14.5
	Married	143	82.7
	Divorced	5	2.9
Place of residence	Rural	123	71.1
	Urban	50	28.9

Table 2: Distributions of risk factor for breast cancer among participants

Variables		**Frequency**	**Percent**
Age at menarche	11-15 years	102	59
	16-19 years	18	10.4
	Not given	53	30.6
Minimum	11	-	-
Maximum	19	-	-
Early menarche (<=12 years)	-	26	15
Mean	13.89±1.73	-	-
Age at first live birth			
Minimum	15	-	-
Maximum	39	-	-
Mean	24.71±5.5		
Menstrual Status	Premenopausal	72	41.6
	Postmenopausal	101	58.4
Parity	Nulliparous	48	27.7
	1-5 children	91	52.6
	=> 6 children	34	19.7
Family history of breast cancer	Yes	12	6.9
	No	161	93.1
History of use of oral Contraceptive pills	Yes	18	10.4
	No	155	89.6
Takes alcohol	Yes	26	15
	No	147	85
Smokes cigarette	Yes	5	2.9
	No	168	97.1

Table 3: Pattern of presentation of cancer patients

Variables	**Frequency (N=173)**	**Percent (%)**
Presenting complaints		
Lump	167	96.5
Ulceration	1	0.58
Retraction	1	0.58
Pain	1	0.58
Discharge	1	0.58
Symptoms of metastasis	2	1.16
Location		
Left	80	46.2
Right	86	49.7
Both	7	4
Size of lump		
Mean lump size (cm)		
Left breast	9.67±6.07	-
Right breast	8.37±5.89	-
Duration of illness before presentation		
Minimum	1 week	-
Maximum	3 years	-
Mean	1.43±2.06 years	-

3.4. Clinical staging at presentation

Figure 1 shows that 29.5% of the patients presented with stage III disease while 19.1% presented with stage IV disease.

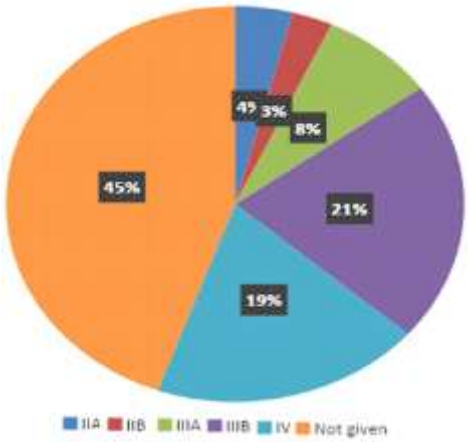

Figure 1: Clinical staging at presentation

3.5. Histopathological diagnosis

Figure 2 shows that the commonest histological type of cancer found amongst the participants was Invasive ductal carcinoma (85.5%) followed by metastatic carcinoma in 5.8% of participants.

3.6. Modality of treatment received

Table 4 shows the modality of treatment received by the participants; 75% received neoadjuvant chemotherapy while 15% received palliative chemotherapy. More than half (71.1%) had surgery as part of their treatment modality (modified radical mastectomy was the commonest type of breast surgery done). Only 7.5% of the patients received radiotherapy. More than half (72.3%) were compliant with their treatment.

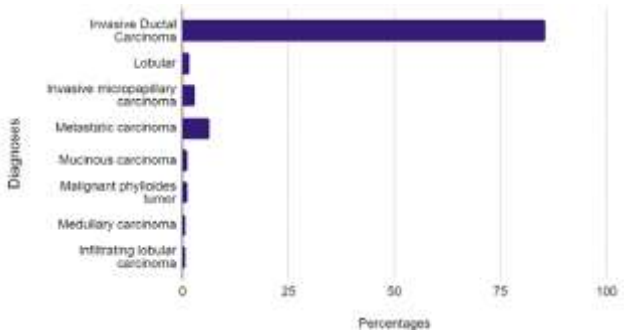

Figure 2: Histopathological diagnosis of cancer

3.7. Outcome of treatment

Amongst the 173 participants, 44.5% were lost to follow up, 25.4% were dead while 19.1% of the patients are still alive with the disease. The mean duration of survival is 2.36 ±1.54. A higher percentage of persons 95.4% had a survival duration of <5 years as shown in **Table 5**.

3.8. Association between compliance to treatment and outcome

There was a significant association between compliance and outcome. ($p<0.01$); furthermore, PostHoc test showed that being Compliant was significantly associated with being alive with disease and remission as shown in **Table 6**.

Table 4: Modality of treatment received

Variables	Frequency (173)	Percent (100%)
Chemotherapy		
Palliative	26	15
Neoadjuvant	131	75.7
Adjuvant	16	9.2
Chemotherapy completed		
Yes	111	64.2
No	62	35.8
Surgery (N=123)		
Simple	22	12.7
Modified radical	101	58.4
Radiotherapy		
Yes	13	7.5
No	160	92.5
Patient compliance with treatment		
Compliant	125	72.3
Non-compliant	48	27.7

Table 5: Outcome of treatment

Variables		Frequency	Percent
Outcome	Dead	44	25.4
	Alive with disease	33	19.1
	Remission	12	6.9
	Recurrence	7	4.0
	Lost to follow up	77	44.5
Duration of survival	<= 1 year	39	22.5
	1-5 years.	98	56.6
	>3-5 years	28	16.2
	>5 years	8	4.6
Minimum	6 month	-	-
Maximum	7 years	-	-
Mean	2.42±1.46 years	-	-

Table 6: Association between compliance to treatment and outcome

Variables	Patient compliance with treatment				
Outcome	**Compliant n (%)**	**Non-compliant n (%)**	**Total**	**X^2**	**p-value**
Dead	32 (25.6)	12 (25.0)	44(25.4)	25.64	<0.01
Alive with disease	32(25.6)*	1 (2.1)	33(19.1)		
Remission	12(9.6)*	0 (0.0)	12 (6.9)		
Reoccurrence	6 (4.8)	1(2.1)	7(.4)		
Lost to follow up	43 (34.4)	34 (70.8)*	77 (44.5)		
Total	125 (100)	48 (100)	173 (100)		

*Specific significant association based on PostHoc Bonferroni correction test

4. Discussion

The mean age of patients whose folders were retrieved was 48.5years ± 12.12 and the age range was from 19-80 years, the mean age is higher compared to what was gotten in an earlier study in NAUTH where the mean age was 45.2 years ±12.98,[10] this increase however could be as result of more numbers of patients above 66 years presenting with breast cancer. Similar finding gotten was a study conducted in South-West Nigeria where they got a mean age of 48.9 ±14.9 years.[4] Other studies done in different part of the Nigeria showed mean ages between 45.4-49.82which is within the range of our results.[2,3,11,12,13] Contrary to the findings of this study, Asian studies found a mean age of 51 years in India while Mutar et al got a mean age of 52 years in Iraq. In developed countries like England however their mean age is the 7th decade of life (63 years), this further buttresses the fact that the average age at diagnosis in Africans is 10 to 15 years younger than that of the western world.[11,14,15,16] From the current study, 90.1% of the patients had at least primary school education while 67.6% had at least secondary school education. This is higher than what was a previous study in NAUTH recorded where 80% had at least primary education and 60% had completed secondary school.[10] This increase can be ascribed to the fact that more females are now going to school unlike few decades ago. This was in line with what Olashinde et al obtained from their study where 90.4% of respondent had at least primary education[2] even though they got a lower value than what we got in our centre (57.8%) for persons with at least secondary education.[2] In another study in south western Nigeria although they recorded a relative lower percentage for patients with at least primary education (73.1%) they however had a higher percentage of patients that had tertiary level of education.[4]

In a study in India, patients with at least primary education were 82.1% while 28.1 had college education and above. Despite high literacy rates, many women did not still present until after6months (55%) suggesting that literacy may not be the only barrier to breast cancer awareness.[17] In studies in Eastern Nigeria the barriers to treatment identified included but not limited to knowledge of cancer and its causes, lack of health insurance influence or spiritual beliefs and need for secrecy. This study found out that a higher percentage of patients were post-menopausal. This was similar to findings in a centre in south west Nigeria and North

Pakistan[2,18] however, some other studies found that the higher percentage of women with breast cancer were premenopausal.[11,16] The mean age of menarche in this study was 13.89 and it corresponds with an earlier study done in NAUTH where a mean age of 13.67 was found. This however was lower compared to another study in south-western Nigeria that found a higher mean age of menarche of 15.2 years however many other studies confirm earlier report of fallen age of menarche.[19] As regards the role of family history in the development of breast cancer they are World wide variations; while our study had 6.9% of patients having family members who had breast cancer another Nigerian study got 25%,[2] a study done in Iraq got 33.5%[16] while another study in the United Kingdom got 15%[9] and another study in Jordan got 17.3%.[20] There is a need to investigate the wide Variation of the presence of family history between different population.[16]

The most common presenting complaint in our study was breast lump (96.5%) and this corresponds with other studies done in and outside Nigeria.[4,16,21] Similar finding (96.5%) was gotten in a study conducted in North India.[22]

From this study, 4% of the participants had bilateral breast cancer which is similar to a study in Iraq where 4.2% had bilateral breast cancer.[16] Another study in South-western Nigeria reported bilateral breast Cancer to be 5.1%.[2] Many participants in this study presented with stage III and stage IV of the disease similar patterns were seen in many other studies.[2,4,10,11,12,16,19,20,21]

The commonest histological type in our study is invasive ductal carcinoma and this corresponds with many other studies reviewed.[2,4,10,11,12,16,19,20,21] However, an earlier study done in Anambra showed that infiltrating carcinoma was most common followed by intra ductal carcinoma.[19]

The Management of breast Cancer is multi-modal and can be very challenging to physicians in the developing countries considering the advanced stage at presentation and the inadequacy of diagnostic and treatment facilities. The choice of therapy is more often dictated by the local availability of resources.[23] In our study, about 58.4% had modified radical mastectomy and 75% got neoadjuvant chemotherapy. This is similar to what was reported in a study in south western Nigeria however differences were noted in the percentage of patients that completed their chemotherapy Regimen. In our study, 7.5% received radiotherapy while another study in the Obafemi Awolowo University hospital (OAUTH) reported that only 7.9% of patients received radiotherapy.[4] Poor access to radiotherapy is a barrier to effective multi-modality treatment of breast cancer in Nigeria despite many patients presenting with locally advanced disease less than 10% received adjuvant Radiotherapy.[5] Out of the 4 functional radiotherapy units in Nigeria the nearest was 600km from our breast clinic on poorly maintained roads.[10]

The treatment outcome of patients was gotten from the information available in the folder even though other studies followed up the patients for a period of time.[4,20,21]

Following up the patients in this study was not possible because of the duration of the study. Between 2016-2021, 25.4% who were diagnosed with breast cancer had dead and 19.1% were alive with breast cancer while a study in OAUTH got 35.3% as patients who had dead and 43.8% were patients who were alive.[11] Vinod et al in their study had a varying results; 72.7% were alive and disease free, 8% were alive with disease and 19.3% had died. The positive outcome was because 90% of the patients presented with stage II or less.[20]

Compliance was significantly associated with treatment outcome as patient who were compliant to treatment had better outcome than those who were not complaint. Also we found that, the minimum survival duration was 6months while the maximum was 7years. The mean duration of survival was 2.42±1.46 years for this study, this was higher than the study by Wambua et al where mean survival time was 25±23.6 months.[24]

The major limitation of this study is its retrospective nature and dependence on the quality of clinical documentation, completeness of the diagnostic examination carried out and careful maintenance of records over the years.

5. Conclusion

Breast Cancer in our locality is seen in young women between the fourth and sixth decades of life which is earlier as compared to other countries and this coincides with the time before or shortly after the completion of family size which can affect their ability to accept the realities on ground due to certain misconceptions they may have.

With most of the patients having completed secondary school and still presenting with stage III and IV of the disease it becomes glaring that education may not be the only barrier to breast cancer awareness and early presentation to the hospital.

There is poor outcome in the management of breast cancer. There was statistical significance between compliance and treatment outcome.

Based on the findings of this study, we therefore recommend, the iinstitution of screening and early detection programmes that can help ensure early presentation, creating cancer support groups in rural area which can encourage women to seek care on time as survivors share their personal experiences in the battle against breast cancer.

6. Source of Funding

None.

7. Conflict of Interest

None.

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Cite this article Emmanuel SI, Nnamani CP, Ubajaka C, Ugwu JO, Ajayi OO, Edeh GC, Anigwe FC, Mbonu CC. Pattern of presentation and treatment outcome of breast cancer among female patients in tertiary health institutions in Anambra State, Nigeria: A five-year review. *IP Int J Med Paediatr Oncol* 2025;11(1):14-21.