



**RESEARCH PAPER**

**PREVALENCE AND HISTOPATHOLOGICAL PATTERN OF BREAST CANCER AMONG PATIENTS AT ABIA STATE UNIVERSITY TEACHING HOSPITAL, ABA, SOUTH EASTERN NIGERIA**

**<sup>1</sup>Ngwogu, K.O.; <sup>1</sup>Offiah, S.A.U., <sup>2</sup>Ngwogu, A.C., <sup>3</sup>Ndubuka, G.I.N; <sup>1</sup> Ekperi, O.**

Departments of <sup>1</sup>Histopathology, <sup>2</sup>Medical Microbiology, College of Medicine and Health Sciences, Abia State University, Uturu, Nigeria; <sup>3</sup> Department of Biomedical Technology, Federal University of Technology, Owerri, Nigeria.

Corresponding Author: [ngwogukenneth@yahoo.com](mailto:ngwogukenneth@yahoo.com)

**Published: 31<sup>st</sup> December, 2017**

*Endorsed By: Innovative Science Research Foundation (ISREF) and International Society of Science Researchers (ISSCIR).*

*Indexed By: African Journal Online (AJOL); Texila American University; Genamics; Scholarsteer; EIJASR; CAS-American Chemical Society; and IRMS Informatics India (J-Gate)*

**ABSTRACT**

There has been no previous study to classify breast cancers in detail based on histopathologically confirmed diagnosis in Abia State University Teaching Hospital, Aba, Nigeria. This study aims at determining the prevalence and histological pattern of breast cancers in our centre. This retrospective study was based on histopathological diagnosed breast cancer lesions from January 2012 to December 2016. Out of 305 archival results and slides retrieved, 29.8% were cancerous in nature. The ratio of benign to malignant lesion was 2.35:1. The age range of the patients was 21-71years. The peak incidence age range was the fifth decade (50, 54.94%). Mean age of breast cancer patients was 46.5+5.4years while majority of patients (78.0%) were in s age group of 21-50years. The left breast (61.5%) was more affected than the right. Invasive ductal carcinoma was the predominant histologic presentation (72.52%), followed by invasive lobular carcinoma (10.98%) and metastatic carcinoma (4.40%). Nineteen (21%) of the patients presented with stages 1 and II of the disease while majority 72 (79.1%) presented with advanced stage of disease commonly with stage III. There was no significant relationship between clinical stage of breast cancer and the age of patients seen (p value >0.05).

**Key words:** Breast cancer, Histopathological patterns, Aba, Nigeria.

**INTRODUCTION**

Breast cancer is the most common and lethal malignancy in developing countries with varying presentations (Kene *et al.*, 2010). It is the commonest female malignancy globally, having overtaken cervical cancer as the leading female malignancy (Balekouzou *et al.*, 2016, Forbes, 1997, Salanke and Adebamowo, 1996). Currently, it is the most leading cause of cancer death with 198,000 deaths per annum which represents 15.4% of all death in developed regions after that of lungs cancer (Ly *et al.*, 2011). In developing countries, it is the first leading cause of death among women with 324, 000 deaths which represents 14.3% of all deaths (Ly *et al.*, 2011; Elgaili *et al.*, 2010). Moreover, this rate varied from 6 to 20 per 100,000 in East Asia and West Africa as a whole (Balekouzu *et al.*, 2016, Ferlay *et al.*, 2013).

The burden of the disease caused by breast cancer is enormous and the etiology is far from being fully understood; though large differences have been observed in the behaviour of the tumour, clinical manifestation, treatment response and prognosis (Balekouzu *et al.*, 2016; Wen *et al.*, 2015). Research has shown that breast cancer risk is increased in patients with atypical ductal and atypical lobular hyperplasia (Dupont *et al.*, 2006; Hartmann *et al.*, 2005; Jensen *et al.*, 1989). Researchers have also reported a relative risk of 3.1 for subsequent breast cancer in women with atypical lobular hyperplasia (Dupont *et al.*, 2006).





Furthermore, a four to five fold increased risk for breast cancer has been associated with atypical ductal hyperplasia mostly in the ipsilateral breast within 10-15 years of diagnosis (Hartmann *et al.*, 2005). Other researchers equally have placed the relative risk of invasive cancer development at 1.3 to 1.9 for proliferative breast disease without atypia (Palli *et al.*, 1991, Dupont *et al.*, 1985, Uwaezuoke and Udoe, 2014).

The mortality rate of breast cancer varies proportionally with age, stage of disease at diagnosis, the speed of management, type and extent of the tumor and response to initial treatment (Balekouzou *et al.*, 2016). The main risk factors related to breast cancer are hormonal factors related to pre-meno pausal estrogenic impregnation, genetic predisposition and environmental factors (Majeed *et al.*, 2014). The African breast cancer patient is likely to present with more aggressive tumor than her Western counterpart and is likely to die from the disease (Gakwaya *et al.*, 2008).

In Nigeria as in most developing countries, late presentations with unfavorable prognosis are common (Gukas *et al.*, 2005; Gakwaya *et al.*, 2005). Researchers believe that the poor prognostic features of tumours of African origin are only reflections of the late stage at diagnosis, non-availability of screening methods and the adverse influence of lack of awareness of the disease and some other epidemiological risk factors (Adebamowo *et al.*, 2008; Awadelkarim *et al.*, 2008). The burden of management of breast cancer in a resource limited country like Nigeria weighs heavily on the patients who are likely to be poor, illiterate and has no form of health insurance. The patients is therefore forced to seek cheaper alternative treatment elsewhere and only come to hospital as a last resort with an advanced stage of the diseased (Agbo *et al.*, 2014).

Breast cancer is recognized as a major public health problem in developing countries and the prevalence of non-communicable disease especially cancer is on the increase (Lucas and Gilles, 2003). There is paucity of information of this group of disease in this centre. The aim of this study was to determine the prevalence and characterize the histopathological pattern of breast cancer in the Abia State University Teaching Hospital, Aba, Nigeria.

## MATERIALS AND METHODS

**Study area/Setting:** Study was carried out at the histopathology department of the Abia State University Teaching Hospital between 1<sup>st</sup> January 2012 and 31<sup>st</sup> December 2016.

**Ethical consideration:** Ethical approval was obtained from ethical committee of Abia State University Teaching Hospital, Aba.

**Sample collection and sample analysis:** All the original request forms and histopathological reports on the breast specimens received within this study period at the histopathology department with their slides were retrieved from the archives and reviewed. The cases of breast cancer formed the focus of this retrospective study. From the request forms, histopathological reports and surgical day books of the department, clinical and demographic data regarding age, sex, nature of specimen, stage of disease, hospital numbers and laboratory numbers were extracted. New slides were made from formalin fixed, paraffin-embedded tissue blocks and stained with Haematoxylin and Eosin (H &E) where necessary for appropriate diagnosis and classification. Cases of breast lesions with incomplete data and cases of which we were unable to trace their slides or blocks were excluded from study.

**Statistical analysis:** Data analyses were done using statistical package for social sciences (SPSS version 16). Comparison of mean was done using the students-t-test. The level of statistical significance was taken as  $p < 0.05$ .

## RESULTS

Out of 305 histopathologically diagnosed breast lesions, 91(29.80%) were cancerous in nature. The ratio of benign to malignant lesions was 2.35:1. Table 1 shows the age distribution of breast cancers seen in this study. The age range of breast cancer was 21-71 years while the peak incidence age range was the fifth decade of life (50, 54.94%). The mean age of the breast cancer patients was 46.5 SD+5.4 years while the majority of the patients 72(79.1%) were in the age group of 21-50 years.



**Table 1: Age distribution of breast carcinoma**

Age in years	11-20	21-30	31-40	41-50	51-60	61-70	71-80
Invasive ductal carcinoma	-	-	-	17	37	10	2
Invasive lobular carcinoma	-	3	-	-	4	3	-
Metastatic carcinoma	-	-	1	3	-	-	-
Medullary carcinoma	-	-	-	3	-	-	-
Papillary carcinoma	-	-	-	-	-	3	-
Mucinous adenocarcinoma	-	-	-	-	2	-	-
Inflammatory carcinoma	-	-	1	-	-	-	1
Colloid carcinoma	-	-	-	-	-	-	1
Malignant phyllodes	-	-	1	-	-	-	-

The cancers affected mostly the left breast 56 (61.5%). The upper outer quadrant of the breast 51(56.0%) was mostly involved followed by the areola region in 27 (29.7%) of patients. Only 8 (8.7%) had the whole breast involved and there was no bilateral involvement at presentation.

Invasive ductal carcinoma was the predominant histologic presentation 66 (72.52%). This was followed by invasive lobular carcinoma 10(10.98%) and metastatic carcinoma 4(4.40%).

**Table 2: Frequently distribution of histologic type of tumor**

TUMOUR HISTOLOGY	FREQUENCY	PERCENTAGE
Invasive Ductal carcinoma	66	72.52
Invasive lobular carcinoma	10	10.98
Metastatic carcinoma	4	4.40
Medullary carcinoma	3	3.30
Papillary carcinoma	3	3.30
Mucinous adenocarcinoma	2	2.20
Inflammatory carcinoma	1	1.10
Colloid carcinoma	1	1.10
Malignant phyllodes	1	1.10
<b>Total</b>	<b>91</b>	<b>100</b>

Nineteen (21%) of the patients presented with stages 1 and 2 of the disease. Majority of the patients 72 (79.1%) presented with advanced stage of disease, commonly with Manchester stage 3. Majority of the breast cancer patients 72(79.1%) were premenopausal. There was no significant relationship between the clinical stage of breast cancer and the age of patients seen (P value > 0.05) (Table 3).

**Table 3: Association between breast cancer stage and age of patients.**

AGE IN YEARS	STAGES 1-2	STAGES 3-4	P VALUE
	N (%)	N (%)	
≤50	14(19.7)	57(80.3)	>0.05
>50	5	15 (75.0)	





## DISCUSSION

The burden of the disease caused by breast cancer is enormous, being the most common female malignancy globally (Balekouzou *et al.*, 2016). It is therefore a major public health concern. In this study, breast cancer constituted 29.80% (91) of all breast diseases seen while benign breast disease was 70.20% (214). The benign: malignant (B:M) ratio of 2.35:1 in this study is consistent with studies in Kano, Nigeria with a B:M ratio of 2.6:1 (Ochicha *et al.*, 2002). This is in contrast to studies in Sokoto and Gombe, Nigeria where the B:M ratio of 1.2:1 and 1.4:1 were reported respectively (Agbo *et al.*, 2014; Mayun *et al.*, 2008). Similar findings in other studies in Nigeria show breast cancer to constitute 28.8%, 27.5% and 31.20% of all breast diseases in Warri, Benin and Enugu respectively (Forae *et al.*, 2014; Olu-Eddo and Ugiegbe, 2011; Anyikam *et al.*, 2008).

The mean age of the breast cancer patients was  $46.5 \pm 5.4$  years, while the majority of the patients 72 (79.1%) were premenopausal in the age group of 21-50 years. This is similar to the findings of 69.0% reported in Nnewi, Eastern Nigeria (Anyanwu, 2000) and 77.3% in Zaria (Odigie *et al.*, 2003). This study therefore shows that breast cancer occurs in younger age among our women than in Western countries (Anyanwu, 2000). Most published studies in Nigeria and America reveal that breast cancer in African women occur about a decade earlier than their Western counter parts (Anyanwu, 2000; Adebamowo and Adekunle, 1999; Joslyn, 2000). African American women also present at much younger age than their Caucasian counter parts (Elmore *et al.*, 1998; Gao *et al.*, 1997). Also black British women present at significantly younger age (median age of 46 years) than white patients with median age of 67 years (Bowen *et al.*, 2008). The reasons for this early age of onset of breast cancer among black women are poorly understood but could probably be connected to the aggressive nature of the disease and the mutations in the breast cancer genes (BRCA 1 and 2) and their variants (Chlebowski *et al.*, 2005; Gao *et al.*, 1997).

The predominant histologic type of invasive ductal carcinoma (72.52%) in this study is not different from other findings in Nigeria and elsewhere (Anyanwu, 2000; Ntekim *et al.*, 2009; Kakarala *et al.*, 2010). This was followed by invasive lobular carcinoma (10.98%). The left breast was mostly affected 56 (61.5%) with the upper outer quadrant mostly involved 51 (56.0%) either singly or in combination with other parts of the breast. This is similar to the results reported by Adesunkanmi *et al.*, at Ile-Ife, Nigeria (2006). The upper outer quadrant is also reported to be more commonly involved in African and European studies (Badoe *et al.*, 2000; Odigie *et al.*, 2003; Mann *et al.*, 1999). This may probably be due to the association of the upper outer quadrant with the axillary tail which is a channel for drainage of lymph to the axillary lymph nodes and may carry micro-metastasis more than the other quadrants of the breast (Kene *et al.*, 2010).

The majority of the patients in this study (79.1%) presented with the advanced stage of the disease, commonly in Manchester stage 3. This finding is similar to several studies in Nigeria (Odigie *et al.*, 2003; Anyanwu, 2000; Hassan *et al.*, 1992; Adesunkanmi *et al.*, 2006). Ohene – Yeboah and Adjei (2012) in Kumasi, Ghana reported that 85.2% (281) of patients presented with stages 3 and 4 of the disease and 82.1% (271) were invasive. These findings confirm that breast cancer in African women is characterized by a younger age at onset, advanced stage at diagnosis and poor prognosis. Studies by Sharma *et al.* (2012), concluded that poverty and lower education level were the major causes of delay in presentation. Other reasons for late presentation of patients in hospitals include lack of information and awareness about breast cancer, ignorance of the disease symptoms, cultural beliefs, skeptical attitude towards Western medicine, fear of the consequences, resort to cheaper alternative treatment like herbal, traditional or faith healing. (Mbuka – Ongona and Tumbso, 2013; Otieno *et al.*, 2010).

Other reasons include low socioeconomic level of the patients, lack of access to quality health care and lack of an effective national program for screening breast cancer (Balekouzou *et al.*, 2016; Agbo *et al.*, 2014). It is also observed that there is no significant relationship between the clinical stage of breast cancer and the age of patient.

## CONCLUSION

Breast cancer in our environment affects younger women, presents late and tends to run an aggressive course. Public health education and advocacy must be sustained to bring about positive change and improve outcome. Well-funded and dedicated breast cancer screening and treatment centers should be set up within reach for early detection, treatment and follow up of atypical lesions thereby reducing the chances of progression of these lesions to invasive cancer.





## ACKNOWLEDGEMENT

We acknowledge with gratitude the secretarial assistance of Miss Goodness Ananaba

## REFERENCES:

- Adebamowo C.A., Famooto, A., Ogundiran, T.O., Aniagwu, T. and Nkwodimmah, C. (2008). Immuno histochemical and molecular subtypes of breast cancer in Nigeria. *Breast Cancer Res Treat* ;110: 183 – 188.
- Adebamowo, C.A.I. and Adekunle, O.O. (1999). Case – controlled study of the epidemiological risk factors for breast cancer in Nigeria. *Br J Surg*; 86: 665 – 668.
- Adesunkanmi, A.R., Lawal, O.O., Adelusola, K.A. and Dirosimi, M.A. (2006). The severity,outcome and challenges of breast cancer in Nigeria. *Breast*; 15 (3): 399 – 409.
- Agbo, P.S., Khalid, A. and Oboirien, M. (2014). Clinical presentation, Prevalence and Management of Breast Cancer in Sokoto, Nigeria. *J. Women's Health Care*; 3: 149 doi: 10.4172/2167 – 0420. 1000149.
- Anyanwu S.N. (2000). Breast cancer in Eastern Nigeria: a ten year review. *West Afr J Med*; 19: 120 – 125.
- Anyikam, A., Nzegwu, M.A., Ozumba, B.C., Okoye, I. and Olusina, D.B. (2008). Benign breast lesions in Eastern Nigeria. *Saudi Med J.*; 29 (2): 241 –244.
- Awadelkarim, K.D., Arizzi,, C., Elamin, E.O., Hamad, H.M. and De Blassio, P. (2008). Pathological, clinical and prognostic characteristics of breast cancer in Central Sudan and Northern Italy: Implications for breast cancer in Africa. *Histopathology*; 52: 445 – 456.
- Badoe, E.A., Archampong, E.O. and da Rocha – Afodu, J.T. (2000). The Breast. In Principles and Practice of Surgery including Pathology in the tropics. Third Ed. Ghana Publishing Corporation 457 – 477
- Balekouzou, A., Yin, P., Pamatika, C.M., Bishwajit, G., Nambei, S.W., Djeintote, Y., Ouansaba, B.E. *et al.* (2016). Epidemiology of breast cancer: retrospective study in the Central African Republic. *BMC Public Health*; 16: 1230.
- Bowen, R.L., Duffy, S.W., Ryan, D.A., Hart, I.R. and Jones, J.L. (2008). Early onset of breast cancer in a group of British black women. *Br J Cancer*; 98: 277 – 281.
- Chlebowski, R.T., Chen, Z., Anderson, G.L., Rohan, T., Aragaki, A. and Lane, D. (2005). Ethnicity and breast cancer: factors influencing differences in incidence and outcome. *J Natl Cancer Inst.*; 97 (6): 439 – 448.
- Dupont, W.D. and Page, D.L. (1985). Risk factors for breast cancer in women with proliferative breast disease. *N Engl J Med.*; 312 (3) 146 - 151 .
- Dupont, W.D., Parl, F.F., Hartman, W.H., Brinton, L.A., Winfield, A.C. and Worrell, J.A. (2006). Breast cancer risk associated with proliferative breast disease and atypical hyperplasia. *Cancer*; 71:1258-1265.
- Elgaili, E.M., Abuidriss, D., Rahman, M., Michalek, A.M. and Mohammed, S.I. (2010). Breast cancer burden in Central Sudan. *Int J Womens Health*; 9 (2): 77-82.
- Elmore, J.G., Mocerri, V.M., Carter, D. and Larson, E.B. (1998). Breast carcinoma tumour characteristics in black and white women. *Cancer*; 83:2509 – 2515.
- Ferlay, J., Soerjomataram, I., Ervik, M., Dikshit, R., Eser, S, and Mathers, C. (2013). LOBOCAN 2012 V.I.O. Cancer incidence and Mortality Worldwide: IARC Cancer Base No. 11 (Internet) Lyon, France. In: International Agency for Research on Cancer.





Forae, G.D., Nwachokor, F.N., Igbe, A.P., Odokuma, E.I. and Ijomone, E.A. (2014). Benign breast diseases in Warri, Southern Nigeria: A spectrum of histopathological analysis. *Ann Nigerian Med*; 8: 28 – 31.

Forbes, J.F. (1997). The incidence of breast cancer: the global burden, public health considerations. *Semin oncol*; 24: S1-20-S1-35.

Gakwaya, A., Kigula–Mugambe, J.B., Kavuma, A., Luwaga, A. and Fualal, J. (2008). Cancer of the breast: 5 year survival in a tertiary hospital in Uganda. *Br J Cancer*; 99: 63 – 67.

Gao, O., Neuhausen, S., Cummings, S., Luce, M. and Olopade, O.I. (1997). Recurrent germ – line BRCA 1 mutations in extended African American families with early-onset breast cancer. *Am J Hum Genet*; 60: 1233 – 1236.

Gukas, I.D., Jennings, B.A., Mandong, B.M., Igun, G.O. and Girling, A.C. (2005). Clinicopathological features and molecular markers of breast cancer in JOS, Nigeria. *West Afr J. Med.*; 24: 209 – 213.

Hartmann, L.C., Sellars, T.A, Frost, M.H., Lingle, W.L., Degnim, A.C. and Ghosh, K. (2005). Benign breast diseases and the risk of breast cancer. *N. Eng J Med.*; 353: 229 –237.

Hassan, I., Onukak. E.E. and Mabogunje, O.A. (1992). Breast cancer in Zaria, Nigeria. *J R Coll Surg Edinb*; 37 (3): 159 – 161.

Jensen, R.A., Page, D.L., Dupont, W.D. and Rogers, L.W. (1989). Invasive breast cancer risk in women with sclerosing adenosis. *Cancer*; 64: 1977 – 83.

Joslyn, S.A.I. and West, M.M. (2000). Racial differences in breast carcinoma survival. *Cancer*; 88: 114 – 123.

Kakarala, M.I., Rozek, L., Cote, M., Liygnage, S. and Brenner, D.E. (2010). Breast cancer histology and receptor status characterization in Asian Indian and Pakistani women in the US – a SEER analysis. *BMC Cancer*; 10: 191.

Kene, T.S., Odigie, V.I., Yusufu, L.M.D., Yusuf, B.O., Shehu, S.M. and Kase, J.T. (2010). Pattern of presentation and survival of breast cancer in a teaching hospital in North Western Nigeria. *Oman Med J*; 25 (2): 104 – 107.

Lucas, A.O. and Gilles, H.M. (2003). Non – Communicable Disease: Health in Transition. In short Textbook of Public Health Medicine for the tropics. International Students Edition. Arnold publishers. pp: 237 – 259.

Ly, M., Antoime, M., Andre, F., Callard, P., Bernuadin, J.F. and Diallo, D.A. (2011). Breast cancer in Sub-saharan African women. *Bull cancer*. 98 (7) 797 – 806. Pub Med Google scholar.

Majeed, W., Aslam, B., Javed, I., Khaliq, T., Mohammed, F. and Ali, A. (2014). Breast cancer: major risk factors and recent developments in treatment. 15 (8): 3353 – 3358.

Mann, C.V., Russel, R.C. and Williams, N.S. (1999). Carcinoma of the breast. In Bailey and Love Short Textbook of surgery. 22<sup>nd</sup> edition. Arnold Publishers. pp: 553 – 562

Mayun, A.A., Pindiga, U.H. and Babayo, U.D. (2008). Pattern of histopathological diagnosis of breast lesions in Gombe, Nigeria. *Niger J Med.*; 17 (2): 159 – 62.

Mbuka–Ongona, D. and Tumbo, J.M. (2013). Knowledge about breast cancer and reasons for late presentation by cancer patients seen at princess Marina Hospital, Gaborone, Botswana. *Afr J Health Care Fam Med*; 5: 1 -7.

Ntekim, A., Nufu, F.T. and Campbell, O.B. (2009). Breast cancer in young women in Ibadan, Nigeria. *Afr Health Sci*; 9: 242 – 246.

Ochicha, O., Edino, S.T., Mohammed, A.Z. and Amin, S.N. (2002). *Nig J Surg Res*; 4:1-5.





- Odigie, V.I., Yusufu, L.M., Rafindadi, A. and da Rocha-Afoda, J.T. (2003). Breast cancer in Zaria. *Nig J Surg*; 9: 46 – 50.
- Ohene –Yeboah, M. and Adjei, E. (2012). Breast cancer in Kumasi, Ghana. *Ghana Med J*; 46: 8 – 13.
- Olu-Eddo, A.N. and Ugiagbe, E.E. (2011). Benign breast lesions in an African population: A 25 year histopathological review of 1864 cases. *Niger Med J*; 52 (4): 211- 216.
- Otieno, E.S., Micheni, J.N., Kimende, S.K. and Mutai, K.K. (2010). Delayed presentation of breast cancer patients. *East Afr Med J*; 87: 147 - 150.
- Palli, D., Rosselli Del Turco, M., Simoncini, R. and Bianchi, S. (1991). Benign breast disease and breast cancer: a case-control study in a cohort in Italy. *Int J cancer*; 47 (5): 703 – 705.
- Sharma, K., Costas, A., Shulman, L.N. and Meara, J.G. (2012). A systematic review of barriers to breast cancer care in developing countries resulting in delayed patient presentation. *J Oncol.*; 2012: 1-9 (ID 121873).
- Solanke, T.F. and Adebamowo, C.A. (1996). Report of the state of the art in oncology in Ibadan and Ife. . National headquarters of cancer registries in Nigeria. UCH Ibadan.
- Uwaezuoke, S.C. and Udoye, E.P. (2014). Benign breast lesions in Bayelsa State, Niger Delta, Nigeria: a 5 year multicentre histopathological audit. *Pan Afr Med J*; 19: 394.
- Wen, S., Ying, L., Yingjie, H., Fan, Z., Yingzhe, W. and Ying, L. (2015). Epidemiological and Clinicopathological Trends of Breast Cancer in Chinese Patients During 1993 to 2013. A Retrospective study. *Medicine*; 94 (26): e 820.

#### **AUTHORS CONTRIBUTIONS:**

All the authors contributed adequately towards the completion of this study. Their carrier background played important roles.

