Original Research Article

UNVEILING THE CRISES OF BREAST CANCER IN YOUNGNIGERIAN WOMEN: A TEN YEAR RETROPSECTIVE STUDY IN A NORTH CENTRAL STATE

ABSTRACT

Aims: To determine the proportion of breast cancers that occur in young women atthe Jos University Teaching Hospital, Jos, Plateau State, Nigeria between the 1st of January 2013 to 31st December 2022.The age distribution and the percentage contribution of breast cancer among malignancies in young women will also be determined.

Study design: This is a retrospective observational study

Place and Duration of Study: Department of Anatomic Pathology and Forensic Medicine of the Jos University Teaching Hospital, Jos, Plateau State, Nigeria between the 1st of January 2013 to 31st December 2022.

Methodology: We extracted all 703 cases of female breast cancer diagnosed histologically and registered in the hospital-based cancer registry of Jos University Teaching Hospital, Jos, Plateau State, Nigeria. The age distribution and percentage of breast cancer diagnosis in women ≤40 years was determined. The total number of cancers diagnosed within the review period, the total number of cancers in women and the total number of cancers in women ≤40 years were also extracted and used to calculate the burden of breast cancer in relation to these groups.

Results: A total of 703 breast cancers were documented within the period of review, 211 (30.0%) of which occurred in women ≤40 years. The peak of breast cancer diagnosis occurred in the 5th decade. Female breast cancers accounted for 19.5% of all malignancies diagnosed within the period of review. They accounted for 32.5% of all cancers in women and 31.9% of cancers in women ≤40 years.

Conclusion: Female breast cancer was the commonest malignancy diagnosed during the period of our review. The proportion of cases diagnosed in young women in our study is significantly higher than observations in developed western nations.

Comment [S1]: You will at least identify the causes. Why this is significant in comparison to Western countries

Keywords: Breast cancer, Young women, Nigeria, Jos, retrospective, unveiling.

1. INTRODUCTION

Female breast cancer is now the commonest cancer diagnosed worldwide accounting for 11.7% of all malignancies and surpassing lung cancer which held first position for many years.[1] It accounts for about 23% of all cancers in women and is more than twice as common as cancer in any other site of the female body.[2] Breast cancer incidence increases with age, with only about 7% of cases diagnosed in women below the age of 40 years.[3]International guidelines define breast cancer in young women as cases

occurring in women 40 years and below.[4] Even though breast cancer occurs less commonly in women below 40 years it is still the commonest cancer diagnosed in this age group and the most common cause of death in women 20-39 years in the united states of America.[5,6] The proportion of breast cancers occurring in women 40 years and below is higher in women of African descent and in developing countries.[7].

A number of factors such as demographics, genetics and age of child-bearing are pustulated to be responsible for the high proportion of breast cancer diagnosis in young women of Low and middle-income countries (LMICs) particularly in Africa[7-13]

Comment [S2]: Breastfeeding appears to play a role in protecting against breast cancer

Breast cancer in young women is associated with a poorer outcome when compared with the disease in older women, they have a higher mortality due to a higher proportion being biologically aggressive and diagnosis of the disease occurring at more advanced stages.[7,14-18]. Younger women are also faced with multiple challenges associated with the disease occurring in their reproductive and most economically productive years.[19] The increased incidence of breast cancer in young women in our environment should be therefore be of public health concern considering the peculiarities of the disease in young women.

The aim of this study is to determine the proportion of breast cancers diagnosed in young women at the Jos University Teaching Hospital, Jos, Plateau state, Nigeriaand hence draw attention to the significant burden of this diseasein young Nigerian women.

2. METHODOLOGY

2.1 Study Design

This study was a retrospective observational study that utilized hospital-based cancer registry dataof theDepartment of Anatomic Pathology and Forensic Medicine at Jos University Teaching Hospital (JUTH) between the 1st of January 2013 to 31st December 2022

2.2 Study Technique

The Study entailed the extraction of all cases of breast cancer diagnosed histologically and entered into the cancer registry database of the Jos University Teaching Hospital (JUTH) between the 1st of January 2013 to 31st December 2022. The age distribution and percentage of cases diagnosed in women ≤40 years was determined. The study also entailed the extraction ofother cancer data within the period in order to relate breast cancer data to other cancer values and for the determination of relevant percentages. The total number of cancers diagnosed, the total number of cancers diagnosed in women and the total number of cancers diagnosed in women ≤40 years was extracted.

Only cases of histologically confirmed cancer are entered into the JUTH cancer registry and therefore included in the study. Cytologically or radiologically diagnosed cancers were therefore excluded.

2.3 Data Analysis

The data was extracted into excel sheet and entered in to Epi-info 7which was used to determine the relevant frequencies and proportions.

3. RESULTS

A total of 703 breast cancers were documented within the period of review, 211 (30.0%) of which occurred in women ≤40 years. (see table 1 and 2).

The peak decade of breast cancer diagnosis occurred in the 5th decade (Table 1)

A total of 3598 malignancies were histologically diagnosed and entered into the JUTH cancer registry between the 1st of January 2013 to 31st December 2022.Female breast cancers therefore accounted for 19.5% of all malignancies within the period of review

A total of 2163 cases of cancer were documented in women within the period of review, 661 of which occurred in women aged ≤40 years. Female breast cancers hence accounted for 32.5% of all cancers in women and 31.9% of cancers in women ≤40 years.

Table 1. Age distribution of breast cancer between year 2013 to 2022

Age Distribution												
Yearly Breast Cancer Cases		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	TOTAL
	2013	-	-	5	12	18	13	5	-	-	-	53
	2014	-	-	1	4	6	8	2	-	-	-	21
	2015	-	-	1	7	3	10	2	-	-	-	23
	2016	-	-	1	5	4	2	5	1	1	-	19
	2017	-	-	4	12	8	4	1	2	-	2	33
	2018	-	-	1	9	23	16	3	5	-	-	57
	2019	-	-	4	25	30	29	7	2	2	-	99
	2020	-	-	7	22	29	21	14	5	1	-	99
	2021	-	1	8	27	44	29	11	2	2	-	124
	2022	-	1	10	44	41	40	26	9	3	1	175
	TOTAL	**0**	**2**	**42**	**167**	**206**	**172**	**76**	**26**	**9**	**3**	**703**

Table 2. Proportion of breast cancer in young women ≤40 years between year 2013 to 2022

Year	≤40 Years (n) (% of total)	Total (n)
2013	17 (32.1)	53
2014	5 (23.8)	21
2015	8 (34.8)	23
2016	6 (31.6)	19
2017	16 (48.4)	33
2018	10 (17.5)	57
2019	29 (29.2)	99
2020	29 (29.2)	99
2021	36 (29.0)	124
2022	55 (31.4)	175
Total	**211 (30.0)**	**703**

4. DISCUSSION

Female breast cancer is the commonest cancer diagnosed during the period of our review accounting for 19.5% of all cancers and 32.5% of cancers diagnosed in women. The peak of breast cancer diagnosis in our study occurred in the 5th decade, which is 2 decades earlier than the peak in the United states.[20]Our data also revealed that breast cancer is the most common cancer among women 40 years and below accounting for 31.9% of cancers in the age group. Worldwide breast cancer is consistently the commonest malignancy in women below 40 years.[6]The proportion of breast cancers in young women (≤40 years) in our study is 30.0%, this correlates with the 28.9% documented by Ntekim et al at the University college hospital Ibadan Nigeria.[7] The alarmingly high proportion of breast cancers occurring in young women in these Nigerian studies is significantly higher than what is documented in most western studies.[3]In the United States of America 6.6% of breast cancers occur in women 40 years and below.[21] Worldwide only about 5.6% of breast cancers occur in women between the ages of 15-39 years.[22]

A number of factors appear to be responsible for the high proportion of breast cancer in young Nigerian women. Some authors have speculated that the high proportion is attributable to the general population's low life expectancy and the resulting young population having a smaller cohort of the older women who usually bear most of the burden of breast cancer.[7] This assertion is supported by the similarly high albeit slightly lower proportion of breast cancers seen in young women in some non-African developing countries which have similarly young populations.[23,24]Latif et al in Pakistan and Sheereen et al in India who both reported their findings in tertiary health facilities documented 18.3% and 20% respectively of breast cancers occurring in women ≤40 years.[23,24]

Evidence shows that breast cancer in women below the age of 35 occurs up to two times more commonly in African American women than in Caucasian American women even though the overall incidence of

breast cancer is higher in the Caucasian population.[8-10]Young women who have a breast cancer diagnosis are more likely to have hereditary disease than older women. Higher rates of germline mutation in BRCA1, BRCA2 and PALB2 genes have been detected in this population than in older women with breast cancer. This suggests a possible genetic basis for breast cancers occurring in young women. Relatives of young women with breast cancer have a much higher risk of developing breast cancer than relatives of women who had their diagnosis later in life.[25]Diagnosis of breast cancer in young women therefore warrants referral of close relatives for genetic counselling and testing.[11-13]While delayed child birth (first child birth after 30) is an established risk factor for breast cancer in women over 35, early child bearing is postulated to be a risk factor for breast cancer in women before the age of 35 years based on recent evidence.[8] The tendency of women to start having children early in low and middle income countries may contribute to the current scenario.

Breast cancer in younger women frequently exhibit adverse tumor biology, their tumors have higher histologic grade, have a higher frequency of nodal disease, are more likely to be human epidermal growth factor receptor 2 (Her2) positive and triple negative.[23,24,26,27]. Young women are more likely to present with advanced disease, have more aggressive disease and have more complications associated with the disease and its treatment.[23,24,28]

The longer duration of survival associated with breast cancer in young women is fraught with multiple problems arising from the disease and its treatment. Depression, cardiovascular dysfunction and osteoporosis are commonly seen in long term survivors.[29]Reproductive challenges such as premature menopause, sexual dysfunction and fertility issues along with loss of economic productivity feature prominently amongst young breast cancer patient's morbidity.[19,23,24,26-28]In a majority of cases young breast cancer survivors require physical, psychological, social, sexual, nutritional, financial and vocational rehabilitation.[30,31]Recognition of these challenges, anticipation and proper planning for mitigation should be advocated for and incorporated in the multidisciplinary teams managing young women with breast cancer.

The level of knowledge of breast cancer and its screeningvaries based on the population surveyed in Nigeria,however utilization of screening isgenerally low.[32,33] Public health education concerning breast

cancer and the need for screening should be advocated using both media and formal education in schools. Most screening guidelines for breast cancer recommend commencement of screening in women aged 40 years and above essentially excluding greater than a quarter of women that would benefit from breast cancer screening in our environment.[34,35]Low and middle income countries like Nigeria should incorporate screening of young women in the national screening guidelines in order to address the peculiarities of our situation. Utilization of a reliable, cost-effective and readily available breast cancer screening tool is therefore essential.

Comment [S3]: It should be noted that by strengthening early systematic screening, we must pay attention to false positives

5. CONCLUSION

The proportion of breast cancers diagnosed in young women in our study is significantly higher than observations in developed western countries, with a peak occurring two decades earlier. The peculiarities of this disease in our environment have to understood a tackled accordingly. Unveiling this hidden and largely ignored public health crises in our young women is therefore of utmost importance.

Recommendations

1. Increased awareness of breast cancer with special emphasis on young women and girls

2. Creation of a domesticated screening guideline that meets the breast cancer screening needs of young women.

3. Research on the genetics and hereditary characteristics of breast cancer in Nigerian women

4. Training of multidisciplinary teams for management of breast cancer with special emphasis on addressing the peculiarities of the disease young women

CONSENT

Is not applicable (no patient identifiers)

ETHICAL APPROVAL

Ethical approval has been obtained from the ethical committee of Jos University Teaching Hospital, Jos, Plateau State, Nigeria and retained by the authors

REFERENCES

(1). Sung H, Ferlay J, Siegel RH, Laversanne M, Soerjomataram I, Jemal A, et al. Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA: a cancer journal for clinicians. 2021 May 71(3):209-49.

(2). Colditz G, Chia K.S. Invasive breast carcinoma: introduction and general features. In. Lakhani SR, Ellis IO, Schnitt SJ, Tan PH, van de Vijver MJ. WHO classification of tumours of the breast. 4th ed. Lyon: IARC press ;2012: 14-31.

(3). Anders CK, Johnson R, Litton J, Phillips M, Bleyer A. Breast cancer before age 40 years. Semin Oncol. 2009;36(3):237–49.

(4). Paluch-Shimon S, Cardoso F, Partridge AH, Abulkhair O, Azim HA, Bianchi- Micheli G, et al. ESO-ESMO 4th International Consensus Guidelines for Breast Cancer in Young Women (Bcy4). Ann Oncol (2020) 31(6):674–96. doi: 10.1016/j.annonc.2020.03.284

(5). Siegel R, Naishadham D, Jemal A. Cancer statistics, 2013. CA Cancer J Clin. 2013;63(1):11–30.

(6). Bleyer A, Barr R, Hayes-Lattin B, Thomas D, Ellis C, Anderson B. Biology and clinical trials subgroups of the US National Cancer Institute progress review group in adolescent and young adult oncology. The distinctive biology of cancer in adolescents and young adults. Nat Rev Cancer. 2008; 8(4):288–298.

(7). Ntekim A, Nufu FT, Campbell OB. Breast cancer in young women in Ibadan, Nigeria. African health sciences. 2009;9(4):242-246.

(8). Althuis MD, Brogan DD, Coates RJ, Daling JR, Gammon MD, Malone KE, et al. Breast cancers among very young premenopausal women (United States). Cancer Causes and Control. 2003, 14:151-160.

(9). Carey LA, Perou CM, Livasy CA, Dressler LG, Cowan D, Conway K, et al. Race, breast cancer subtypes, and survival in the Carolina Breast Cancer Study. JAMA 2006, 295;(25):2492-502.

(10). Brinton LA, Sherman ME, Carreon JD, Anderson WF. Recent Trends in Breast Cancer Among Younger Women in the United States. JNCI J Natl Cancer Inst [Internet]. 2008 Nov 19;100(22):1643–8.

(11). Lalloo F, Varley J, Moran A,Ellis D, O'Dair L, Pharoah P, et al. BRCA1, BRCA2 and TP53 mutations in very early-onset breast cancer with associated risks to relatives. Eur J Cancer. 2006;42(8):1143–1150.

(12). Haffty BG, Choi DH, Goyal S, Silber A, Ranieri K, Matloff E, et al. Breast cancer in young women (YBC): prevalence of BRCA1/2 mutations and risk of secondary malignancies across diverse racial groups. Ann Oncol. 2009;20(10):1653–659.

(13). Peto J, Collins N, Barfoot R, Seal S, Warren W, Rahman N,et al. Prevalence of BRCA1 and BRCA2 gene mutations in patients with early-onset breast cancer. J Natl Cancer Inst. 1999;91(11):943–949.

(14). Freedman RA, Partridge AH. Management of Breast cancer in very young women. The Breast. 2013 Aug 1;22:S176-9

(15). Korde LA, Partridge AH, Esser M, Lewis S, Simha J, Johnson RH. Breast cancer in young women: research priorities. A report of young survival coalition research think thank meeting. Journal of adolescent and young adult oncology. 2015 Mar 1;4(1):34-43.

(16). Gravena AA, Dell Agnolo CM, Lopes TC, Demitto MD, Mello WA, Borghesan DH, et al. Breast cancer in young Brazilian women: Challenge for the oncology care. Epidemiology research international. 2014 May 27;2014.

(17). Assi HA, Khoury KE, Dbouk H, Khalil LE, Mouhieddine TH, ElSaghir NS. Epidemiology and prognosis of breast cancer in young women. Journal of thoracic disease. 2013 Jun;5(Suppl 1):S2.

(18). Sinaga ES, Ahmad RA, Shivalli S, Hutajulu SH. Age at diagnosis predicted survival outcome of female patients with breast cancer at a tertiary hospital ainYogyakarta, Indonesia. Pan African Medical Journal. 2018 Nov 7;31(1).

(19). Ganz PA, Greendale G A, Peterson L, Kahn B, Bower JE. Breast cancer in young women: reproductive and late health effects of treatment. Journal of Clinical Oncology.2003; 21: 4184- 93.

(20).Breast Cancer Facts & Figures 2019-2020. Accessed October 15th, 2023. https://www.cancer.org/content/dam/cancer-org/ research/cancer-facts-and-statistics/breast-cancer-facts-andfigures/ breast-cancer-facts-and-figures-2019-2020.pdf

(21). Tichy JR, Lim E, Anders CK. Breast Cancer in Adolescents and Young Adults: A Review With a Focus on Biology. J Natl Compr Cancer Netw . 2013 Sep 1;11(9):1060–9.

(22). Johnson RH, Anders CK, Litton JK, Ruddy KJ, Blayer A. Breast cancer in adolescents and young adults. Pediatric blood and cancer. 2018 Dec;65(12):e27397.

(23). Latif S, Perveen S, Iqbal M, Ahmed T, Bux KM, Jafri SN. Et al. Epidemiology of Carcinoma Breast in Young Adolescence Women. Cureus. 2022 Mar 31;14(3): e23683. DOI 10.7759/cureus.23683

(24). Sheereen S, Das P, Khuntia PK, Lobo FD, Patel W, Das R, et al. Breast Cancer in Young Women: Experience from a Tertiary Care Hospital of Coastal India. Int J Med Public Health. 2022;12(2):91-5.

(25). Dite GS, Jenkins MA, Southey MC, et al. Familial risks, early-onset breast cancer, and BRCA1 and BRCA2 germline mutations. J Natl Cancer Inst. 2003;95(6):448–457.

(26). Keegan TH, DeRouen MC, Press DJ, Kurian AW, Clarke CA. Occurrence of breast cancer subtypes in adolescent and young adult women. Breast Cancer Res 2012; 14:1-9.

(27). Collins LC, Marotti JD, Gelber S, Cole K, Ruddy K, Kereakoglow S, et al. Pathologic features and molecular phenotype by patient age in a large cohort of young women with breast cancer. Breast Cancer Res Treat 2012; 131: 1061–66.

(28). Partridge AH, Hughes ME, Ottesen RA, Wong YN, Edge SB, Theriault RL, et al. The effect of age on delay in diagnosis and stage of breast cancer. Oncologist 2012; 17(6): 775–82.

(29). Ademuyiwa FO, Cyr A, Ivanovich J, Thomas MA, Managing breast cancer in young women: Challenges and solutions. Breast cancer: targets and therapy. 2005 Dec 21:1-2

(30). Dunn J, Steginga SK. Young women's experience of breast cancer: Defining young and identifying concerns. Psycho-Oncology 2000;9:137-46.

(31). Schover LR. Sexuality and body image in younger women with breast cancer. J Natl Cancer InstMonogr1994;16:177-82.

(32). Nkubli BF, Auwal A, Obi CN, Nwobi CI, MuhammedMN, Geoffrey L, et al. Awareness and practice of breastcancer screening methods among female students ofUniversity of Maiduguri. Nigerian Journal of Medical Imagingand Radiation Therapy. 2015; 4 (1): 37-41.

(33).Yusuf A, Okafor I, Olubodun T, Onigbogi O, Breast cancer knowledge and screening practices among undergraduates in a Nigerian tertiary institution, Southwestern region. African health sciences. 2022 Dec 21;4(4):16-30

(34). Foxcroft LM, Evans EB, Porter AJ. The diagnosis of breast cancer in women younger than 40. The Breast 2004;13(4):297–306.

(35).Grimm LJ, Avery CS, Hendrick E, Baker JA. Benefits and Risks of Mammography Screening in Women Ages 40 to 49 Years. Journal of Primary Care & Community Health. 2022;13: 1–6. doi.org/10.1177/215013272110583.