

# A Review of Pattern of Presentation, Morbidity, and Mortality of Breast Cancer at a New Teaching Hospital in the Federal Capital Territory, Abuja, Nigeria

Sani Ali Samuel<sup>1,2</sup>

<sup>1</sup>Department of Surgery, Faculty of Clinical Sciences, College of Health Sciences, University of Abuja, Abuja, Nigeria

<sup>2</sup>Breast and Endocrine Surgery Unit, Division of General Surgery, Department of Surgery, University of Abuja Teaching Hospital, Gwagwalada, Abuja, Nigeria

## Email address:

sanisupercentre@gmail.com

## To cite this article:

Sani Ali Samuel. A Review of Pattern of Presentation, Morbidity, and Mortality of Breast Cancer at a New Teaching Hospital in the Federal Capital Territory, Abuja, Nigeria. *Clinical Medicine Research*. Vol. 11, No. 2, 2022, pp. 20-27. doi: 10.11648/j.cmr.20221102.12

**Received:** February 6, 2022; **Accepted:** March 14, 2022; **Published:** April 14, 2022

---

**Abstract:** *Introduction:* Breast cancer is a leading cause of death among women in Nigeria. The incidence has been increasing steadily, particularly in younger women. *Materials and methods:* This is a retrospective study of the pattern of presentation, morbidity, and mortality of consecutive patients with breast cancer at the University of Abuja Teaching Hospital, Gwagwalada, Abuja, Federal Capital Territory. A hundred (100) eligible patients' records from the cancer registry, between 1<sup>st</sup> January 2014 and 31<sup>st</sup> December 2019 - A 5 year period, were reviewed. *Result:* The patients were mostly married women with a higher level of education and a mean age of 44.46±10. 81 years. The commonest presenting symptom was a painless breast lump (93.0%). Others are painful breast lump (1.0%), breast ulceration (2.0%), swelling in the axilla (2.0%) and unproductive cough (2.0%), respectively. The left breast is most frequently affected by breast cancer (50.0%), followed by the right breast (44.0%), while bilateral disease accounted for 6.0%. The upper outer quadrant of the breast accounted for 60.0% of cases. The frequency distribution of menopausal status is pre-menopausal (57.0%), menopausal (28.0%), post-menopausal (14.0%) and andropause (1.0%). Twenty-nine percent (29.0%) of patients presented with symptoms of one (1) year duration, while twenty-four percent (24.0%) had a duration of the symptom of six (6) months. Invariably fifty-three percent (53.0%) of the patients had symptoms between 6 months-1 year before presentation to the hospital. The majority (91.0%) of the patients presented with late disease. In this study pleural effusion is the commonest form of morbidity (44.0%) among patients with breast cancer. The mortality rate is 26.0%, though significantly high, only reflected death that occurred within the hospital which might be a far cry from the overall mortality in five (5) years because a significant number of the terminally ill patients preferred to die at home or in proximity to family members. *Conclusion:* The majority of the patients were young premenopausal women with advanced breast cancer at the time of presentation. Delayed presentation is responsible for the dismal outlook of breast cancer care in Nigeria. The reasons for delays are protean, however, the importance of early presentation to curbing the scourge of breast cancer cannot be overemphasized. Early diagnosis is crucial to the management and outcome of breast cancer, thus there is an urgent need to establish national breast cancer screening programs to facilitate early diagnosis and mitigate its morbidity and mortality, by healthcare policymakers in the country.

**Keywords:** Breast Cancer, Pattern, Presentation, Mortality, Morbidity

---

## 1. Introduction

Globally, cancer is a major health burden. Cancer is rapidly being recognized as a disease of public health importance in sub-Saharan Africa. Cancer of the breast is a leading cause of mortality among women in Nigeria. The

disease is on the increase, particularly in younger women.

Delayed presentation of patients with breast cancer to health facilities is a common phenomenon in the country due to superstitious beliefs, poverty, ignorance of the disease,

refusal of conventional treatment, and unaffordable health care services. The International Agency for Research on Cancer (IARC), estimates that one-in-five men and one-in-six women worldwide will develop cancer throughout their lifetime and those one-in-eight men and one-in-seven women will die from their disease [1]. Cancers are among the leading causes of morbidity and mortality worldwide, responsible for 18.1 million new cases and 9.6 million deaths in 2018. Several factors have been adduced for the global increase in cancer incidence, particularly the rise in exposure to cancer risk factors associated with social and economic growth.

The breast, a very sensitive and well-celebrated organ is a citadel of diseases. Breast cancer originates from the terminal lobulo-ductal unit. The processes begin with hyperplasia and progress through dysplasia, in-situ ductal and lobular carcinoma, invasive ductal and lobular cancers, and the variants such as colloid, inflammatory, squamous, and Paget diseases [2]. Metastasis can occur in any organ in the body.

Breast cancer can occur in both men and women, but it's found more commonly in women.

Breast cancer is a heterogeneous disease fraught with significant morbidity and mortality, nevertheless, not a death sentence as recovery is feasible when detected early and accorded appropriate treatment.

More than 1.6 million new cases are diagnosed worldwide each year [3]. Approximately 1 in 8 women will be diagnosed with breast cancer during their lifetime [4]. Furthermore, between 5-10% of the cases are hereditary [5]. While hereditary breast cancer due to germline mutations accounts for only 10% of breast cancers, non-hereditary familial clusters account for a further 15-20%, and the rest are sporadically associated with somatic mutations in the breast [6]. The risk of a woman with a family history of breast cancer varies according to the closeness of the relationship [7] within the pedigree. The risk for a woman with cancer in a first-degree relative is reported to be 1.7-2.5 folds, while the presence of bilateral breast cancer in a mother or sister increases this risk to 5-6 folds [8-9]. Hereditary breast cancer is characterized by an early age of onset, bilaterality, and association with other primary cancers [10].

In Nigeria, 100,000 women are diagnosed with breast cancer every year, according to the World Health Organization (WHO), and about 80,000 die of it annually, this death ratio of 4:5 is one of the worst in the world. Combating the scourge is hinged on early detection (which will encompass screening), prompt surgical intervention, genetic counseling, and adjuvant therapies; endocrine, chemotherapy, radiotherapy, etc.

It is noteworthy that surgery is the mainstay in the treatment of breast cancer. Of several modalities of treatments available for breast cancers, mastectomy is the most dramatic and traumatic [11], particularly because of its effect on sexuality and the potential for marital disharmony. Another arm of the multidisciplinary approach to breast cancer treatment is endocrine therapy. It has been found to significantly reduce disease recurrence and breast cancer-related mortality in estrogen receptor-positive breast cancers.

However, acquired resistance to therapy has been noted in nearly one-third of women treated with tamoxifen and other endocrine therapies [12], due to mutations in the estrogen receptors. Other modalities of treatment include adjuvant chemotherapy, radiotherapy, monoclonal antibody, and systemic therapies. Targeted therapy is fast paving the way to personalized healthcare in breast cancer treatment rather than the age-long mentality of one-cap fits-all.

Breast cancer is more often diagnosed at an advanced stage among Nigerian women, and overall survival is very poor [13-16]. In addition, Nigerian women are diagnosed more frequently with triple-negative breast cancer than patients of European descent [17].

Furthermore, among Nigerian women, one in eight cases of invasive breast cancer is a result of inherited mutations in BRCA1, BRCA2, PALB2, or TP53, and breast cancer risks associated with these genes are extremely high. Given limited resources prevention and early detection services should be focused on these high-risk women. Complex arrays of personal, social, and cultural factors appear to influence a woman's decision to delay before the presentation [18].

Frankly, the menace of breast cancer is an urgent global challenge, thus regional government must reinforce strategies to scale up prevention, early detection and diagnosis, treatment, and support services. For breast cancer prevention programs in Nigeria to succeed, they must in addition to breast awareness and screening programs, address the institutional bottlenecks, the dearth of knowledge among primary care physicians and improve referrals from alternative practitioners and prayer houses [19].

## **1.1. Objectives of the Study**

### **1.1.1. Aim**

Determination of pattern of presentation, morbidity, and mortality of breast cancer in our institution.

### **1.1.2. Specific Objectives**

- 1) To determine the commonest mode of presentation of breast cancer;
- 2) To ascertain between the onset of symptoms and presentation;
- 3) To ascertain the clinical stage of the disease at presentation;
- 4) To determine morbidity rates among patients with breast cancer;
- 5) To determine the mortality rate of breast cancer.

## **1.2. Benefit to Patient and Community**

### **1.2.1. Patient**

It will improve the quality of care given to breast cancer patients and may lead to the deployment of newer innovations in breast cancer care in our institution. However, there might be no financial benefit to the patient.

### **1.2.2. Community**

The study is intended for publication in scholarly peer-reviewed journals locally or internationally. It will project a

positive image of the institution globally, especially in the frontiers of the academic community.

### 1.3. Sources of Data/Information

#### 1.3.1. Primary

The primary source of data is from the case notes and admission records of recruited patients as specified in the questionnaire. The case notes would be retrieved from the health information management library of the hospital according to laid down protocols and shall be returned as soon as relevant information is extracted into the datasheet.

#### 1.3.2. Secondary

Secondary sources of information are from books, journals (print / electronic), online articles, publications, etc.

### 1.4. Selection Criteria

#### 1.4.1. Inclusion

- 1) All consecutive breast cancer patients within the study period (01/01/2014 - 31/12/2019).
- 2) Adults (18 – 75 years).
- 3) All patterns of presentation, morbidity, and mortality of breast cancer in the institution.

#### 1.4.2. Exclusion

- 1) Ages 0 -17 yrs.
- 2) Benign breast diseases.

## 2. Materials and Method

A retrospective study reviewing the pattern of presentation, morbidity, and mortality of consecutive patients with breast cancer at University of Abuja Teaching Hospital, Gwagwalada, Abuja, Federal Capital Territory.

The study involved reviewing case notes and admission records from the cancer registry of University of Abuja Teaching Hospital, Gwagwalada, Abuja, Federal Capital Territory, between 1<sup>st</sup> January 2014 and 31<sup>st</sup> December 2019 - A 5 year period.

Clinical data (information) about each patient were retrieved from the case note and admission records using a pro forma and entered into an excel spreadsheet. Information(s) extracted includes socio-demographic variables, the pattern of presentation, duration of symptom, breast affection, quadrant affection, menopausal status, clinical stage of disease at presentation (using American Joint committee on Cancer (AJCC) & Manchester staging systems), morbidity, mortality and cause of death.

The Statistical Package for the Social Sciences (SPSS), IBM version 21 software (IBM Corporation, USA) was used for statistical analysis. Results are expressed as mean  $\pm$  standard deviation. Statistical significance is set at a *P*-value of  $< 0.05$ .

Data is presented in frequencies, percentages, and cumulative percentages.

This research was carried out as per the Declaration of Helsinki of the World Medical Association and received

ethical approval from the Health Research Ethics Committee of the University of Abuja Teaching Hospital, Gwagwalada, Abuja, Federal Capital Territory.

## 3. Results

One hundred (100) patient records that met the criteria for inclusion were assessed.

The demographic characteristics of the patients are summarized in Table 1. The patients were mostly females 99 (99.0%), married with a higher level of education and mean age of  $44.46 \pm 10.81$  years.

**Table 1.** Sociodemographic characteristics of the patients (*n* = 100).

Variables	Frequency	Percentage
<i>Age</i>		
10-19	0	0.0
20-29	4	4.0
30-39	26	26.0
40-49	38	38.0
50-59	23	23.0
60-69	5	5.0
$\geq 70$	4	4.0
<i>Sex</i>		
Male	1	1.0
Female	99	99.0
<i>Educational background</i>		
Primary	0	0.0
Secondary	6	6.0
Higher education	31	31.0
Tertiary	13	13.0
No formal education	4	4.0
Not available	46	46.0
<i>Occupational status</i>		
Trader	32	32.0
Housewife	30	30.0
Civil servant	27	27.0
Artisan	2	2.0
Banker	2	2.0
Administrator	2	2.0
Farmer	1	1.0
Unemployed	4	4.0
<i>Marital status</i>		
Single	11	11.0
Married	87	87.0
Divorced	2	2.0
<i>Religion</i>		
Christianity	82	82.0
Islam	18	18.0

Mean age of patients  $44.96 \pm 10.81$  years.

The commonest presenting symptom was painless breast lump 93 (93.0%). Others are painful breast lump 1 (1.0%), breast ulceration 2 (2.0%), swelling in the axilla 2 (2.0%) and unproductive cough 2 (2.0%) respectively (Table 2).

The left breast is the most frequently affected by breast cancer 50 (50.0%), followed by the right breast 44 (44.0%) and bilateral disease 6 (6.0%) Table 3. The upper outer

quadrant of the breast accounted for 60 (60.0%) of cases, Table 4.

The frequency distribution of menopausal status is pre-menopausal 57 (57.0%), menopausal 28 (28.0%), post-menopausal 14 (14.0%) and andropause 1 (1.0%) as represented in Figure 1.

Twenty-nine percent (29.0%) of patients presented with symptoms of one (1) year duration, while twenty-four percent (24.0%) had a duration of the symptom of six (6) months (Table 5). Invariably fifty-three percent (53.0%) of the patients had symptoms between 6 months - 1 year before the presentation to the hospital.

Majority of the patients 91 (91.0%) presented with late disease, as shown in Table 6.

Pleural effusion is the commonest form of morbidity 44 (44.0%) among patients that presented with breast cancer (Figure 2).

The mortality rate in this study is 26 (26.0%), Figure 3, though significantly high, only reflected death that occurred within the hospital which might be a far cry from the overall mortality in five (5) years because a significant number of the terminally ill patients preferred to die at home or in proximity to family members and were not included.

**Table 2. Presenting symptom.**

Presenting symptom(s)	Frequency	Percent	Valid Percent	Cumulative Percent	
Valid	painless breast lump	93	93.0	93.0	93.0
	painful breast lump	1	1.0	1.0	94.0
	breast ulceration	2	2.0	2.0	96.0
	swelling in the axilla	2	2.0	2.0	98.0
	unproductive cough	2	2.0	2.0	100.0
	Total	100	100.0	100.0	

**Table 3. Breast Affection.**

Breast Affection	Frequency	Percent	Valid Percent	Cumulative Percent	
Valid	left breast	50	50.0	50.0	50.0
	right breast	44	44.0	44.0	94.0
	bilateral	6	6.0	6.0	100.0
	Total	100	100.0	100.0	

**Table 4. Quadrant Affection.**

Quadrant Affection	Frequency	Percent	Valid Percent	Cumulative Percent	
Valid	upper outer quadrant	60	60.0	60.0	60.0
	upper inner quadrant	14	14.0	14.0	74.0
	lower outer quadrant	14	14.0	14.0	88.0
	lower inner quadrant	2	2.0	2.0	90.0
	nipple-areola complex	9	9.0	9.0	99.0
	The axillary tail of the breast	1	1.0	1.0	100.0
	Total	100	100.0	100.0	

**Table 5. Duration of Symptoms.**

Duration of Symptom	Frequency	Percent	Valid Percent	Cumulative Percent	
Valid	2 weeks	3	3.0	3.0	3.0
	4 weeks	5	5.0	5.0	8.0
	8 weeks	6	6.0	6.0	14.0
	12 weeks	10	10.0	10.0	24.0
	6 months	24	24.0	24.0	48.0
	1 year	29	29.0	29.0	77.0
	others	23	23.0	23.0	100.0
	Total	100	100.0	100.0	

**Table 6. Clinical stage of disease at presentation.**

Clinical stage of disease at presentation	Frequency	Percent	Valid Percent	Cumulative Percent	
Valid	Early disease; (*AJCC Stage I & IIa, Manchester stage I & II)	9	9.0	9.0	9.0
	Late disease;(AJCC Stage IIb - IV, Manchester stage III & IV)	91	91.0	91.0	100.0
	Total	100	100.0	100.0	

\*AJCC - American Joint Committee on Cancer.

Menopausal status				
Menopausal status	Frequency	Percent	Valid Percent	Cumulative Percent
Valid pre-menopausal	57	57.0	57.0	57.0
menopausal	28	28.0	28.0	85.0
post-menopausal	14	14.0	14.0	99.0
andropause	1	1.0	1.0	100.0
Total	100	100.0	100.0	

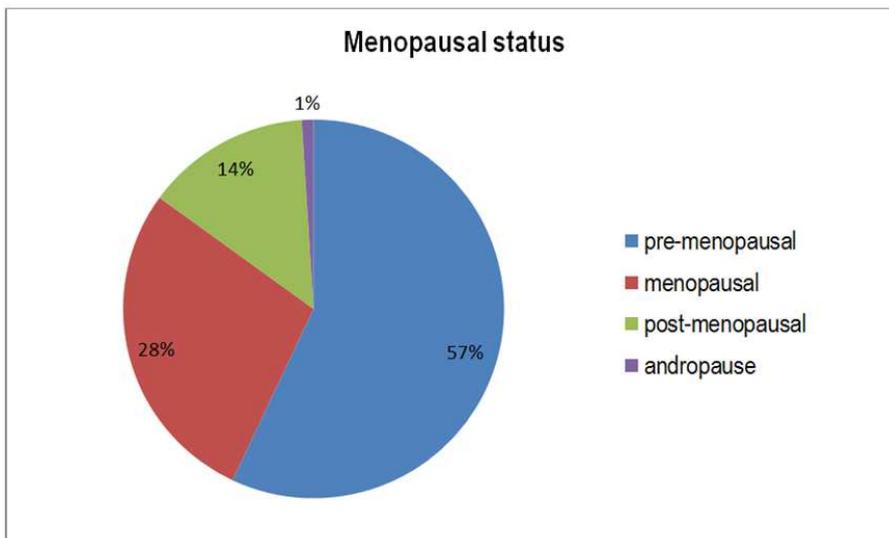


Figure 1. Menopausal Status.

Morbidity			
	Frequency	Percent	Cumulative Percent
Pleural effusion	44	44.0	44.0
Depression	14	14.0	58.0
Psychological trauma	8	8.0	66.0
Metastasis to rib	6	6.0	72.0
Cerebral metastasis	6	6.0	78.0
Ascites	5	5.0	83.0
Lumbosacral metastasis	5	5.0	88.0
Liver secondaries	4	4.0	92.0
Lung metastasis	4	4.0	96.0
Pathological fractures	4	4.0	100.0

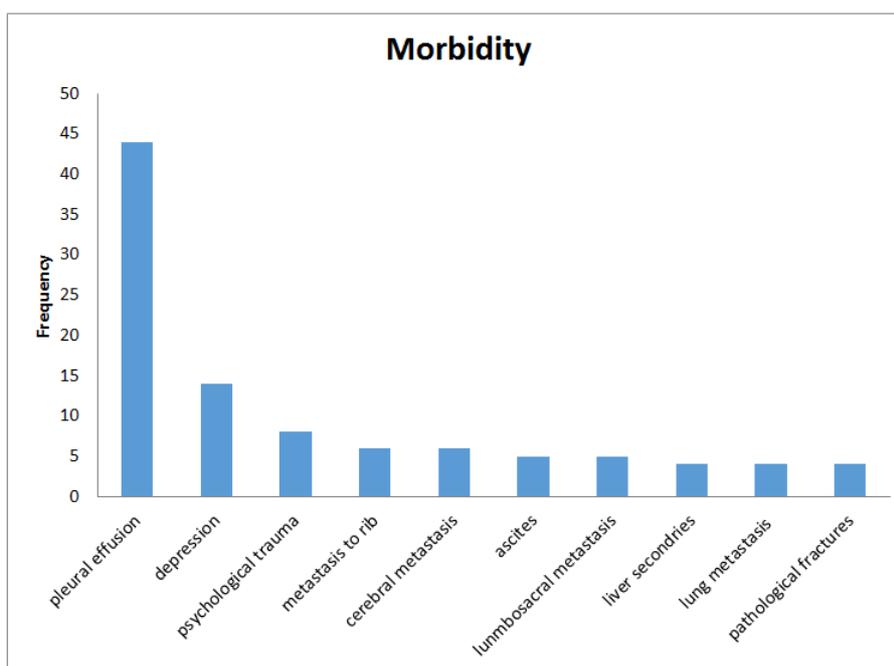


Figure 2. Morbidity.

		Mortality			
Mortality		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Alive	74	74.0	74.0	74.0
	Dead	26	26.0	26.0	100.0
	Total	100	100.0	100.0	

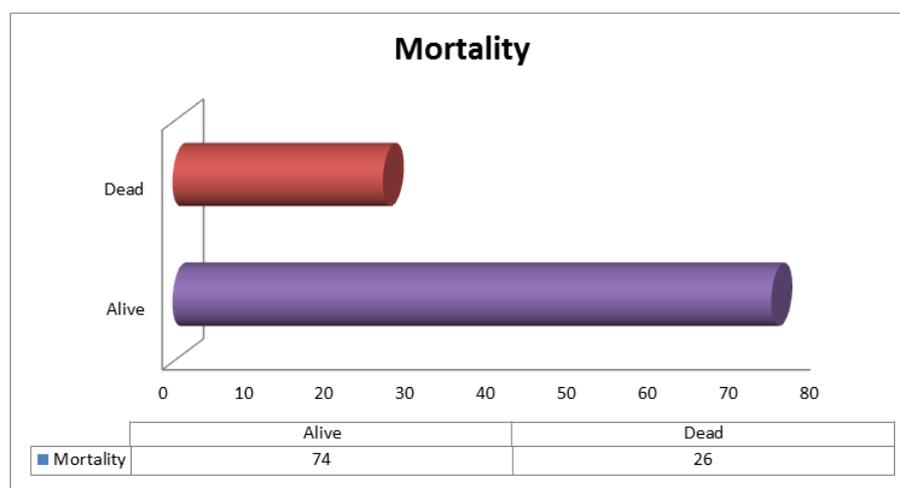


Figure 3. Mortality.

## 4. Discussion

Breast cancer is a global health burden. Breast cancer is the commonest cancer and remains the most lethal malignancy in women across the world [20, 21]. Mortality due to breast cancer is high in Nigeria due to delay in diagnosis and ineffective treatment occasioned by poverty vis-à-vis the high cost of cancer care services.

The patients were mostly females 99 (99.0%), which corroborates with the fact that breast cancer is predominantly a disease of women.

The mean age in this study is  $44.46 \pm 10.81$  years. This is similar to  $44.5 \pm 13$  years in North-Western Nigeria [22] and studies from other African centers where the mean age is 48 years [23-25].

The commonest presenting symptom was painless breast lump 93 (93.0%). Others are painful breast lump 1 (1.0%), breast ulceration 2 (2.0%), swelling in the axilla 2 (2.0%) and unproductive cough 2 (2.0%) respectively. Characteristically, breast cancer presents with a painless breast lump. Pain is a feature of disease progression.

The left breast is the most frequently affected by breast cancer 50 (50.0%), followed by the right breast 44 (44.0%) and bilateral disease 6 (6.0%) Table 3. The upper outer quadrant of the breast accounted for 60 (60.0%) of cases, Table 4.

The frequency distribution of menopausal status is premenopausal 57 (57.0%), menopausal 28 (28.0%), postmenopausal 14 (14.0%) and andropause 1 (1.0%). Most of the patients were premenopausal [26] as compared to the report by Ntekim AI, and coauthors.

Ninety-one percent (91.0%) of the patients had the late disease; (AJCC Stage IIb – IV or Manchester stage III & IV) at presentation. This figure is much higher than sixty-four percent (64%) [27] reported in Eastern Nigeria. This result

underscores public health education towards early presentation by women with breast cancer.

Pleural effusion is the commonest form of morbidity 44 (44.0%) among patients that presented with breast cancer. The second most common complication of advanced breast cancer is depression 14 (14.0%), while the third commonest is psychological trauma 8 (8.0%). Others are lung metastasis with cannonball secondaries, metastasis to rib, pathological fractures, cerebral metastasis, liver secondaries, lumbosacral metastasis, and ascites. This pattern portends an increased risk of death as pulmonary metastasis occurs early in the disease and may be a contributing factor to the dismal outlook of breast cancer care in Nigeria. These complications are preventable if patients present early in the course of the disease.

The mortality rate in this study is 26 (26.0%), corroborating with the exertion that the mortality rate of breast cancer is higher in less developed regions [28] and overall finding of a substantial increase in breast cancer mortality rate in the world during the past 25 years [29].

## 5. Conclusion

The majority of the patients were young premenopausal women with advanced breast cancer at the time of presentation. Delayed presentation is responsible for the dismal outlook of breast cancer care in Nigeria. The reasons for delays were ignorance of the seriousness of a painless breast lump, non-acceptance of hospital treatment, preference for traditional treatment, a quest for prayer houses, dearth of knowledge among primary care physicians vis-à-vis a poor referral system, and interference by alternative medicine practitioners. The importance of early presentation to curbing the scourge of breast cancer cannot be overemphasized. Early diagnosis is crucial to the management and outcome of breast

cancer. There is an urgent need to establish national breast cancer screening programs to facilitate early diagnosis and mitigate its morbidity and mortality, by healthcare policymakers.

## Role of Researcher

Dr. SANI Ali Samuel - Principal Investigator (PI); Saddled with Conceptualization, Initiation, Writing, Data Assembly, Interpretation, and Proofreading of the entire work. He is the Corresponding Author.

## Conflicts of Interest

The author declares that he has no competing interests.

## Acknowledgements

I wish to thank Mr. KUMAI Matthew Henry and USMAN Dangana, from the Health Information Management Unit, of the Hospital, for their roles in retrieving patients' records. Also, my special appreciation to Dr (Mrs.) SANI Hauwa Rebecca for her active participation in data management.

## References

- [1] New Global Cancer Data: GLOBOCAN 2018. Available from <https://www.uicc.org/news/new-global-cancer-data-globocan-2018>. Accessed 27 February 2022.
- [2] Myron L. Breast cancer – the last 50 years; delivered at the surgical research society meeting, Medical University of Southern Africa, May 2004; S Afr J Surg. 2004 Nov; 42 (4): 116-20.
- [3] Ferlay J, Soerjomataram I, Dikshit R, Eser S, Mathers C, Rebelo M, et al. Cancer incidence and mortality worldwide: Sources, methods and major patterns in GLOBOCAN 2012. *Int J Cancer* 2015; 136 (5): E359.86.
- [4] European Commission initiative on breast cancer-website: <http://ecibc.jrc.ec.europa.eu/recommendation/>
- [5] Nielsen FC et al. Hereditary breast and ovarian cancer: new genes in confined pathways. *Nature Reviews*. 2016; 16: 599-612.
- [6] Gail MH, Brinton L, Byar DP, et al. Projecting individualized probabilities of developing breast cancer for white females who are being examined annually. *J Natl Cancer Inst* 1989; 81: 1879.
- [7] Koc G, Gulen-Savas H, Ergol S, Yildirim-Cetinkaya M, Aydin N. Female university students' knowledge and practice of breast self-examination in Turkey. *Niger J Clin Pract* 2019; 22: 410-5.
- [8] Lowery JT, Ahnen DJ, Schroy PC, Hampel H, Baxter N, Boland CR et al. Understanding the contribution of family history to colorectal cancer risk and its clinical implications: A state - of - the - science review. *Cancer* 2016; 122: 2633-45.
- [9] Guner IC, Tetik A, Gonener HD. Determination of women's knowledge, attitude, and behaviors about self-breast examination. *Gaziantep Med J* 2007; 13: 55-60.
- [10] Lynch HT, Lynch J, Conway T, Watson P, Feunteun J, Lenoir G, Narod S, Fitzgibbons R Jr. Hereditary breast cancer and family cancer syndromes. *World J Surg*. 1994 Jan-Feb; 18 (1): 21-31. doi: 10.1007/BF00348188. PMID: 8197773.
- [11] Akanbi OO, Adeoti ML, Habeeb OG, Idris OL, Abiodun AB, Ajiboye OA. *Nigerian Hospital Practice*. 2016; 18: 1-6.
- [12] Alluri et al. Estrogen receptor mutations and their role in breast cancer progression. *Breast Cancer Research* 2014 16: 494. doi: 10.1186/s13058-014-0494-7.
- [13] Adebamowo CA, Adekunle OO: Case-controlled study of the epidemiological risk factors for breast cancer in Nigeria. *Br J Surg* 1999; 86: 665-68.
- [14] Ihekwa FN: Breast Cancer in Nigerian women. *Br J Surg* 1992; 79: 771-775.
- [15] Ukwanya AY, Yusufu LMD, Madu PT, Garba ES, Ahmed A. Delayed treatment of symptomatic breast cancer: the experience from Kaduna, Nigeria. *S Afr J Surg*. 2008; 46 (4): 106-10.
- [16] Sani AS et al. Sociodemographic Characteristics and Histologic Subtypes of Breast Cancer at a Tertiary Hospital in North Central Nigeria. *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)* e-ISSN: 2279-0853, p-ISSN: 2279-0861. Volume 20, Issue 10 Ser. 9 (October. 2021), PP 39-44. DOI: 10.9790/0853-2010093944. [www.iosrjournals.org](http://www.iosrjournals.org).
- [17] Yonglan Z, Tom W, Suleyman G, Silva C, Ming KL, Temidayo O. O, et al: Inherited breast cancer in Nigerian women. *J C Oncol* 2018; 78; 3977. DOI: <http://doi.org/10.1200/JCO2018:78:3977>.
- [18] Facione NC, Miaskowski C, Dodd MJ, Paul SM. The self-reported likelihood of patient delay in breast cancer. *New thoughts for early detection. Preventive Medicine* 2002; 34: 397-407.
- [19] Ezeome ER. Delays in presentation and treatment of breast cancer in Enugu, Nigeria. *Niger J Clin. Pract* 2010; 13 (3): 311-16.
- [20] Doshi D, Reddy B, Kulkarni S, Karunakar P. Breast self-examination, knowledge, attitude, and practice among students in India. *Indian J Palliat Care* 2010; 1: 66-7.
- [21] Nwaneri A, Osuala EO, Okpala PU, Emesowum AC, Iheanacho P. Knowledge and awareness of breast cancer among rural women in Umuowa Orlu Local Government Area Imo State, South East, Nigeria. *Niger J Clin Pract* 2017; 20: 489-94.
- [22] Kene TS, Odigie VI, Yusufu LMD, Yusuf BO, Shehu SM, Kase JT. Pattern of Presentation and Survival of Breast Cancer in a Teaching Hospital in North-Western Nigeria. *Oman Med J*. 2010 Apr; 25 (2): 104–107. DOI: 10.5001/omj.2010.29.PMCID: PMC3215495. PMID: 22125710.
- [23] Adesunkanmi ARK, Lawal OO, Adelusola KA, Durosimi MA. The severity, outcome, and challenges of breast cancer in Nigeria. *Breast*. 2006; 15 (3): 399-409. PubMed | Google Scholar.
- [24] Rambau PF, Chalya PL, Manyama MM, Jackson KJ. Pathological features of Breast Cancer seen in Northwestern Tanzania: A nine years retrospective study. *BMC Research Notes*. 2011; page 214. PubMed | Google Scholar.

- [25] Huo D, Ikpat F, Khramtsov A, Dangou JM, Nanda R, Dignam J, Zhang B, Grushko T, Zhang C, Oluwasola O, Malaka D, Malami S, Odetunde A, Adeoye AO, Iyare F, Falusi A, Perou CM, Olopade OI. Population differences in breast cancer: survey in indigenous African women reveals over-representation of triple-negative breast cancer. *J Clin Oncol*. 2009 Sep 20; 27 (27): 4515-21. DOI: 10.1200/JCO.2008.19.6873. Epub 2009 Aug 24. PMID: 19704069; PMCID: PMC2754904.
- [26] Ntekim AI, Folasire AM, Ali-Gombe. Survival pattern of rare histological types of breast cancer in a Nigerian institution. *Pan Afri Med J*. 2019; 34: 114. Published online 2019 Oct 29. DOI: 10.11604/pamj.2019.34.114.16925. Accessed 30 December 2020.
- [27] Anyanwu SN. Breast cancer in Eastern Nigeria: A ten-year review. *West Afr J Med* 2000; 19 (2): 120-5.
- [28] Momenimovahed Z, Salehiniya H. Epidemiological characteristics of and risk factors for breast cancer in the world, *Breast Cancer* (Dove Med Press), 2019; 11: 151–164. Published online 2019 Apr 10. DOI: 10.2147/BCTT.S176070; PMCID: PMC6462164; PMID: 31040712. Accessed 31<sup>st</sup>, December 2020.
- [29] Azamjah N, Soltan-Zadeh Y, Zayeri F. Global Trend of Breast Cancer Mortality Rate: A 25-Year Study, *Asian Pac J of Cancer Prev*. 2019 Jul 1; 20 (7): 2015-2020. DOI: 10.31557/APJCP.2019.20.7.2015. PMID: 31350959; PMCID: PMC6745227.