



## DEMOGRAPHIC AND CLINICAL PROFILE OF PATIENTS DIAGNOSED WITH BREAST CANCER IN PORT HARCOURT: IMPLICATIONS FOR TARGETED SCREENING

Solomon N. Elenwo, \*Rex F.O.A. Ijah, Alexander A. Dimoko

Department of Surgery, University of Port Harcourt Teaching Hospital, Port Harcourt, Rivers State, Nigeria.

\*Corresponding Author: Rex Friday Ogoronte A. Ijah; Email: rexijah@gmail.com

### ABSTRACT

**Background:** The role of risk factors in breast cancer mortality has been reported. Statistics on breast cancer differ from region to region. Our unique regional characteristics, therefore, could be harnessed for future care. This study aims at determining the demographic and clinical profile of patients diagnosed with breast cancer from July 2016 to June 2019 in Port Harcourt and their implications for targeted screening.

**Method:** This descriptive retrospective study was carried out at the breast clinic and general surgery wards of a tertiary healthcare facility using the medical records of all patients with histologically confirmed breast cancer seen between July 2016 and June 2019. Data was analyzed using the Statistical Package for the Social Sciences (SPSS) version 20.0.

**Results:** The median age at diagnosis of breast cancer was 41.0 years with a range of 20 – 75 years. The median age at menarche was 14.0 years. Most of the patients, 47 (77.1%) presented with duration of symptoms of  $\leq 12$  months. The most common stage at presentation was stage III cancer.

**Conclusion:** The relatively younger age at presentation/diagnosis of breast cancer in our subregion could be a strong and viable reason for advocacy for early commencement of age-targeted breast cancer screening from 25 years.

**Keywords:** Demographic profile, Clinical profile, Breast cancer, Implications for Targeted Screening, Port Harcourt.

### INTRODUCTION

The global burden of cancer was estimated to be 18.1 million new cancer cases and 9.6 million cancer deaths in 2018, and breast cancer was reported as the most commonly diagnosed cancer and leading cause of cancer death among women.<sup>1</sup> The 2018 report puts the global number of new cases





of breast cancer at 2,088,849 (11.6% of all new cases of cancer), and breast cancer deaths at 626,679 (6.6% of all cancer deaths).<sup>1</sup> A recent review of the global epidemiological characteristics of breast cancer reveals significant variation with race and ethnicity, with rising incidence and higher mortality among the less developed nations.<sup>2</sup> Female breast cancer incidence rate in Nigeria is reported to be 36.3 to 50.2/100,000 live births.<sup>3,4</sup>

The role of risk factors in breast cancer mortality has been reported – geographic location<sup>5</sup>, radiation<sup>6</sup>, parity<sup>5</sup>, body build<sup>7</sup>, diet<sup>8</sup>, stage at presentation<sup>5</sup>, grade of tumour<sup>7</sup>, age at detection<sup>7</sup>, systemic endocrine therapy<sup>7</sup>, reproductive factors<sup>9</sup>, comorbidity, and hospice care.<sup>10</sup> However, a study done among women from Nigeria, Cameroon, and Uganda did not support these findings.<sup>11</sup>

In a random screening of 3000 women for clinical palpable breast lumps, a Ghanaian study reported that 23 (0.76%) out of 194 (6.46%) clinically palpable lumps were diagnosed with breast cancer and about 30% of them were below 35 years of age.<sup>12</sup> The role of occupation in breast cancer mortality has been studied. While increased breast cancer mortality was reported among women “executives” and “administrative support staff” in the United State of America<sup>13</sup>, a similar study in Nigeria<sup>3</sup> could not support such findings. Findings on the role of education in breast cancer mortality has rather been inconsistent.<sup>14-16</sup>

Statistics on breast cancer differ from region to region. The unique features of breast cancer presentation among Asian women has influenced future prevention and management strategies in that region.<sup>17</sup> Reviews of the risk factors for breast cancer in Africa shows some uniqueness with greater number occurring in premenopausal women.<sup>18-20</sup> There have been several studies on risk factors of breast cancer in Nigeria<sup>21-32</sup>, with emphasis on rising incidence and changing demographic profile. Late presentation, invasive ductal carcinoma, triple negativity with poor prognosis, especially among our younger patients are common features in our Nigerian breast cancer patients.<sup>33-39</sup> However, a Nigerian study reported in 2008 found no difference in the immunohistochemistry pattern of African breast cancer patients compared to other populations.<sup>40</sup> Also, another Nigerian study found a strong correlation of immunohistochemistry characteristics with age, tumor grade, tumor size and lymph node status.<sup>41</sup> This study aims at determining the demographic and clinical profile of patients diagnosed with breast cancer in our center and their implications for targeted screening.



## METHODOLOGY

This descriptive retrospective study was carried out at the breast clinic and general surgery wards of the University of Port Harcourt Teaching Hospital, a tertiary healthcare facility in Port Harcourt, Nigeria. The approval of the Research Ethics Review Committee of the University of Port Harcourt Teaching Hospital was sought and obtained. The medical records of all patients with histologically confirmed breast cancer within the study period, between July 2016 and June 2019, who formed the study population were included in the study. Data was analyzed using the Statistical Package for the Social Sciences (SPSS) version 20.0. The parameters analyzed included age at diagnosis, age at menarche, age at menopause, parity, family history, duration of symptoms, and clinical stage.

## RESULTS/ANALYSIS

**Table 1: Median Age at Diagnosis, Menarche, and Menopause; and Parity**

Variables	Median	Range
Age at diagnosis	41.0years	20 – 75years
Age at menarche	14.0years	12 – 18years
Age at menopause	51.5years	44.0 – 55.0years
Parity	3.0	0 – 10

Table 1 shows that the age at diagnosis is rather young. Also, the median age at menarche is not early, and the median age at menopause is not late. The median parity of three (3) suggests that many of the patients were not nulliparous.

**Table 2: Family History and Duration of Symptoms of Patients with Breast Cancer**

Findings (N= 61)	n	%
<b>Family History (Breast Cancer)</b>		
Nil	58	90.1
Mother	1	1.6



Sister	1	1.6
Aunt	1	1.6
<b>Duration of Symptoms</b>		
<6 Months	22	36.1
6 – 12 Months	27	44.2
13 – 18 Months	2	3.3
19 – 24 Months	5	8.2
> 24 Months	5	8.2

In Table 2, majority of the patients (90.1%) did not have any family history of breast cancer. A significant number of patients had symptoms that lasted less than twelve (12) months before presentation.

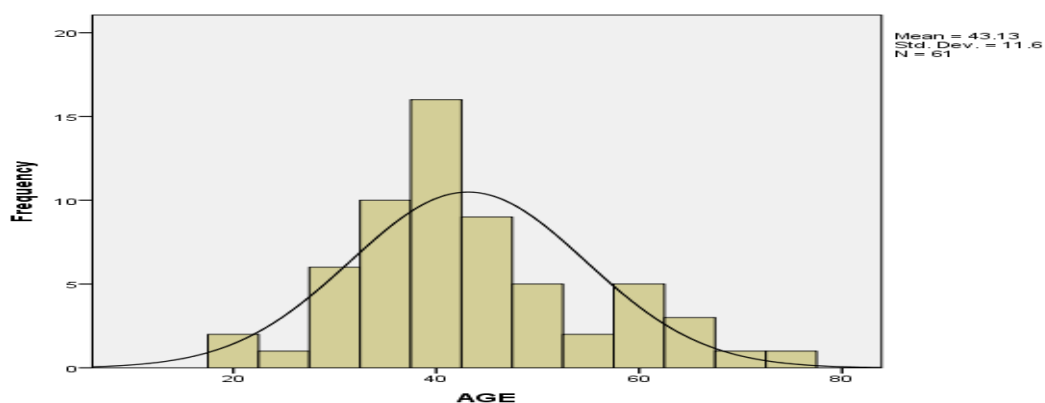
**Table 3: Breast characteristics of patients with breast cancer**

Findings (N= 61)	n	%
<b>Presenting Complaint</b>		
Right Breast Lump/Mass	19	31.2
Left Breast Lump/Mass	24	39.3
Lump in both Breast	1	1.6
<b>Location of Breast Lump</b>		
Upper Outer	25	41.0
Upper Inner	6	9.8
Lower Outer	7	11.4
Lower Inner	7	11.4
Peri-areolar	3	4.9
Whole Breast	11	18.0
Upper Outer + Lower Outer	1	1.6
Lower Inner + Peri-areolar	1	1.6
<b>Nipple Discharge</b>		
Nil	50	81.9

Bloody	3	4.9
Serous	4	6.6
Milky	2	3.3
Yellowish	2	3.3
<b>Symmetry of breast</b>		
Asymmetrical	38	62.3
Symmetrical	23	37.7

Table 3 displayed frequencies for breast characteristics of patients with breast cancer. Left breast lump/mass was the most frequent presenting complaint being 24 (39.3%) compared with right breast lump/mass which was 19 (31.2%) and 1 (1.6%) for lump/mass in both breasts. The upper outer quadrant was the most frequent location – 25 (41.0%) followed by the whole breast – 11 (18.0%), then the lower outer – 7 (11.4%) and lower inner – 7 (11.4%) quadrants.

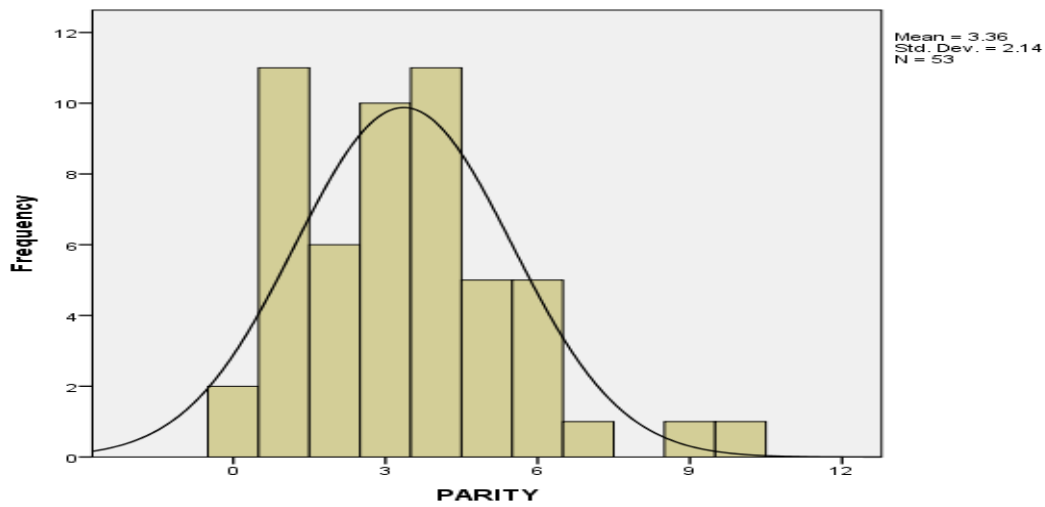
Bloody nipple discharge was not noticed in most of our patients. Breast asymmetry was a significant finding.



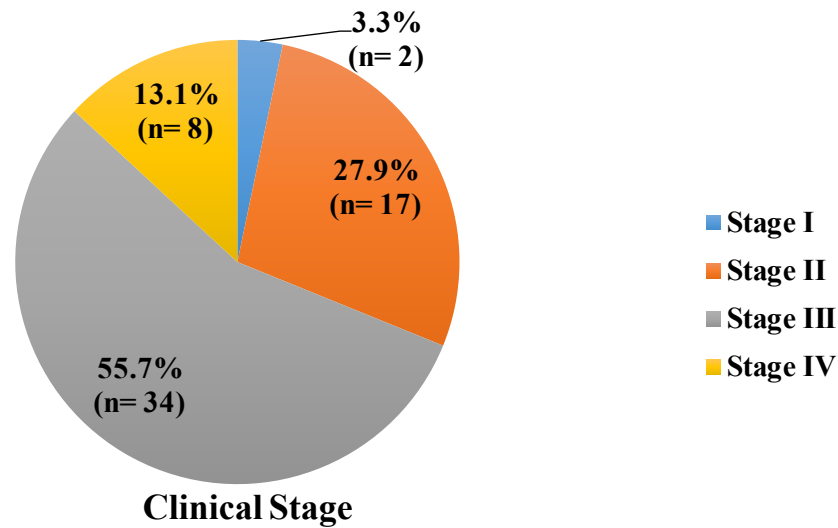
**Figure 1: Frequency distribution of ages of the patients**



**Figure 2: Frequency distribution of age at menopause**



**Figure 3: Frequency distribution of parity of the patients**



**Figure 4: Clinical staging of patients with breast cancer**

The most common stage at presentation was stage III cancer – 34 (55.7%), followed by stage II cancers – 17 (27.9%), and then stage IV – 8 (13.1%). Stage I cancers were the least – 2 (3.3%) in this series.

## DISCUSSION

The median age at diagnosis (and range), median age at menarche, median parity of patients, median age at menopause described in this study are similar to some reported earlier studies.<sup>26, 28, 33, 42-48</sup> The median age/range at diagnosis is lower in this study when compared to some studies outside our region in Iran in the Middle-East, the United States, and the United Kingdom.<sup>49-52</sup> Targeted breast cancer screening has been the subject of interest in some research works.<sup>53-55</sup> Age-targeted and density-targeted screening strategies have been mentioned in literature.<sup>56</sup> Kinome screening for new therapeutic target has also been described for breast cancer<sup>57</sup>. Targeting younger age groups in our breast cancer screening program seems to be a viable option since our patients have a lower age at presentation/diagnosis. Also, age-targeted screening strategies have cheaper outlook, compared to all-digital mammography or screening services.<sup>56</sup>

In most of the patients in this study there was no significant family history of breast cancer, so screening patients' families for cancer may not be rewarding in our setting. Late presentation is



evidenced in this study as in most developing countries of the world.<sup>33, 44-48, 58, 59</sup> It has been noted in a few studies in our subregion that most of those who present early have triple negative and aggressive tumours.<sup>24, 29, 60, 61</sup>

Similar clinical characteristics of breast cancer observed in this study have been reported in earlier studies, and emphasize the occurrence of features of advanced disease in our subregion more than in developed climes.<sup>33, 62-64</sup> Applying age-targeted screening programs using the protocol adopted from advanced countries (usually 35-40years) may not be outrightly suitable in our setting.

## **CONCLUSION**

The demographic and clinical characteristics of breast cancer in this study, just like others in our subregion, demonstrate some differences when compared with features seen in developed climes. Late presentation and late stage disease are also featured in this study. It appears therefore that the relatively younger age at presentation/diagnosis of breast cancer in our subregion could be a strong and viable reason for advocacy for early commencement of age-targeted breast cancer screening from 25 years, especially because early onset of breast cancer is associated with increased aggression. This seems reasonable as it will accommodate our younger patients, and have a secondary benefit of improving early detection and likely reduce the occurrence of late stage disease.

## **REFERENCES**

1. Bray F, Ferlay J, Soerjomataram I, Siegel RL, Torre LA, Jemal AJ. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. 2018;68(6):394-424.
2. Momenimovahed Z, Salehiniya H. Epidemiological characteristics of and risk factors for breast cancer in the world. *Breast Cancer: Targets and Therapy*. 2019;11:151.
3. Amin SM, Ewunonu HAS, Oguntebi E, Liman IMJSMJ. Breast cancer mortality in a resource-poor country: A 10-year experience in a tertiary institution. 2017;20(3):93.
4. Jedy-Agba E, Curado MP, Ogunbiyi O, Oga E, Fabowale T, Igbino F, et al. Cancer incidence in Nigeria: a report from population-based cancer registries. 2012;36(5):e271-e8.





5. Tatalovich Z, Zhu L, Rolin A, Lewis DR, Harlan LC, Winn DMJl Johg. Geographic disparities in late stage breast cancer incidence: results from eight states in the United States. 2015;14(1):31.
6. Garland FC, Garland CF, Gorham ED, Young JFJ Pm. Geographic variation in breast cancer mortality in the United States: a hypothesis involving exposure to solar radiation. 1990;19(6):614-22.
7. Toikkanen SP, Kujari HP, Joensuu HJEJoC, Oncology C. Factors predicting late mortality from breast cancer. 1991;27(5):586-91.
8. Gaskill SP, McGuire WL, Osborne CK, Stern MPJCr. Breast cancer mortality and diet in the United States. 1979;39(9):3628-37.
9. Daling JR, Malone KE, Doody DR, Anderson BO, Porter PLJCE, Biomarkers P. The relation of reproductive factors to mortality from breast cancer. 2002;11(3):235-41.
10. Connor SR, Pyenson B, Fitch K, Spence C, Iwasaki KJJop, management s. Comparing hospice and nonhospice patient survival among patients who die within a three-year window. 2007;33(3):238-46.
11. Sighoko D, Ogundiran T, Ademola A, Adebamowo C, Chen L, Odedina S, et al. Breast cancer risk after full-term pregnancies among African women from Nigeria, Cameroon, and Uganda. 2015;121(13):2237-43.
12. Naku Ghartey Jnr F, Anyanful A, Eliason S, Mohammed Adamu S, Debrah S. Pattern of breast cancer distribution in Ghana: a survey to enhance early detection, diagnosis, and treatment. International journal of breast cancer. 2016;2016.
13. Calle EE, Murphy TK, Rodriguez C, Thun MJ, Heath Jr CWJA Joe. Occupation and breast cancer mortality in a prospective cohort of US women. 1998;148(2):191-7.
14. Loomis DP, Savitz DA, Ananth CVJJJotNCI. Breast cancer mortality among female electrical workers in the United States. 1994;86(12):921-5.
15. Heck KE, Wagener DK, Schatzkin A, Devesa SS, Breen NJAJoPH. Socioeconomic status and breast cancer mortality, 1989 through 1993: an analysis of education data from death certificates. 1997;87(7):1218-22.
16. Lund E, Jacobsen BKJCC, Control. Education and breast cancer mortality: experience from a large Norwegian cohort study. 1991;2(4):235-8.
17. Lim S-E, Back M, Quek E, Iau P, Putti T, Wong JEJWjos. Clinical observations from a breast cancer registry in Asian women. 2007;31(7):1387-92.



18. Brinton LA, Figueroa JD, Awuah B, Yarney J, Wiafe S, Wood SN, et al. Breast cancer in Sub-Saharan Africa: opportunities for prevention. *Breast cancer research and treatment.* 2014;144(3):467-78.
19. Akarolo-Anthony SN, Ogundiran TO, Adebamowo CA. Emerging breast cancer epidemic: evidence from Africa. *Breast cancer research.* 2010;12(4):1-4.
20. Vanderpuye V, Grover S, Hammad N, Simonds H, Olopade F, Stefan D. An update on the management of breast cancer in Africa. *Infectious agents and cancer.* 2017;12(1):1-12.
21. Adebamowo C, Adekunle O. Case-controlled study of the epidemiological risk factors for breast cancer in Nigeria. *British Journal of Surgery.* 1999;86(5):665-8.
22. Okobia M, Bunker C. Epidemiological risk factors for breast cancer—a review. *Nigerian journal of clinical practice.* 2005;8(1):35-42.
23. Hou N, Ogundiran T, Ojengbede O, Morhason-Bello I, Zheng Y, Fackenthal J, et al. Risk factors for pregnancy-associated breast cancer: a report from the Nigerian Breast Cancer Study. *Annals of epidemiology.* 2013;23(9):551-7.
24. Adebamowo C, Ogundiran T, Akang E. Epidemiology of triple negative breast cancer in Nigerian women. *Journal of Clinical Oncology.* 2006;24(18\_suppl):10504-.
25. Okobia MN, Bunker C, Lee L, Osime U, Uche E. Case-control study of risk factors for breast cancer in Nigerian women: a pilot study. *East African medical journal.* 2005;82(1).
26. Huo D, Adebamowo C, Ogundiran T, Akang E, Campbell O, Adenipekun A, et al. Parity and breastfeeding are protective against breast cancer in Nigerian women. *British journal of cancer.* 2008;98(5):992-6.
27. Elewonibi B, BeLue R. The influence of socio-cultural factors on breast cancer screening behaviors in Lagos, Nigeria. *Ethnicity & health.* 2019;24(5):544-59.
28. Ihekwa F. Breast cancer in Nigerian women. *British Journal of Surgery.* 1992;79(8):771-5.
29. Gukas I, Jennings B, Mandong B, Igun G, Girling A, Manasseh A, et al. Clinicopathological features and molecular markers of breast cancer in Jos, Nigeria. *West African journal of medicine.* 2005;24(3):209-13.
30. Madubogwu CI, Ekwuonwu AO, Madubogwu NU, Njelita IA. Breast cancer screening practices amongst female tertiary health worker in Nnewi. *Journal of cancer research and therapeutics.* 2017;13(2):268.



31. Nggada HA, Yawe KDT, Abdulazeez J, Khalil MA. Breast cancer burden in Maiduguri, North eastern Nigeria. *The breast journal*. 2008;14(3):284-6.
32. Ogunbode AM, Adebusoje LA, Fatiregun AA, Ogunbode OO. Breast examination as a cost-effective screening tool in a clinical practice setting in Ibadan, Nigeria. *African Journal of Primary Health Care and Family Medicine*. 2013;5(1):1-7.
33. Adesunkanmi A, Lawal O, Adelusola K, Durosimi M. The severity, outcome and challenges of breast cancer in Nigeria. *The Breast*. 2006;15(3):399-409.
34. Dauda A, Misauno M, Ojo E. Histopathological types of breast cancer in Gombe, North Eastern Nigeria: A seven-year review. *African journal of reproductive health*. 2011;15(1).
35. Victor J, Aligbe J. Histopathological types of breast cancer in Nigerian women: a 12-year review (1993-2004). *African journal of reproductive health*. 2006;10(1):71-5.
36. Titiloye N, Omoniyi-Esan G, Adisa A, Komolafe A, Afolabi O, Adelusola K. Breast cancer in a Nigerian cohort: Histopathology, immunohistochemical profile and survival. *Postgrad Med J Ghana*. 2013;2:26-9.
37. Adisa A, Arowolo O, Akinkuolie A, Titiloye N, Alatise O, Lawal O, et al. Metastatic breast cancer in a Nigerian tertiary hospital. *African health sciences*. 2011;11(2).
38. Ukah C, Emegoakor C, Anyiam D, Onyiaorah I, Onwukamuche M, Egwuonwu O, et al. The immunohistochemical profile of breast cancer in indigenous women of Southeast Nigeria. *Annals of Medical and Health Sciences Research*. 2017;7(7).
39. Omoniyi-Esan G, Olaofe O, Aremu O, Omonisi A, Olasode B, Adisa O. Hormonal and HER2 receptor Immunohistochemistry of Breast Cancers in Ile Ife, Nigeria. *Austin J Women's Health*. 2015;2(1):1009.
40. Adebamowo CA, Famooto A, Ogundiran TO, Aniagwu T, Nkwodimmah C, Akang EE. Immunohistochemical and molecular subtypes of breast cancer in Nigeria. *Breast cancer research and treatment*. 2008;110(1):183-8.
41. Aliyu UM, Musa AA. Assessment of breast cancer immunohistochemistry and tumor characteristics in Nigeria. *World Journal of Clinical Oncology*. 2020;11(11):935.
42. Shinde SS, Forman MR, Kuerer HM, Yan K, Peintinger F, Hunt KK, et al. Higher parity and shorter breastfeeding duration: association with triple-negative phenotype of breast cancer. *Cancer*. 2010;116(21):4933-43.
43. Jamabo R, Eke N, John C. Pregnancy-associated breast cancer; a management dilemma in Nigeria. *Sahel Medical Journal*. 2004;7(2):69-72.



44. Anyanwu SN. Temporal trends in breast cancer presentation in the third world. *Journal of Experimental & Clinical Cancer Research*. 2008;27(1):17.
45. Agarwal G, Pradeep P, Aggarwal V, Yip C-H, Cheung PS. Spectrum of breast cancer in Asian women. *World journal of surgery*. 2007;31(5):1031-40.
46. Fan L, Strasser-Weippl K, Li J-J, St Louis J, Finkelstein DM, Yu K-D, et al. Breast cancer in China. *The lancet oncology*. 2014;15(7):e279-e89.
47. Rodríguez-Cuevas S, Macías CG, Franceschi D, Labastida S. Breast carcinoma presents a decade earlier in Mexican women than in women in the United States or European countries. *Cancer*. 2001;91(4):863-8.
48. El Saghier NS, Khalil MK, Eid T, El Kinge AR, Charafeddine M, Geara F, et al. Trends in epidemiology and management of breast cancer in developing Arab countries: a literature and registry analysis. *International journal of surgery*. 2007;5(4):225-33.
49. Ghiasvand R, Bahmanyar S, Zendehtdel K, Tahmasebi S, Talei A, Adami H-O, et al. Postmenopausal breast cancer in Iran; risk factors and their population attributable fractions. *BMC cancer*. 2012;12(1):414.
50. DeSantis CE, Ma J, Goding Sauer A, Newman LA, Jemal A. Breast cancer statistics, 2017, racial disparity in mortality by state. *CA: a cancer journal for clinicians*. 2017;67(6):439-48.
51. Sondik EJ. Breast cancer trends Incidence, mortality, and survival. *Cancer*. 1994;74(S3):995-9.
52. Smith-Bindman R, Chu PW, Miglioretti DL, Sickles EA, Blanks R, Ballard-Barbash R, et al. Comparison of screening mammography in the United States and the United Kingdom. *Jama*. 2003;290(16):2129-37.
53. Garza MA, Luan J, Blinka M, Farabee-Lewis RI, Neuhaus CE, Zabora JR, et al. A culturally targeted intervention to promote breast cancer screening among low-income women in East Baltimore, Maryland. *Cancer Control*. 2005;12(4\_suppl):34-41.
54. Song H, Wang R, Wang S, Lin J. A low-molecular-weight compound discovered through virtual database screening inhibits Stat3 function in breast cancer cells. *Proceedings of the National Academy of Sciences*. 2005;102(13):4700-5.
55. Hall P, Easton D. Breast cancer screening: time to target women at risk. *Nature Publishing Group*; 2013.



56. Tosteson AN, Stout NK, Fryback DG, Acharyya S, Herman BA, Hannah LG, et al. Cost-effectiveness of digital mammography breast cancer screening. *Annals of internal medicine.* 2008;148(1):1-10.
57. Giamas G, Filipović A, Jacob J, Messier W, Zhang H, Yang D, et al. Kinome screening for regulators of the estrogen receptor identifies LMTK3 as a new therapeutic target in breast cancer. *Nature medicine.* 2011;17(6):715.
58. Ukwenya A, Yusufu L, Nmadu P, Garba E, Ahmed A. Delayed treatment of symptomatic breast cancer: the experience from Kaduna, Nigeria. *South African Journal of Surgery.* 2008;46(4).
59. Ibrahim N, Oludara M. Socio-demographic factors and reasons associated with delay in breast cancer presentation: a study in Nigerian women. *The Breast.* 2012;21(3):416-8.
60. Huo D, Ikpat F, Khramtsov A, Dangou J-M, Nanda R, Dignam J, et al. Population differences in breast cancer: survey in indigenous African women reveals over-representation of triple-negative breast cancer. *Journal of Clinical Oncology.* 2009;27(27):4515.
61. Adisa C, Eleweke N, Alfred AA, Campbell M, Sharma R, Nseyo O, et al. Biology of breast cancer in Nigerian women: A pilot study. *Annals of African medicine.* 2012;11(3):169.
62. Ikpat O, Kuopio T, Ndoma-Egba R, Collan Y. Breast cancer in Nigeria and Finland: epidemiological, clinical and histological comparison. *Anticancer research.* 2002;22(5):3005-12.
63. Ikpat O, Ndoma-Egba R, Collan Y. Influence of age and prognosis of breast cancer in Nigeria. *East African medical journal.* 2002;79(12):651-7.
64. Ikpat O, Ndoma-Egba R. Oestrogen and progesterone receptors in Nigerian breast cancer: relationship to tumour histopathology and survival of patients. *The Central African journal of medicine.* 2003;49(11-12):122-6.