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ORIGINAL RESEARCH

Effect of Increased Awareness of Breast Cancer on Mammography Uptake in a Suburban Tertiary Centre Olalere Ayankemi A, Aina Ifeoluwasemilojo, Oyedepo Victor O, Bello Temitope O, Aremu Ademola A

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Abstract

Background: Breast cancer (BC) is one of the most common cancers in women, especially of reproductive age. Following a report of low community awareness of BC in 2019, the "Pink October Month Campaign" for BC awareness was introduced in Ogbomoso.

Objectives: To assess the effect of increased awareness of breast cancer screening mammograms after the institution of the Pink October Campaign and compare with the years preceding the campaign.

Methods: A retrospective study was conducted using the screening mammography register of the Radiology Department, LAUTECH Teaching Hospital, Ogbomoso, from 2019 to 2023.

Results: Two hundred and seventeen women presented for a screening mammogram over the two periods, with the age range of 40–80 years. There was more than a double increase in the number of women who presented for screening mammograms after the institution of Pink October Month celebration in the year 2022, when compared to previous years. The age of the women showed a significant association with the findings on their breast parenchyma composition.

Conclusion: Increased awareness of breast cancer screening mammography during the Pink October Month Campaign is a testimony to the effect of health education on screening programmes. This may help in early detection of breast cancer and ultimately reduce associated morbidities and mortality.

Keywords: Breast cancer, Cancer screening, Mammography, Pink month, Reproductive age.

Introduction

Breast cancer (BC) is one of the most common cancers in women, especially in the reproductive age group, and the most

frequently diagnosed cancer in women globally, with 2.26 million new cases in 2020. ^[1, 2]. Many countries of the world have shown an increase in breast cancer incidence. A study conducted in Iran among their women showed

that 23.6% of their sample size had breast cancer. [3] The Turkish Cancer Statistics yearbook of 2017 also showed that BC is the most prevalent cancer among Turkish women. [1] The rising mortality rate in Brazil is associated with notable regional variations, such as low adherence to screening programs, gaps in their execution, and delays in diagnosis brought on by low educational attainment. [4]

The African continent is not spared as the incidence rates of BC are rising, and according to the global cancer estimates, the cancer mortalities in Asia and Africa are on the increase, with women in the Horn of Africa having a greater projected cumulative chance of dying from cancer. [5, 6] This increase has been attributed to lifestyle changes, which include delayed age at first birth, fewer children or nulliparity, reduced breastfeeding duration, changes in diet, alcohol intake, hormonal use, increased body weight, and use of carcinogens on skin and hair. [7] Personal medical or family history of cancer, and especially BC, are also known to increase the risk for breast cancer. [1] Many breast cancer screening programmes (self-breast examination, clinical breast examination, mammography for females who are 40 years and above, breast ultrasound for females under 40 years) have been initiated for different age groups to curb the morbidity and mortality from BC. Osei-Afriyie *et al.*, however, noted that the practice of breast cancer screening among Ghanaian women was unsatisfactory and, as a result, many breast cancer cases were diagnosed at advanced stages, leading to poor outcomes, including mortalities. [8]

Although mammography awareness was 84% in the northwestern part of Nigeria, only 9% of the female healthcare workers had ever done the procedure. [9] In another part of the country, the awareness of breast cancer among patients, teachers, and health workers was low. [10] It was also observed from a study done in 2019 that the knowledge and practice of breast cancer screening modalities were low among women

in Ogbomoso, a town in southwestern Nigeria. [11] This shows that most BC programs were concentrated in cities, excluding suburban regions. Early detection of BC through screening programs can help manage the disease and even achieve a cure. The majority of the women, however, are not aware of BC screening, which causes late presentation. [12] One of the ways instituted to increase breast cancer awareness is the celebration of the “Pink Month”, which takes place in October every year. This celebration is global, with many institutions in Nigeria also participating.

This study aimed to assess the rise in mammographic screening in LAUTECH Teaching Hospital, Ogbomoso, following the commencement of the “Pink October” campaign, and comparing the details of mammography uptake pre- “Pink October” campaign.

Methods

Setting

The Radiology Department records of screening mammograms conducted between January 2019 and December 2023 at LTH, Ogbomoso, which is the only centre in Oyo State North senatorial district with a functioning mammogram machine.

Study design

This was a retrospective study of five years' data.

Ethical considerations

Consent was not required as it was a retrospective study. However, ethical approval was obtained from the institution's ethics committee with ethical approval number LTH/OGB/EC/2024/490.

Data collection

There was no prior campaign for screening mammography until September 2022, when the Pink Month committee was instituted in LTH,

and they carried out awareness campaigns within the hospital community and outside, in the community. The major and most populous market within Ogbomoso was chosen for the campaign. A big banner on breast cancer was mounted, with information on how to perform self-breast examination. There were demonstrations and accompanying musical shows. Direct communication was done in form of health talks delivered in the local dialect, the Yoruba language. There were interactive sessions to offer more information about prevention of BC. Free breast examination by palpation was then performed on willing members of the audience in an appropriate place designated by the market leader for the purpose of confidentiality. This campaign was extended to the university community the following year and the messages were further disseminated through religious bodies, cooperative societies, and the broadcast media encouraging women to come to the hospital for screening mammography. The hospital fee for mammography was discounted for women seeking screening on the trail of the campaigns while those with symptomatic breast diseases were also appropriately referred.

The convenient sampling technique was used to obtain the data of patients who came for screening mammography from the departmental register during the period of study. The ages of the patients in this study ranged between 40 years and 80 years. All the recorded patients who had screening

mammography within this period were included in the study, while patients who came for diagnostic mammography were excluded from the study.

Data analysis

The data generated were analyzed using the Statistical Package for the Social Sciences version 26. Frequency tables, percentages, mean, and standard deviation were generated for relevant variables. Chi-square was used to test for associations, and p-values less than or equal to 0.05 were considered statistically significant.

Results

A total of two hundred and seventeen patients presented for screening mammography at the Department of Radiology in the hospital within the study period. The ages ranged between 40 - 80 years, with a mean age of 52.63 ± 8.05 ; however, two of the women did not indicate their ages as shown in Table I. As shown in Table II, the number of patients who had screening mammography done after the Pink October campaign in 2022 more than doubled compared to the previous years. The majority of the patients had scattered fibroglandular density (41.5%), while extremely dense breast composition was the least finding (2.3%), as shown in Table III. There is a statistically significant association between the patient's age and their breast parenchymal composition, as shown in Table IV.

Table I: Age distribution of patients

<i>Variables</i>	<i>Frequency (N=217)</i>	<i>Percentage %</i>
Age (mean $\pm$ SD)	52.63 $\pm$ 8.05	
40-49yrs	85	39.2
50-59yrs	81	37.3
60-69yrs	44	20.3
>70 yrs	5	2.3
Non-responder	2	0.9

Table II: Patient distribution pre- and post-Pink October campaign

<i>Variable</i>	<i>Frequency (n = 217)</i>	<i>Percentage (%)</i>
Pre-Pink October month awareness in 2022	63	29
Post-Pink October month awareness in 2022	154	71

Table III: Breast parenchymal composition based on ACR

<i>Breast parenchymal composition ACR-classification</i>	<i>Frequency (n = 217)</i>	<i>Percentage (%)</i>
Entirely fatty	66	30.4
Scattered fibroglandular density	90	41.5
Heterogeneously dense	56	25.8
Extremely dense	5	2.3

ACR - American College of Radiology

Table IV: Association between age and breast parenchymal composition

<i>Age</i>	<i>Entire fatty (%)</i>	<i>Scattered fibroglandular (%)</i>	<i>Heterogeneously dense (%)</i>	<i>Extremely dense (%)</i>	<i>Total</i>	<i>X²</i>	<i>p-value</i>
40-49yrs	7 (8.2)	48 (56.5)	27 (31.8)	3 (3.5)	85	46.447	0.000
50-59yrs	32 (39.5)	27 (33.3)	20 (24.7)	2 (2.5)	81		
60-69yrs	22 (50.0)	13 (29.5)	9 (20.5)	0 (0)	44		
>70yrs	5 (100)	0 (0)	0 (0)	0 (0)	5		

Discussion

Early detection of breast cancer cells using different radiological imaging modalities, including ultrasonography, mammography, and magnetic resonance imaging, can prevent morbidities and thus, save lives. [12 - 14] However, a low level of awareness will give a low level of participation in screening programmes. Screening mammography was conducted for women who were 40 years of age and above, according to the age recommended for screening mammography by the American Cancer Society Guidelines for the Early Detection of Breast Cancer and the Breast Imaging Society of Nigeria (BISON). [15]

In this study, the mean age of patients who had screening mammography was 52.6 years, which is similar to the findings in previous studies done in other parts of the country. [16-18] Women in their fourth decade of life participated most in the screening mammogram. This is similar to studies at a

tertiary center in Nigeria, Kuwait, and Jamaica, which recorded women aged 41-50 as the most frequent age of participation in BC screening activities. [16, 19–21]. This may imply that women in this decade of life are more concerned about their risk of cancers and health generally, as they are vibrant and energetic, and form part of the nation's workforce. However, this varied with a screening mammogram in another part of the country, with higher participation observed in the third decade of life.[19] The variance may be due to the screening modality of ultrasonography added to mammography, which qualified women less than 40 years of age to participate. This, however, contradicts what was observed in Brazil, where there are divergent recommendations. [21]

In the present study, there was more than a double increase (71% vs 29%) in women seeking screening mammography after increased BC awareness during the "Pink October" campaign in 2022, when compared to previous years. This rise is likely due to the

increased awareness among the women's groups at the study location. This is similar to what was observed in Brazil after the Pink Month campaign. [21] Halving the price of screening mammography by the institution management also contributed to the increase in the uptake of screening mammography. This, however, contradicts a Swedish study where screening attendances did not increase significantly after the implementation of free screening mammography. Higher out-of-pocket expenses were also associated with significantly lower screening. [22-24] Several studies observed low attendances in screening activities during the COVID-19 pandemic lockdown. [25-27] This was also observed in the present study, as there was no mammography screening even up to almost a year after the pandemic. This is likely due to the fear of the pandemic.

The scattered fibroglandular breast composition was observed to be the most prevalent breast composition among the patients who presented for screening mammograms in the present study. This agrees with the reports of previous studies by Muhammad *et al.* (41.6%) and Akande *et al.* (44%). [28, 29] However, this disagrees with a previous study that observed that heterogeneously dense breast composition was the most prevalent breast finding. [16] The age of the patients showed a remarkably significant association with the breast parenchymal composition, corroborating previous findings from previous studies. [28, 29]

Limitation

This study is limited by its retrospective design hence, some data might be missing. This study was conducted in only one institution, and the findings might, therefore, not be generalisable.

Conclusion

Increased awareness of BC screening mammography follows a BC prevention

campaign known as the "Pink October". This increased awareness will help with early detection of BC and ultimately, reduce morbidity and mortality. This can also be extended to other non-communicable diseases that where screening modalities are well known and recommended such as prostate-specific antigen for prostate cancer, regular intra-ocular pressure checks to prevent glaucoma, and cervical pap smears for cervical cancer.

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