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Breast Cancer Screening Trend Year 2017 among South-Western Nigeria Female Residents

Oladeji Saheed Busari[1], Saheed Opeyemi Usman[2*], Ndumiso Tshuma[3,4], Olusola John Fatunmbi[5], Ibiwumi Nafisat Usman[6] and Afusat Adesina[7]

[1]School of Basic Midwifery, Oyo State College of Nursing and midwifery, Kishi, Nigeria.
[2]Department of Clinical Laboratory Services, Equitable Health Access Initiative, Lagos, Nigeria.
[3]Regent Business School, Durban, South Africa.
[4]Texila American University, Guyana, South America.
[5]Department of Laboratory Services, Union Diagnostics, Osogbo, Nigeria.
[6]Department of Community Medicine, Ladoke Akintola University of Technology, Osogbo, Nigeria.
[7]Howards University (HOWARD) Continuous Education Centre, Lagos, Nigeria.

Authors' contributions

This work was carried out in collaboration between all authors. Authors OSB, SOU, OJF and NT designed the study, performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. Authors OJF, OSB, SOU, INU and AA managed the analyses of the study. Author NT managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Background: Breast cancer is the commonest of all cancers and a leading cause of cancer deaths in women worldwide, a situation that can be predicated upon by knowledge inadequacies and fundamental cancer prevention strategies. This study was therefore carried out to determine the screening trend among female residents in South-Western Nigeria and determine the significant effect of education and occupation on the screening of breast cancer.
Methods: This cross sectional study was carried out four South-Western States (Osun, Ekiti, Ogun & Lagos) in Nigeria. The target population was 20 years and above female residents of the states. Data was collected by trained volunteers and supervised by appointed supervisors, by a face-to-

**Corresponding author: E-mail: Senatorhopsy@yahoo.com;*

face interview. All data were statistically analysed, using statistical package for the social sciences (SPSS) windows version 23.0 software and statistical test of significance was performed with Chi-Square test while multiple comparisons was done using Post Hoc Bonferroni test.

Results: A total of 620 consenting respondents participated in the study with a mean age ± SD is 30.93 ± 8.03 years. 359 (57.9%) of them knew breast cancer doesn't always produce symptoms, 392 (63.2%) knew how to perform breast self-examination (BSE) while 364 (58.7%) have ever done the BSE. The main factor significantly associated with breast cancer screening were educational status (χ^2 = 196.48, df = 3, P = 0.001) and occupation (χ^2 = 172.95, df = 4, P = 0.001). The odds for performing breast self-examination (BSE) for women who know that breast cancer does not necessarily produce symptoms especially in the early stages is low (OR: 0.77, 95% CI: 0.28 – 0.92).

Conclusion: This study shows inadequate screening practices even among those aware of the various screening techniques indicating the urgent need for re-orientation and development of more efficient educational programs particularly in schools and communities aimed at reducing the identified barriers to breast cancer screening practices and early detection in order the stem the tide of the disease, the arising mortality and make available timely treatment options.

Keywords: Breast cancer; female; screening; Nigeria.

1. INTRODUCTION

Breast cancer is the most common of all cancers and one of the Major threats to health among women especially [1]. Breast cancer is a global health concern and a leading cause of morbidity and mortality among all the cancers that affect women [2]. Generally, differences in known risk factors, availability of screening programs and access to effective and affordable treatment options, are responsible for global variations in incidence and mortality due to the disease prevention and effective treatment, as high incidence of breast cancer necessitates the need for early detection because this would increase the treatment options available to affected women & thereby improved survival rate [3]. Report on the incidence of breast cancer reveals that one out of every eight women in the world stand a chance of having the disease in her life time [4]. The rate of breast cancer incidences is reportedly higher in developing countries as compared with other parts of the world [5]. In Nigeria, about one breast cancer death is reported in every 25 cases identified [1].

A 2015 research work on the demographic differences in the knowledge about breast cancer among women in Ebonyi State, South Eastern Nigeria, showed an average knowledge about Breast cancer (48.72%), differed by age with younger women (35-44 years 56.43%) reporting higher knowledge of breast cancer than the older women (45-54 years 46.03%); women with post-secondary education (67.66%) having higher knowledge than those with secondary (60.16%), primary (49.03%) and non-formal education (39.01%); urban women (55.61%) were more knowledgeable than rural women (47.81%) [6]. In Mongolia, the authors of a 2015 research on practices related to breast & cervical cancers reported that, employment and education were associated with greater awareness of the cancers and participation in screening examinations. Clinical Breast Examinations (CBEs) were more common among rural than urban participants (Median Odds Ratio, MOR: 1.492; 95% CI 1.125-1.979) [7]. In Oman, it was reported that female students were well informed and aware about breast cancer in general but their knowledge of breast cancer symptoms was better than the risk factors of breast cancer. 77.07% reported to be able to perform Breast Self-Examination (BSE), 72.61% knew that BSE should be done monthly, 61.1% said BSE should be performed a week after menstruation and more than 80% are aware of the symptoms of Breast Cancer (BrCA) to include change in shape of breast, breast lump, nipple discharge, breast pain and lump/ swelling in the armpit [8].

In 2014, a research carried out in South India showed that 87.71% of respondents knew about BSE, 39.47 knew that ultrasound could be used as a screening tool while 94.73% knew mammography is a good screening tool [9]. In Karachi Pakistan, age >40 years, educational level, income and employment status were significantly associated with high mean screening awareness scores, 48.8% have heard about BSE, 38% knew how to perform BSE while only 25.9% regularly performed the BSE [10]. A 2014 Iranian study also showed that 33.2% & 31.9% of the participants had high awareness levels about

screening approaches and risk factors of breast cancer respectively, with majority having poor to moderate knowledge levels [11]. The aim of the study was to determine the cancer screening trend and the factors affecting the practice of breast cancer screening among South-Western Nigeria female residents.

1.1 Research Hypothesis

1) Educational status is not significantly associated with breast cancer screening.
2) Occupation is not significantly associated with breast cancer screening.

2. METHODS

This study was a cross sectional study carried out in four South-Western States (Osun, Ekiti, Ogun & Lagos) in Nigeria between January and June 2017. The target population was 20 years and above female residents of the states, selected using a multistage sampling technique. A pre-tested questionnaire was administered consecutively on 620 respondents. Demographic and socio-economic information obtained were included. Data was collected by trained volunteers and supervised by appointed supervisors and investigators, by a face-to-face interview using a pre-tested structured questionnaire on screening and practice concerning breast cancer, among others. A multi-stage sampling technique was used to select the respondents from selected areas in each district. Residences were stratified by geographical proximity and from each stratum, residences were selected randomly. A $20year^{+}$ old women was selected randomly for interview.

2.1 Sample Size

Using Leslie Fischer's formula, for population >10,000 via an online sample size calculator, a minimum sample size was obtained [12,13]. With a 5% margin of error or degree of precision and a 95% confidence level, in a targeted population size of women age 20years and above of >10000, the minimum sample size is 396, but in order to increase representativeness and make-up for non-response, 620 pre-tested questionnaires were administered.

2.2 Statistical Analysis

Data was statistically analysed using Statistical Package for the Social Sciences (SPSS) for windows version 23.0 software (SPSS Inc., Chicago, IL, USA). All data were expressed as Mean ± Standard Deviation (SD). Frequency counts were generated for all variables and statistical test of significance was performed with Chi-Square test. Significance was fixed $P < 0.05$ and highly significance is $P < 0.01$.

3. RESULTS

A total of 620 consenting respondents participated in the study out of 628 persons we had contact with, equivalent to a 98.7% consent. The mean age ± SD is 30.93 ± 8.03 years. 266 (42.9%) of the respondents listed the following as symptoms of breast cancer: breast lump; breast skin/nipple thickening; one breast larger than the other; nipple changing position, shape or becoming inverted; nipple discharge; skin puckering or dumpling, constant pain in part of breast/armpit/nipple; rash on/around nipple and swelling beneath the armpit or around collarbone. 161 (26.0%) of them listed microscopy, biopsy, breast self examination (BSE), clinical breast examination (CBE), mammography, ultrasound and magnetic resonance imaging (MRI) as possible diagnosis or screening methods for breast cancer, with respondents selecting from the options provided in the questionnaire. 202 (36.2%) of the respondents stated radiation therapy, chemotherapy, surgery, hormonal therapy and medications as treatment options or management methods for breast cancer, with respondents selecting from the options provided in the questionnaire. 312 (50.3%) of the respondents stated the frequency of performing breast self-examination (BSE) is monthly. 323 (52.1%) of the respondents stated the processes/procedure for breast self-examination (BSE) correctly including standing in front of mirror/bathing/lying down for the examination, checking for changes in breast shape/skin/nipples and squeezing nipples to check for discharge. 39 (6.3%) of the respondents do Clinical Breast Examination (CBE) annually while 89 (14.4%) of them do it every two years. 320 (51.6%) of the respondents stated that women age 25 to 39 years should have Clinical Breast Examination (CBE) done once every 2 years while 306 (49.4%) reported that women age 40 years & above should have Clinical Breast Examination (CBE) done once every year.

Table 1. Socio-demographic data of respondents

Variables	Frequency (%)
Age Group (years)	
20 - 24 years	181 (29.2)
25 - 29 years	111 (17.9)
30 - 34 years	151 (24.4)
35 - 39 years	62 (10.0)
40 - 44 years	59 (9.5)
45 - 49 years	34 (5.5)
50^{+}	22 (3.5)
Marital status	
Single	207 (33.4)
Married	413 (66.6)
Level of education	
No Formal Education	63 (10.2)
Primary Education	8 (1.3)
Secondary Education	42 (6.8)
Tertiary Education	507 (81.8)
Occupation	
Artisan	114 (18.4)
Nurse	114 (18.4)
Market Women/Trader	162 (26.1)
Physician	39 (6.3)
Teacher	191 (30.8)

The null hypothesis is rejected when the test statistic is greater than the tabled value or critical value.

4. DISCUSSION

This research outcome has shown that 86.3% of the respondents have heard about breast self-examination (BSE) while 63.2% knew how to perform BSE and 58.7% of them have ever performed BSE. This is largely in agreement with a previous study reported in South India that 87.71% of the respondents knew about BSE [9] and in Oman, 77.07% reported of the respondents are able to perform Breast Self-Examination (BSE) [8]. It is however in contrast to a Pakistan study that revealed that 48.8% have heard about BSE, 38% knew how to perform BSE while only 25.9% regularly performed the BSE [10] and in Iran, 33.2% & 31.9% of the participants had high awareness levels about screening approaches and risk factors of breast cancer respectively, with majority having poor to moderate knowledge levels [11]. This shows that majority of the people are aware of breast cancer and its screening or diagnostic techniques including about breast self-examination (BSE) but the rate at which it is practiced is however far lower indicating that being aware of the disease does not translate to practicing the screening techniques. The research also showed that respondents have lower knowledge regarding the possible diagnosis or screening methods, treatment options or management methods for breast cancer but have enhanced knowledge about the processes or procedure for breast self-examination (BSE). However, the practice of clinical breast examination and mammography especially for eligible women is vastly lower as compared to the awareness level. These findings show that a lot of work still needs to be done in the area of breast cancer awareness and more especially the screening techniques, screening schedules and the eligible for each diagnostic or screening method.

The Chi Square analysis in table 3 shows that educational status has significant effect on breast cancer (BrCA) screening ($\chi^2 = 196.48$, df = 3, P = 0.001) as observed by the rejection of the null hypothesis, which may be a result of enhanced knowledge of the importance or relevance of breast cancer screening among the more educated people translates to screening tendencies. This is consistent with a previous study that showed that women with post-secondary education having higher knowledge than those with secondary, primary and non-formal education [6] and another study which revealed that education was associated with greater awareness of the cancers and participation in screening examinations [7]. Occupation also have significant effect on breast cancer (BrCA) screening ($\chi^2 = 172.95$, df = 4, P = 0.001) as observed by the rejection of the null hypothesis, which is likely due to the fact that medical professionals are expected to do breast cancer (BrCA) screening more than other professionals as they probably have better knowledge about the disease and ways of preventing it. This is similar to the report of a study in Mongolia which revealed that employment was associated with greater awareness of the cancers and participation in screening examinations [7].

The odds for performing breast self-examination (BSE) for women who know that breast cancer does not necessarily produce symptoms especially in the early stages is low (OR: 0.77, 95% CI: 0.28 – 0.92). This shows that having better knowledge about breast cancer does not necessarily translate to people actually performing the breast self-examination (BSE), indicating that there are barriers to breast cancer screening practices and its early detection that need to be inculcated into health plans.

Table 2. Breast cancer screening & practice

Variables	Frequency (%)
Breast cancer doesn't always produce symptoms	
Yes	359 (57.9)
No	261 (42.1)
Ever heard about breast self-examination (BSE)	
Yes	529 (85.3)
No	91 (14.7)
Know how to perform breast self-examination (BSE)	
Yes	392 (63.2)
No	228 (36.8)
Ever performed breast self-examination (BSE)	
Yes	364 (58.7)
No	256 (41.3)
Last time breast self-examination (BSE) was done (estimated)	
A week ago	75 (12.1)
Two weeks ago	56 (9.0)
A month ago	63 (10.2)
Two months ago	107 (17.3)
Three months ago	41 (6.6)
A year ago	22 (3.5)
Age at which every woman should start conducting breast self-examination (BSE)	
10 & above	34 (5.5)
20 & above	460 (74.2)
30 & above	87 (14.0)
40 & above	39 (6.3)
Ever heard about clinical breast examination (CBE)	
Yes	384 (61.9)
No	236 (38.1)
Ever done clinical breast examination (CBE)	
Yes	128 (20.6)
No	492 (79.4)
Last time clinical breast examination (CBE) was done (estimated)	
A month ago	55 (8.9)
Two months ago	35 (5.6)
Three months ago	5 (0.8)
Six months ago	33 (5.3)
Ever heard about mammography	
Yes	361 (58.2)
No	259 (41.8)
Ever done mammography	
Yes	22 (3.5)
No	598 (96.5)
Last time mammography was done (estimated)	
A year ago	17 (2.7)
Two years ago	5 (0.8)

Table 3. Chi square result showing factors associated with breast cancer (BrCA) screening

Variables (hypotheses)	χ^2	df	Critical value	Decision	P-value
Educational status is not significantly associated with BrCA	196.48	3	7.82	Rejected	0.001
Occupation is not significantly associated with BrCA screening	172.95	4	9.49	Rejected	0.001

Table 4. Odd's ratio (Or) table

Variables	OR	95% CI
Estimated odds that women who know that breast cancer does not necessarily produce symptoms especially in its early stage will perform BSE	0.77	0.55 – 1.06

5. CONCLUSION

This study shows inadequate screening practices even among those aware of the various screening techniques indicating the urgent need for re-orientation and development of more efficient educational programs particularly in schools and communities aimed at reducing the identified barriers to breast cancer screening practices and early detection in order the stem the tide of the disease, the arising mortality and make available timely treatment options.

CONSENT

As per international standard or university standard, patient's written consent has been collected and preserved by the authors.

CONSENT

All authors declare that 'written informed consent was obtained from the subjects and other approved parties for publication of this paper and accompanying images.

ETHICAL APPROVAL

All authors hereby declare that all experiments have been examined and approved by the appropriate ethics committee (the ethical review committee of the Federal Teaching Hospital, Ido Ekiti, Nigeria) and have therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki." Ethical standards laid down in the 1964 Declaration of Helsinki.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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