

Mammography and mammographic screening: are female patients at a teaching hospital in Lagos, Nigeria, aware of these procedures?

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PURPOSE

To determine the level of awareness of mammography and mammographic screening amongst women in Lagos, Nigeria.

MATERIALS AND METHODS

A structured questionnaire was administered to 555 consecutively recruited women who visited various clinics at the Lagos State University Teaching Hospital, Ikeja, between January 2009 and June 2009.

RESULTS

The mean age of respondents was 38.16 ± 9 years, and the majority (59.6%) had a tertiary education. A family history of breast cancer was present in 33 (6.0%) women, less than 20% of whom had undergone mammography. Only 20% of all subjects were aware of the recommendation that they should receive routine mammography and mammographic screenings on an annual or biannual basis, depending on their age, and of the side effects associated with the procedure. The mass media was women's main source of information regarding these procedures. The majority (67.6%) of participants confirmed that they performed breast self-examinations, though less than 5% of them had had their breasts examined by mammography.

CONCLUSION

This study revealed a rather low level of awareness about mammography and mammographic screening, indicating the need to educate women about the risk of breast cancer and the importance of screening as a tool for the early detection and treatment of this condition.

Key words: • mammography • awareness • breast cancer

Breast cancer is the leading female malignancy in the world and is now the most common cancer in Nigeria (1). It is the most common cancer and the second principal cause of cancer deaths in women worldwide, including in Nigeria (2). African breast cancer patients generally tend to present at a younger age compared to Caucasians (1). The peak incidence of breast cancer in Nigerian women is about a decade earlier than in Caucasians, and about 57% of breast cancer cases in Nigeria occur in women under 50 years of age (2). Thus, this disease remains an important public health problem (3). It has been reported that each year, more than 1.15 million women worldwide are diagnosed with breast cancer, and 502,000 die from the disease (3). Breast cancer is increasing in incidence even in regions that have until recently had low incidences of the disease (2, 4).

The five-year breast cancer survival rate in Nigeria is less than 10%, compared with over 70% in Western Europe and North America (2). The recent decline in deaths from breast cancer in the Western nations can be partly explained by a trend toward earlier diagnosis due to early presentation (2). In contrast, it has been reported that 70% of Nigerian women present late, at which point little or no benefit may be derived from breast cancer therapies (2).

Late breast cancer diagnoses are common in countries with limited resources (5, 6) However, early diagnosis has been proven to reduce mortality and improve prognosis (3, 7) Early detection requires early diagnosis in symptomatic women and regular screening in asymptomatic women (5). The key prerequisites for early detection are to ensure that women are supported in seeking care and that they have access to appropriate, affordable diagnostic tests and treatment (4, 5).

Mammography and mammographic screening are relatively new breast imaging modalities in the developing world; however, the capacity to perform mammography is gradually becoming widespread in Nigeria. In a study in Pakistan, Badar et al. (8) found that most patients received their first mammograms when they already had a clear palpable mass. The authors attributed this phenomenon mainly to a low level of awareness and to economic reasons. Somdatta and Baridalayne (9) also found that high rates of mortality from breast cancer were due to late-stage diagnoses, as patients usually presented at an advanced stage due to their lack of awareness and to ineffective cancer screening programs.

Other reasons why women do not enter early detection and cancer treatment programs include the financial and organizational problems inherent in any health care system, coupled with a lack of recognition of cancer as a public health priority, shortages in and migration of the health care providers, including physicians, nurses, midwives and traditional healers, with whom women have contact, educational deficits and social barriers (10).

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Knowledge and beliefs about breast cancer and its management are important determinants of women's health-seeking behavior. Most early breast tumors are self-discovered, and the majority of early self-discovered cancers are found by breast self-examination (BSE) (2).

The recommended screening methods for the early detection of breast cancer are mammography, clinical breast examination (CBE) and breast self-examination (BSE) (3). Each of these methods has potential benefits and harms. It appears that, overall, the best way to prevent breast cancer deaths is to arm women with knowledge of the potential benefits and harms of the recommended screening methods and to improve their knowledge about the warning signs of breast cancer. This approach will enable the early detection of breast cancer, reducing its mortality rate. After all, a woman cannot seek treatment for breast cancer unless she is aware of its signs and symptoms (2).

This study seeks to evaluate the level of awareness among women in Lagos regarding mammography and mammographic screening as diagnostic and preventive imaging modalities for breast cancer.

Materials and methods

This study was conducted using a structured questionnaire that interviewers administered to women attending clinics in a tertiary health care institution in Lagos, Nigeria. The questionnaire was designed to elicit the women's sociodemographic information as well as their knowledge, attitudes, views and practices regarding mammography and mammographic screening. Following approval by the research and ethics committee of the hospital, the study was carried out from January 2009 to June 2009. The 30-question study instrument (questionnaire) was developed by the authors and pre-tested on ten women. It was then corrected, revised and restructured to improve the clarity of some questions. All respondents consented to participate in the study. The interviewers who administered the questionnaire included trained female registrars and the authors. Data analysis was performed both manually and with the use of Epi-Info statistical software version 3.5 (Centers for Disease Control and Prevention, Atlanta, USA).

Results

The participants' ages ranged from 17 to 70 years, with a mean age of 38.16±9 years (Table 1). The majority (59.6%) of respondents had tertiary education and that level of education was even more common (77.1%) among those who knew about mammography and mammographic screening (Table 2).

Over half of the respondents (55.1%) were skilled workers. Of those, 73.4% knew about mammography and mammographic screening, while less than 10% of unskilled workers were aware of these diagnostic tools (Table 3). Thirty-three women (6.0%) reported a family history of breast cancer, but fewer than 20% of these women had undergone mammographic examination (Table 3).

Only 225 (40.5%) women had heard about mammography, and 174 (31.4%) had heard about mammographic screening. Ninety (16.2%) women in this study had accurate knowledge about mammography, 75 (13.5%)

claimed that mammography is a form of treatment (of these, three were nurses) and 219 (39.5%) were at least aware that it is used for diagnosing breast cancer (Table 4). Fifteen women (2.7%) were of the opinion that mammography is the same as an ultrasound scan of the breast (Table 4).

When asked about how they had heard about mammography and mammographic screening, 79 women (14.2%) reported having heard something about these methods on television, 47 (8.5%) on the radio, 48 (8.6%) through friends, 24 (4.3%) in the hospital through their doctors, 16 (2.9%) through fliers, 5 (0.9%) at a recent seminar held by Cadbury Nigeria PLC and 3 (0.5%) each in churches and clubs (Table 5).

Only 111 women (20%) knew how many times mammography or mammographic screening should be done per year, and only 42 (7.6%) knew that mammography has side effects, such as

Table 1. Age distribution of respondents

Age range (years)	Number of patients	Percentage (%)
16–25	49	8.8
26–35	211	38.0
36–45	166	29.9
46–55	82	14.8
56–65	37	6.7
66–75	10	1.8
Total	555	100.0

Table 2. Sociodemographic factors versus knowledge of mammography and mammographic screening

	Awareness about mammography and mammographic screening (n = 555)		
	Yes n (%)	No n (%)	Chi square P value
Educational level			
No formal	3 (1.6)	6 (1.6)	$\chi^2 = 35.5$, Df = 6 $P = 0.000$
Primary	9 (4.9)	33 (8.9)	
Secondary	30 (16.4)	143 (38.4)	
Tertiary	141 (77.1)	190 (51.1)	
Type of occupation			
Unskilled	18 (9.4)	119 (32.7)	$\chi^2 = 47.0$, Df = 4 $P = 0.00$
Semi-skilled	33 (17.2)	79 (21.8)	
Skilled	141 (73.4)	165 (45.5)	

minor discomfort from the compression applied to the breast during the procedure and the possible side effects from exposure to radioactive energy, e.g. minimal risk of developing cancer later in life, although mammographic exposure is of low dose. Five hundred and thirty-two (96%) participants did not know that mammography should

not be performed on women younger than 40 years of age (Table 4). Of those with a family history of breast cancer, fewer than 20% had undergone a mammography before (Table 4).

A total of 375 women (67.6%) reported having had some form of breast examination. One hundred and sixty-two (43.2%) engaged in some form of breast

examination regularly, 105 (28.0%) did so occasionally and 108 (28.8%) only rarely. Regarding the mode of examination, 303 women (80.9%) performed BSE, 54 (14.4%) had undergone clinical breast examination (CBE) and 18 (4.8%) had undergone mammographic examination (Table 6).

Women who did not examine their breasts gave a variety of explanations, such as not having any breast problems (40.0%), not knowing how (15.0%), being unaware of the need for breast examinations (15.0%), not understanding the importance of such exams (15.0%), having no time for it (10.0%), fearing positive findings (3.9%) and claiming infertility (<2.0%) (Table 7).

Discussion

Only 219 (39.5%) of the women in this study understood that the purpose of mammography and mammographic screening is the early detection of breast cancer. This finding contrasts with the rates of awareness found in the study by Tyndel et al. (11), where almost all (97%) of the women knew the procedure's purpose. In the present study, most women (about 80% of respondents) appeared relatively uninformed about the recommended frequency of screenings and the procedure's potential disadvantages (92.4%) (Table 4), similar to Tyndel et al.'s findings in these areas (11).

Only 7.6% of the respondents knew that mammography has side effects (Table 4). Interestingly, a medical doctor and three nurses in the study group were also unaware of this information. This supports the findings of Odusanya and Tayo (12), who reported that some professional health care workers know little about the prevention of breast cancer. Some of the respondents believed that mammography and mammographic screening involved the same procedure as an ultrasound scan (Table 4).

Mammography is an expensive mode of breast cancer screening, presenting many logistical challenges and requiring professional technicians trained in its implementation.³ Furthermore, randomized trials comparing outcomes for women who underwent mammographic screening to those of women who did not have found that mammographic screening might at best result in a 15% reduction in a woman's relative risk of mortality (3). In addition, it

Table 3. Family history of breast cancer versus history of mammography

Family history of breast cancer	Had mammography			Chi square P value
	Yes n (%)	No n (%)	Total n (%)	
Yes	6 (18.1)	27 (81.9)	33	$\chi^2 = 2.38, Df = 1$
No	51 (9.8)	471 (90.2)	522	$P = 0.123$
Total	57 (10.3)	498 (89.7)	555 (100.0)	

Table 4. Knowledge about mammography and mammographic screening

	(n = 555)		
	Yes n (%)	No n (%)	No response n (%)
Heard about mammography	225 (40.5)	330 (59.5)	
Heard about mammographic screening	174 (31.4)	381 (68.6)	
Accurate knowledge about mammography	90 (16.2)	465 (83.8)	
Know that mammography should not be done before 40 years of age	23 (4.1)	532 (95.9)	
Know how many times mammographic screening should be done each year	111 (20)	444 (80)	
Know mammography has side effects	42 (7.6)	513 (92.4)	
Use(s) of mammography			
For treatment	75 (13.5)	261 (47.0)	219 (39.5)
For diagnosis	219 (39.5)	336 (60.5)	
It is the same as ultrasound scan	15 (2.7)	540 (97.3)	

Table 5. Sources of information about mammography and mammographic screening

Source of information	n	%
Television	79	14.2
Friends	48	8.6
Radio	47	8.5
Hospital	24	4.3
Fliers	16	2.9
Seminar	5	0.9
Club	3	0.5
Church	3	0.5
Total	225	40.5

has been shown that mammographic screening is ineffective for women under 50 years of age (3). This study revealed that 96% of women were not aware that mammography should not be performed on women younger than 40 (Table 4). Less than 5% of subjects in this study reported having had their breasts examined by mammography, thus suggesting that their level of awareness about mammography was very low (Table 6).

More than half (54.6%) of respondents in this study practiced BSE (Table 6). This finding differs from the results of another Nigerian study by Okobia et al. (2). In their study, only 34.9% of women claimed to have ever practiced BSE, which the authors took as evidence that women did not have enough knowledge about breast cancer. A survey of women in Iran echoed this claim based on the finding that only 17% of respondents performed BSE (3).

BSE, unlike mammography and CBE, is simple, low-tech and inexpensive, and it can be taught to health professionals and women alike (3). Even more importantly, teaching the procedure raises awareness about breast cancer. However, there is no clear evidence that performing routine BSE aids in the early detection of breast cancer or that it reduces breast cancer-related mortality (3). While a number of studies have shown that BSE has improved early detection and reduced mortality, data from a randomized trial in Russia revealed no significant differences in the size of the primary tumor or the incidence of metastatic lesion of the lymph nodes at the time of detection between those who performed BSE and those who did not (3). Similar findings have been reported for a study carried out in Shanghai (3). Overall, the literature does not indicate that routine BSE is an effective screening tool for breast cancer (3).

Despite the ongoing debate about the efficacy of BSE, the method nevertheless remains popular as a preventative measure, although not as a cornerstone of public health policy, for the early detection of breast cancer in developing countries (3).

Clinical breast examination is relatively simple and inexpensive, but its exact contribution to reducing mortality has yet to be established (3). Recent estimates suggest that CBE has a sen-

sitivity of about 54% and a specificity of about 94% (3). However, it has been shown that clinical breast examination may only detect about 60% of breast cancers that are detected by mammography as well as some breast cancers not detected by mammography (3).

At present, routine mammography and mammographic screening cannot be implemented in Nigeria due to the country's limited resources and the intense competition for funds in the health care system. Nonetheless, effective national breast screening programs should be developed to improve the rate of early detection of breast cancer and thus reduce mortality from this disease. So far, mammographic screening is the only mode of detection that has been shown to reduce breast cancer mortality (3). Thus, unless women

are educated about mammography and mammographic screening, the goal of reducing breast cancer fatalities will remain out of reach.

Montazeri et al.(3) found that only 9% of Iranian women had heard about mammography, a rate of awareness much lower than that found among women in the present study (of whom 40.5% had heard about mammography and 31.4% about mammographic screening). The main sources of information about mammography and mammographic screening in the present study were the mass media, followed by friends (Table 5). This finding is in line with the results of Montazeri et al.'s study (3).

Regarding patient's current breast health practices, this study's findings differ from those of Okobia et al.(2),

Table 6. Information on breast examination

Breast Examination	(n = 375)		Total n (%)
	Yes n (%)	No n (%)	
Underwent any form of breast examination	375 (67.6)	180 (32.4)	555 (100)
Frequency of breast examination	n (%)		
Regularly	162 (43.2)		
Occasionally	105 (28.0)		
Rarely	108 (28.8)		
Mode of breast examination	n (%)		
Mammography	18 (4.8)		
Breast self-examination	303 (80.9)		
Clinical breast examination	54 (14.4)		

Table 7. Reasons given for not engaging in breast self-examination

Reason	n (%)
Nothing wrong with my breasts	72 (40.0)
Not aware it is important	27 (15.0)
Do not know about it	27 (15.0)
Do not know how to do it	27 (15.0)
Do not have the time	18 (10.0)
Fear of positive findings	7 (3.9)
I am infertile	2 (1.1)
Total	180 (100.0)

who reported that no participants had undergone mammographic examination. This difference may, however, be due to the urban setting used in the present study.

Also, we observed that only 6 (18.1%) participants with a family history of breast cancer had undergone mammography, while the remaining 51 (9.8%) of those who had previous experience with mammography had a negative family history. These low mammography rates may be due to women's fear of being diagnosed with breast cancer, their inability to afford the cost of the procedure or their low level of awareness regarding this screening procedure.

Similar to Okobia et al.'s report (2), we found that women's level of education influenced their level of awareness about mammography and mammographic screening. Education,

profession and being a skilled (as opposed to unskilled) worker improved women's chances of having heard about mammography and mammographic screening; we found that significantly more women with tertiary education and more women working in skilled positions had heard about mammography and mammographic screening than women who were less educated or whose work was classified as unskilled ($P < 0.05$). The main reason women gave for not performing BSE was that they had no problems with their breasts, while other reasons included a lack of awareness regarding BSE and how to perform the procedure. This finding, too, is similar to the results reported by Okobia et al. (2).

The current study was hospital-based and should be considered as a preliminary survey to guide later com-

munity-based studies. It is clear that more attention and resources should be devoted to educating women about breast cancer, mammography and mammographic screening. Programs to promote breast health awareness, CBE and resource-adapted mammographic screening would all contribute to the earlier detection of breast cancer.

In conclusion, this study revealed that women in Lagos, Nigeria, have a low level of awareness of mammography and mammographic screening. Very few respondents had ever undergone mammography, and the majority examined their breasts mainly by BSE. This underutilization of mammography and mammographic screening most likely results from a lack of awareness, financial constraints, scarce mammographic equipment and trained technicians to operate it and ineffective national breast health awareness programs. These study findings may serve as a useful source of information for researchers and those involved in public health programs. We have three recommendations:

1. Investments should be made in improving women's awareness of and access to mammographic screening, as it is the only mode of screening that has been shown to reduce breast cancer mortality.
2. Public education and awareness programs should be developed to promote earlier diagnosis using a multi-pronged approach that includes simple, cost-effective ways of disseminating the relevant information (such as through the mass media).
3. The cost of screenings should be subsidized to make them affordable for all women.

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