Journal of Midwifery & Reproductive Health

JMRH.mums.ac.ir

Determinants of Breast Cancer Knowledge and Screening Practices among Women of Childbearing Age in Abakaliki Metropolis, Nigeria: a Cross-Sectional Study

Edmund Ossai (MSc)[1,2], Ifeyinwa Ezenwosu (MD)[3*], Odeamuza Essuman (MSc)[4], Constance Nwekpa (MSc)[4], Irene Eze (MD)[2,5]

[1] Assistant Professor, Department of Community Medicine, College of Health Sciences, Ebonyi State University Abakaliki, Nigeria
[2] Department of Community Medicine, Alex Ekwueme Federal University Teaching Hospital Abakaliki, Nigeria
[3] Medical Doctor, Department of Community Medicine, University of Nigeria Teaching Hospital Ituku-Ozalla, Enugu
[4] Graduated, Department of Community Medicine, College of Health Sciences, Ebonyi State University Abakaliki, Nigeria
[5] Medical Doctor, Department of Community Medicine, College of Health Sciences, Ebonyi State University Abakaliki, Nigeria

ARTICLE INFO

Article type:
Original article

Article History:
Received: 23-Jul-2023
Accepted: 13-Feb-2024

Key words:
Knowledge
Breast Cancer
Screening
Breast Self-examination
Mammography

ABSTRACT

Background & aim: Breast cancer is a public health concern and the leading cause of death among women. This study examined the factors affecting knowledge of breast cancer and screening practices among women of childbearing age in Abakaliki, Metropolis, Nigeria.

Methods: The community-based, cross-sectional study was carried out on 401 women using a four-stage sampling process from February to March 2021 in Abakaliki Metropolis, Nigeria. The tools used consisted of a questionnaire including socio-demographic and breast disease-related data, and a researcher-made questionnaire for knowledge and Preventive practice against breast cancer that was completed by face-to-face method in the community. Data were analysed by SPSS version 25 using descriptive and inferential statistics.

Results: The results showed that 18.0% of respondents had good knowledge and 8.7% had good breast cancer screening practices, from whom 23.4% had ever practiced breast self-examination, 9.5% had undergone a clinical breast examination, 3.5% had undergone mammography. Determinants of good knowledge of breast cancer included having an interest in matters related to breast cancer, AOR= 4.2 (95%CI: 2.0-9.0), having attained tertiary education, AOR=5.0 (95% CI: 2.4-9.8) and being in low socio-economic class, AOR=0.4 95% CI: 0.2-8.3). Determinants of good preventive practices included being less than 25 years, AOR=0.2 (95% CI: 0.1-0.8), having an interest in matters related to breast cancer, AOR=2.6 95% CI: 1.0-6.5) and attaining tertiary education, AOR=4.4 (95% CI: 1.0-6.5).

Conclusion: Women need to become more aware of breast cancer, especially those in younger age groups, low educational status, and poor socioeconomic class for early detection of breast cancer.

► *Please cite this paper as*:
Ossai E, Ezenwosu I, Essuman O, Nwekpa C, Eze I. Determinants of Breast Cancer Knowledge and Screening Practices among Women of Childbearing Age in Abakaliki Metropolis, Nigeria: a Cross-Sectional Study. Journal of Midwifery and Reproductive Health. 2025; 13(1): 4651-4661. DOI: 10.22038/JMRH.2024.73573.2158

Introduction

Globally, the continuous increase in the prevalence of cancers occurring in different body organs and tissues has been a public health concern with breast cancer being the most common and significant cause of mortality among women (1). In 2020, approximately 2.3 million women received a breast cancer diagnosis, accounting for 24.5% of all women's cancer cases, and the disease caused 685,000 deaths globally (2).

Breast cancer affects both developed and developing nations (3). In Nigeria, a low and-middle-income country, breast cancer is the

* Corresponding author: Ifeyinwa Ezenwosu, Medical Doctor, Department of Community Medicine, University of Nigeria Teaching Hospital Ituku-Ozalla, Enugu. Tel; +2348035384821; Email: ifeyinwaezenwosu32@gmail.com

most prevalent malignancy among women, causing 22.7% of all new cancer cases (3). Also, sub-Saharan Africa accounts for nearly 60% of the mortality rate due to breast cancer with Nigeria accounting for the major death rate and recording about 12,0000 deaths annually (3-4).

In Nigeria, the increased burden of breast cancer may be attributable to certain modifiable and non-modifiable risk factors such as the use of hormone replacement therapy, smoking, alcohol intake, obesity, adoption of a sedentary lifestyle, early menarche, family history of breast cancer and late menopause (5). Furthermore, the higher mortality rate observed in developing countries compared to the developed may be due to delay in management of the disease (6). This is because, in developing countries, up to 80% of breast cancer cases are diagnosed at stage III or IV as against <50% in developed countries (6). Also, it may be attributable to poor knowledge of breast cancer and practice of the screening methods regarding the disease in Africa including Nigeria (4).

Breast self-examination (BSE), clinical breast examination (CBE), and mammography are three screening methods important for the prompt detection of breast cancer (7). Although the American Cancer Society (ACS) has recommended mammography as the ideal screening method for prompt diagnosis of breast cancer, the benefits of BSE and CBE in the detection of breast cancers cannot be neglected especially in poor resource countries where a majority of the people can't afford access to mammography due to financial constraints and poor availability of the equipment (8,9). BSE is encouraged to be started by women in their 20s; this allows women to become familiar with their breast composition and thus identify any changes as early as possible (10). Clinical breast examination involves breast examination by a trained health worker during a clinic visit while mammography is an X-ray of the tissues inside the breast that is done on women from 40 years of age (10-11). All these screening practices are done periodically throughout the lifetime of a woman for prompt diagnosis of breast cancer (11).

In sub-Saharan Africa, evidence has shown that premenopausal women and younger age groups are more likely than those in Western countries to develop breast cancer (6). Also, 48% of breast cancer-related deaths that occur in Africa take place in women aged less than 50 years (12). Late detection of the disease among these women leads to some psychological worries such as concern about having more children when faced with a life-threatening illness, survival rate, fear of their children becoming orphans, loss of their jobs, the uncertainty of the disease relapse, and financial burden associated with the disease coupled with providing for their dependents (12-13). Thus, the need for women of reproductive age to imbibe breast cancer screening practices for prompt diagnosis of the disease which will ultimately result in a better prognosis, decreased morbidity, reduced mortality, and better quality of life (6). In addition, low- and middle-income countries face numerous factors that influence breast cancer screening practices (14). Prior researchers indicated that common determinants affecting knowledge of breast cancer and screening practices include age, education, marital status, ethnicity, income, and personal attitudes (4,11). However, the factors influencing the knowledge of breast cancer and screening practices among women of childbearing age may vary across localities due to sociocultural norms and beliefs (4,6). Therefore, it is imperative to understand the factors associated with breast cancer in our locality to provide a rational basis for the effective design of breast cancer prevention campaign programs and optimal utilization of breast cancer screening practices in the community (14). Also, it will contribute to the existing body of knowledge about breast cancer screening practices among women of childbearing age in society. This study assessed the determinants of breast cancer knowledge and screening practices among women of childbearing age in the Abakaliki metropolis, Nigeria.

Materials and Methods

This community-based cross-sectional study took place between February and March 2021 in Abakaliki Metropolis, Nigeria. Ebonyi state, one of the five states in Nigeria's southeast geopolitical zone, has Abakaliki as its administrative capital. It is a city composed of three local government districts. Despite the

presence of various tribes, the majority of the population belongs to the Igbo ethnic nationality. Abakaliki was the headquarters of the old Ogoja province which is located in present-day Cross River State. Based on the 2006 national population census in Nigeria, Ebonyi State had a population of 2,176, 947 people with females constituting 51% of the population. In 2022, Ebonyi State's population was projected to reach 3,242,500 and that of Abakaliki metropolis was estimated at 756,000 based on a 2.5% annual population change (15).

The women of childbearing age were chosen for this study based on their consent to participate in the research. The women must have resided in the Abakaliki metropolis for a period not less than one year before the beginning of the study. The women who did not will to take part in the study were excluded from the study.

The formula for single proportions was used to estimate the minimum sample size for the study (16).

$$N = \frac{Z^2 P (1-P)}{d^2}$$

Considering the following: 65.9% as the proportion (P) of respondents who practiced breast examination (17), Z statistic for a level of confidence (1.96 for 95% confidence level) and a level of precision (d)=5%. Including a 10% non-response rate, a total of 401 respondents were interviewed in this study.

To select the respondents, a four-stage sampling technique was employed. At the initial stage, using a simple random sampling technique of balloting, one local government area was selected from the three urban local government districts in the metropolis. The second stage involved selecting five communities from the ten communities in the local government area using a simple random sampling technique. In the third stage, houses in the selected communities were selected using a systematic random sampling technique. Each of the selected communities had their houses numbered which served as the sampling frame. Furthermore, each community was assigned a proportional allocation of 80 respondents. To ascertain the sampling interval, the sampling frame was divided by the sample size of 80. The sampling interval determined the sequence in which houses were selected by their allocated numbers during the house numbering exercise. A simple random sampling technique known as balloting was used to select the index house. A list of the women of reproductive age in each of the selected houses was created during the fourth stage. Where there was more than one woman of reproductive age, a woman was recruited through a simple random sampling technique of balloting. The selected woman of reproductive age was incorporated into the study.

A semi-structured, pre-tested questionnaire which was developed by the researchers was distributed to the respondents by trained research assistants. The tools used in the study consisted of a questionnaire including socio-demographic characteristics and breast-disease related data, as well as a researcher-made questionnaire for knowledge and practices of breast cancer screening. The questionnaires were administered to the women of reproductive age in the communities using face-to-face interviews by the trained research assistants after each client signed a written informed consent form. Each questionnaire took about 15-20 minutes to administer. To ensure the validity and reliability of the questionnaires, we pre-tested with the study population using 10% of the total sample size.

The socio-demographic and breast disease-related data questionnaire consisted of eleven questions. They include age, marital status, ethnicity, education, number of children, socio-economic status, interest in breast disease,.

Before the administration of the questionnaire, the respondents were informed about the significance of the study and their degree of engagement before they signed the informed consent forms. Also, they were informed that their involvement in the study is entirely up to them and that they may still opt out even after giving consent. The confidentiality of all information obtained through the questionnaire was guaranteed to the respondents.

Principal component analysis (PCA) in Stata v12 (StataCorp, College Station, TX) was used to create the socioeconomic status index. Estimated household income and ownership of 10 household items were included in the input to the PCA. They include a gas cooker, television,

refrigerator, cable television, electric fan, air conditioner, motor vehicle, generator, microwave oven, and washing machine. Quartiles (Q) were used to obtain the distribution cut points. The wealth index score of each respondent's household was assigned. The quartiles were Q1=poorest, Q2=the very poor, Q3=the poor, and Q4=the least poor. The quartiles were then divided into two groups: low socioeconomic class, which included the poorest and most impoverished individuals, and high socioeconomic class, which included the groups with the poor and least poor groups (18). Thirty variables were used to evaluate the knowledge of breast cancer. For every variable, an accurate response received a score of one while an inaccurate response was given zero. Good knowledge of breast cancer was ascertained by the proportion of respondents who obtained 50% and above in the 30 variables utilized in the evaluation of the knowledge of breast cancer. The test-retest reliability of the questionnaire was 0.78.

Preventive practice against breast cancer was assessed using three variables including breast self-examination, clinical breast examination, and mammography. Respondents who have ever performed any of these two breast cancer screening practices were seen as those with good breast cancer preventive practices but participants who have not were regarded as having poor breast cancer preventive practices. The test-retest reliability of the questionnaire was 0.78.

Data entry and analysis were done using IBM Statistical Product and Service Solutions (SPSS) statistical package version 25. Frequencies and proportions were used to summarize the categorical variables. Also, the mean and standard deviation were utilized to summarize continuous variables. The analysis employed the chi-square test of statistical significance and multivariate analysis utilized binary logistic regression. A p-value of <0.05 indicated the level of statistical significance.

Variables with a p-value of ≤0.2 on bivariate analysis (Chi-square test) were subjected to the logistic regression model to identify the predictors of good knowledge of breast cancer and good screening practices. The results of logistic regression analysis were reported using adjusted odds ratios (AOR) and 95% confidence intervals (CI), and a p-value of <0.05 indicated the level of statistical significance.

Results

The study included 401 women who were within the reproductive age range, with a mean age of 29.1±7.3 years. More than half the participants (56.1%) had been married. Among the respondents, 44.9% have completed their tertiary education. Also, most of the participants, (50.1%) belonged to the low socioeconomic status as shown in Table 1.

Table 1. Socio-demographic characteristics and history of breast disease among the respondents (N=401)

Variable	Frequency (%)
Age	
Mean±(SD)	29.1±7.3
Age in years	
<25 years	120 (29.9)
25-29 years	107 (26.7)
30-34 years	69 (17.2)
≥35 years	105 (26.2)
Marital status	
Never married	162 (40.4)
Married	225 (56.1)
Divorced/Separated/Widowed	14 (3.5)
Religion	
Christianity	392 (97.8)
Islam	7 (1.7)
Traditional religion	2 (0.5)
Ethnicity	
Igbo	375 (93.5)
Yoruba	12 (3.0)
Hausa	3 (0.7)
Ethnic minorities	11 (2.7)
Educational attainment	
No formal education	20 (5.0)
Primary education	114 (28.4)
Secondary education	87 (21.7)
Tertiary education	180 (44.9)
Number of children	
No child	172 (42.9)
1-4 Children	196 (48.9)
≥5 children	33 (8.2)
Employment status	
Unemployed	148 (36.90
Self-employed	164 (40.9)
Salaried employment	89 (22.2)
Socio-economic class	
Low socio-economic class	201 (50.1)
High socio-economic class	200 (49.9)
History of breast disease	
Yes	26 (6.5)

Variable	Frequency (%)
No	375 (93.5)
Having relatives diagnosed with breast cancer	
Yes	23 (5.7)
No	378 (94.3)
Having interest in breast cancer issues	
Yes	218 (54.4)
No	183 (45.6)

The respondents' history of breast disease is shown in Table 2. A very minor proportion of the respondents, 6.5% have a history of breast disease. Similarly, few of them, 5.7% have a relative diagnosed with breast cancer while the majority of them, 54.4% have an interest in matters related to breast cancer.

Table 2. Knowledge of breast cancer among the respondents (Only correct responses indicated) (N=401)

Variable	Frequency (%)
Cause of breast cancer	
Cause of breast cancer	75 (18.7)
Breast cancer affects only females (No)	81 (20.2)
Early detection of breast cancer improves survival (Yes)	197 (49.1)
Non-modifiable risk factors	
Age (getting older) (Yes)	66 (16.5)
Family history of breast cancer (Yes)	79 (19.7)
Genetic mutation (Yes)	82 (20.4)
Gender (being a female) (Yes)	76 (19.0)
Personal history of breast biopsies (Yes)	42 (10.5)
Personal history of breast cancer (Yes)	73 918.2)
Having a dense breast (Yes)	35 (8.7)
Early menarche (starting menstruation early before age 12) (Yes)	35 (8.7)
Late menopause (after 55years of age) (Yes)	34 (8.5)
Nulliparity or Late first child (after 35 years) (Yes)	40 (10.0)
Modifiable risk factor	
Physical inactivity (Yes)	60 (15.0)
High alcohol consumption (Yes)	68 (17.0)
Unhealthy diet (high-fat diet) (Yes)	75 (18.7)
Obesity / increased body mass index (BMI) (Yes)	62 (15.5)
Smoking (Yes)	69 (17.2)
Early pregnancy and adequate breastfeeding (No)	84 (20.9)
Contraceptive use (Yes)	53 (13.2)
No breastfeeding (Yes)	53 (13.2)
Exposure to radiation (Yes)	80 (20.0)
Signs and symptoms	
Nipple discharge (Yes)	126 (31.4)
Lump under the armpit (Yes)	119 (29.7)
Pain in the breast region (Yes)	142 (35.4)
Change in breast shape (Yes)	122 (30.4)
Dimpling of the breast skin (Yes)	117 (29.2)
Painless breast lump (Yes)	102 (25.4)
Soreness of nipples (Yes)	132 (32.9)
Nipple retraction (Yes)	108 (26.9)
Knowledge of breast cancer	
Good	72 (18.0)
Poor	329 (82.0)

Table 3 presents the participants' level of knowledge regarding breast cancer. Only 18.7% of the participants were informed that breast cancer is due to abnormal growth of cells while 49.1% understood that prompt identification of breast cancer improves chances of survival. Regarding non-modifiable risk factors for breast cancer, very few respondents gave correct responses to the possible risk factors with the highest proportion (20.4%) of them agreeing that genetic mutation is a risk factor. In modifiable risk factors, the highest proportion (20.9%) of the respondents correctly agreed that early pregnancy and adequate breastfeeding don't lead to breast cancer. The overall knowledge shows that 18.0% had good knowledge of breast cancer.

Table 4 illustrates the screening practices for breast cancer among the respondents. Less than one-third of them, 32.2% were informed of the breast self-examination. However, a low percentage (23.4%) of them have ever performed breast self-examination. Also, 26.2% of the women were informed of the clinical breast examinations while 9.5% of them had ever done a clinical breast examination.

Table 3. Breast cancer screening practices among the respondents (N=401)

Variable	Frequency (%)
Aware of breast self-examination	
Yes	129 (32.2)
No	272 (67.8)
Have ever practiced breast self-examination	
Yes	94 (23.4)
No	307 (76.6)
Willing to start or continue practicing breast self-examination	
Yes	135 (33.7)
No	266 (66.3)
Being aware of clinical breast examination	
Yes	105 (26.2)
No	296 (73.8)
Ever had a clinical breast examination done	
Yes	38 (9.5)
No	363 (90.5)
Willing to start or continue the practice of clinical breast examination	
Yes	112 (27.9)
No	289 (72.1)
Being aware of mammography	
Yes	81 (20.20
No	320 (79.8)
Ever had mammography done	
Yes	14 (3.5)
No	387 (96.5)
Willing to start or continue the practice of mammography	
Yes	89 (22.2)
No	312 (77.8)
Breast cancer screening practice	
Good	35 (8.7)
Poor	366 (91.3)

Table 4. Factors affecting knowledge of breast cancer

Variable	Knowledge of breast cancer (N=401)		χ^2(p-value on bivariate analysis)	AOR in multivariate analysis (95% CI)
	Good N (%)	Poor N (%)		
Age				
<25 years	29 (24.2)	91 (75.8)	8.016 (0.046)	1.3 (0.4 – 3.6)
25-29 years	22 (20.6)	85 (79.4)		1.3 (0.5 – 3.3)
30-34 years	7 (10.1)	62 (89.9)		0.6 (0.2 – 1.9)
≥35 years	14 (13.3)	91 (86.7)		1
Marital status				
Married	31 (13.8)	194 (86.2)	6.073 (0.014)	0.9 (0.4 – 2.2)
Single	41 (23.3)	135 (76.7)		1
Having relatives diagnosed with breast cancer				
Yes	11 (47.8)	12 (52.2)	14.779 (<0.001)	2.4 (0.8 – 7.4)
No	61 (16.1)	317 (83.9)		1
Personal history of breast disease				
Yes	10 (38.5)	16 (61.5)	7.936 (0.005)	2.3 (0.7 – 7.3)
No	62 (16.5)	313 (83.5)		1
Interested in issues related to breast cancer				
Yes	62 (28.4)	156 (71.6)	35.651 (<0.001)	4.2 (2.0 – 8.9)
No	10 (5.5)	173 (94.5)		1
Educational attainment				
Tertiary education	58 (32.2)	122 (67.8)	45.129 (<0.001)	5.0 (2.4 – 9.8)
Secondary education and below	14 (6.3)	207 (83.7)		1
No of children				
No child	41 (23.8)	131 (76.2)	8.537 (0.014)	2.3 (0.4 – 13.7)
1-4 children	29 (14.8)	167 (85.2)		2.9 (0.6 – 15.4)
≥5 children	2 (6.1)	31 (93.1)		1
Employment status				
Unemployed	32 (21.6)	116 (78.4)	3.957 (0.138)	1.6 (0.6 – 4.2)
Self-employed	22 (13.4)	142 (86.6)		1.0 (0.4 – 2.3)
Salaried employment	18 (20.2)	71 (79.8)		1
Socio-economic class				
Low socio-economic class	20 (10.0)	161 (90.0)	17.530 (<0.001)	0.4(0.2 – 0.8)
High socio-economic class	52 (26.0)	148 (74.0)		1

Approximately one-fifth of the respondents, 20.2% were aware of breast mammograms; however, very few (3.5%) of them had ever done a mammogram. Just 8.7% of the respondents reported using effective screening procedures for breast cancer.

In bivariate analysis, most variables except employment status were significantly associated with knowledge of breast cancer. On further analysis, having an interest in matters related to breast, attaining tertiary education, and being of the low socio-economic class were determinants of knowledge of breast cancer. The likelihood of having good knowledge about breast cancer was four times higher among those with an interest in the topic than among those without it. (AOR= 4.2, 95%CI: 2.0-9.0, p<0.001). Individuals with tertiary education were approximately five times more likely to have good knowledge compared to those with secondary education or less (AOR=5.0, 95%CI: 2.4-9.8, <0.001).

Table 5. Factors affecting breast cancer screening practices among the respondents

Variable	Screening practices for breast cancer (N=401)		χ^2(p-value on bivariate analysis)	AOR in multivariate analysis (95% CI)
	Good N (%)	Poor N (%)		
Age				
<25 years	5 (4.3)	115 (85.8)	6.443 (0.092)	0.2 (0.1 – 0.8)
25-29 years	11 (10.3)	96 (89.7)		0.7 (0.3 – 1.8)
30-34 years	5 (7.2)	64 (92.8)		0.5 (0.1 – 1.4)
≥35 years	14 (13.3)	91 (86.7)		1
Marital status				
Married	21 (9.3)	204 (90.7)	0.236 (0.627)	NA
Single	14 (8.0)	162 (92.0)		
Having relatives diagnosed with breast cancer				
Yes	4 (17.4)	19 (82.6)	2.299 (0.129)	1.5 (0.4 – 5.2)
No	31 (8.2)	347 (91.8)		1
Personal history of breast disease				
Yes	2 (7.7)	24 (92.3)	0.037 (0.847)	NA
No	33 (8.8)	342 (91.2)		
Interested in issues related to breast cancer				
Yes	28 (12.8)	190 (87.2)	10.158 (0.001)	2.6 (1.0 – 6.5)
No	7 (3.8)	176 (96.2)		1
Educational attainment				
Tertiary education	28 (15.6)	152 (84.4)	19.110 (<0.001)	4.4 (1.0 – 6.5)
Secondary education and below	7 (3.2)	214 (96.8)		1
Number of children				
No child	15 (8.7)	157 (91.3)	0.346 (0.841)	NA
1-4 children	18 (9.2)	178 (90.8)		
≥5 children	2 (6.1)	31 (93.9)		
Employment status				
Unemployed	9 (6.1)	139 (93.9)	12.284 (0.002)	0.667 (0.2 – 2.0)
Self-employed	10 (6.1)	154 (93.9)		0.491 (0.2 – 1.2)
Salaried employment	16 (18.0)	73 (82.0)		1
Socio-economic class				
Low socio-economic class	18 (9.0)	183 (91.0)	0.026 (0.872)	NA
High socio-economic class	17 (8.5)	183 (91.5)		
Knowledge of breast cancer				
Good	11 (15.3)	61 (84.7)	4.726 (0.030)	1.245 (0.5 – 2.9)
Poor	24 (7.3)	305 (92.7)		1

Also, poor socioeconomic status was associated with a 2.5-fold decrease in the likelihood of having good knowledge of breast cancer (AOR=0.4, 95%CI: 0.2-8.3, <0.001), as shown in Table 5.

In bivariate analysis, having an interest in issues related to breast, educational attainment, employment status and knowledge of breast cancer were significantly associated with screening practices for breast cancer. On further analysis, age, having an interest in matters related to breasts, and attaining tertiary education were determinants of screening practices. Compared to those aged 25 and above, respondents aged below 25 years had a five-fold lower likelihood of using appropriate screening procedures (AOR=0.2, 95% CI: 0.1 – 0.8). The likelihood of having good screening practices was approximately three times higher among those with an interest in breast cancer-related issues than among non-interested individuals (AOR= 2.6, 95% CI:1.0 – 6.5). The likelihood of having good screening practices was four times higher among those with tertiary education than among those with secondary education or below as their greatest level of education (AOR=4.4, 95%CI: 1.0 – 6.5).

Discussion

The aim of this research was to ascertain knowledge and screening practices of breast cancer, and its determinants among women of reproductive age. An essential factor in the detection of breast cancer among women of reproductive age was their knowledge of breast cancer and their screening practices (11).

According to the findings, only 18.7% of the respondents were aware of the etiology of breast cancer although about half of them knew that prompt diagnosis of the disease improves survival. Furthermore, despite having tertiary education as their greatest educational level, the majority of the respondents were unaware of the symptoms and signs of breast cancer, which eventually contributed to the majority of the participants having poor knowledge of the disease. The findings of the study confirm the reports of previous studies in Ethiopia (19) Ghana (8), and Egypt (20) but disagree with the results of studies done in Jordan and Australia (8,19-22). This discrepancy in findings may be due to misconceptions and cultural beliefs about breast cancer in poor resource countries compared to developed countries (8). Thus it is required to plan and implement breast cancer community awareness programs in our study area and other low- and middle-income countries using different communication media accessible to the women.

Regarding breast cancer screening practices, 8.7% of the respondents had good screening practices which were similar to studies done in Rwanda and Ethiopia (4, 19). Nevertheless, a higher percentage of participants having good screening practices were observed by researchers in India and Brazil (23-24). This may be attributable to an increased level of community awareness programs on breast cancer and health accessibility in the previous studies as against our study area. Furthermore, 23.4% of the participants had ever performed breast self-examination with very a few proportion of them ever doing clinical breast examination (9.5%) and mammography (3.5%). The findings were similar to studies done in Nigeria, Tunisia, and Rwanda which is attributable to the fact that this locality and other low- and middle-income countries lack effective breast cancer screening programs (4, 23, 25-26). Also, access to mammograms in most low- and middle-income countries has been an issue over the past years due to cost and poor availability of the screening method, and this might have explained why a few proportions of our respondents had ever done mammograms (27). Nevertheless, a higher proportion of them are willing to start or continue the practice of each of the screening methods but more respondents need to participate in the screening practices for better health outcomes in the society. This highlights the need to emphasize that continuous utilization of these screening methods is the basis for early detection of breast cancer during community awareness programs (7).

The likelihood of having good knowledge about breast cancer was four times higher among those with an interest in matters related to breast cancer than among those without it. This is consistent with the findings of another researcher and the probable explanation is that women who are conscious about their bodies tend to know more about their reproductive

health (25). Compared to individuals with secondary education or less as their greatest level of education, those with tertiary education were approximately five times more likely to have good knowledge. This was consistent with the research conducted in India and Saudi Arabia (28-29). This shows the importance of literacy in promoting the depth of knowledge about breast cancer and the need for continuous improvement in the educational status of women. Furthermore, those in low socio-economic class were associated with a 2.5-fold decrease in the likelihood of having good knowledge of breast cancer, which was in contrast to participants in high socio-economic class, and this agrees with a study in Iran (30). The findings may be attributable to the fact that people in the high socio-economic class have greater chances of exposure to different sources of health-related information, e.g.,media, and are more likely to utilize the health system for care (31). As a result, they may learn about breast cancer from healthcare professionals, potentially enhancing their knowledge.Regarding variables influencing breast cancer screening practices, the respondents aged above 25 years were five times more likely to practice the screening methods and this was similar to a study done in Ethiopia but contradicts another study in Australia (19,22). This might be related to the perception in low-and middle-income countries that as people get older, their risk of getting cancer increases, which leads to greater a proportion of older women utilizing breast cancer screening practices (19). This is unlike in developed countries where this misconception doesn't exist and younger women are exposed earlier to breast cancer screening practices. Also, the likelihood of having good screening practices was approximately three times higher among those with an interest in breast cancer-related issues than among non-interested individuals. This agrees with a researcher's finding in Ethiopia and it shows that lack of interest in issues related to breast cancer was a deterrent in the uptake of breast cancer screening practice (32). The probability of having good screening practices was four times higher among those with tertiary education than among those with secondary education or below. This is not unexpected because we anticipate that educated women will make greater use of breast cancer screening techniques and understand the significance of early breast cancer identification (32). Therefore, regular screening practices should be implemented among women with low educational status and further sustained among those with high educational status.

The large sample size deployed in the study improved the generalizability of the findings. However, the cross-sectional design of the study lacks any evidence of causality. Additionally, the study did not estimate the psychometric properties of the tools, potentially influencing its outcomes. The findings of this study provided a clear understanding of the factors associated with the knowledge and practice of breast cancer in our locality. This provides a rational basis for future research on the training of healthcare professionals in the effective design of breast cancer prevention programs to promote the optimal practice of breast cancer early detection.

Conclusion

A few number of the individuals demonstrated appropriate knowledge of breast cancer and its screening procedures. The factors linked to the knowledge of breast cancer and screening practices were age, education, socioeconomic status, and interest in matters related to breast cancer. To ensure early detection of breast cancer, it is necessary to enhance community awareness programs, particularly among women of younger age groups, those with low education, and those from poor socioeconomic classes.

Declarations

Acknowledgments

We thank the participants who took part in this project as well as the research assistants for their consistent inputs in collecting the data.

Conflicts of interest

The authors declared no conflicts of interest.

Ethical Considerations

This study received approval from the Research and Ethics Committee of Ebonyi State University Abakaliki, Nigeria (Reference

number: EBSU/DRIC/UREC/Vol.05/092). Dated 9th April 2021.

Funding

None.

Authors' contribution

EO, IE, OE & CN conceived the research. CN, IE, IE & EO conducted the study design and data collection. EO, OE, & IE4 were involved in the data analysis and preparation of the manuscript. All authors read and approved the final manuscript.

References

1. Akram M, Iqbal M, Daniyal M, Khan AU. Awareness and current knowledge of breast cancer. Biological Research 2017; 50: 33.
2. Lei S, Zheng R, Zhang S, Wang S, Chen R, Sun K, et al. Global patterns of breast cancer incidence and mortality: A population-based cancer registry data analysis from 2000 to 2020. Cancer Communications. 2021; 41(11): 1183–1194.
3. Fatiregun OA, Oluokun T, Lasebikan NN, Nwachukwu E, Ibraheem AA, Olopade O. Breast Cancer Research to Support Evidence-Based Medicine in Nigeria: A Review of the Literature. JCO Global Oncology. 2021; 7: 384–390.
4. Igiraneza PC, Omondi LA, Nikuze B, Uwayezu MG, Fitch M, Niyonsenga G. Factors influencing breast cancer screening practices among women of reproductive age in South Kayonza District, Rwanda. Canadian Oncology Nursing Journal. 2021; 31(3): 251–257.
5. Godinho-Mota JCM, Gonçalves LV, Mota JF, Soares LR, Schincaglia RM, Martins KA, et al. Sedentary Behavior and Alcohol Consumption Increase Breast Cancer Risk Regardless of Menopausal Status: A Case-Control Study. Nutrients. 2019; 11(8): 1871.
6. Black E, Richmond R. Improving early detection of breast cancer in sub-Saharan Africa: Why mammography may not be the way forward. Globalization and Health. 2019; 15(1): 3.
7. Albeshan SM, Hossain SZ, Mackey MG, Brennan PC. Can Breast Self-examination and Clinical Breast Examination Along With Increasing Breast Awareness Facilitate Earlier Detection of Breast Cancer in Populations With Advanced Stages at Diagnosis. Clinical Breast Cancer. 2020; 20(3): 194–200.
8. Osei-Afriyie S, Addae AK, Oppong S, Amu H, Ampofo E, Osei E. Breast cancer awareness, risk factors and screening practices among future health professionals in Ghana: A cross-sectional study. PLoS One. 2021; 16(6): e0253373.
9. Ossai E, Azuogu B, Ogaranya I, Ogenyi A, Enemor D, Nwafor MA. Predictors of Practice of Breast Self-examination: A Study among Female Undergraduates of Ebonyi State University, Abakaliki, Nigeria. Nigerian Journal of Clinical Practice. 2019; 22(3): 361–369.
10. Madubogwu CI, Egwuonwu AO, Madubogwu NU, Njelita IA. Breast cancer screening practices amongst female tertiary health workers in Nnewi. Journal of Cancer Research and Therapy. 2017; 13(2): 268–275.
11. Babatunde S, Sunday J. Breast Cancer Screening Practices among Women in Akure South Local Government Area of Ondo State, Nigeria. International Journal of Caring Science. 2017; 10(2): 946–954.
12. Galukande M, Schüz J, Anderson BO, Zietsman A, Adisa C, Anele A, et al. Maternally Orphaned Children and Intergenerational Concerns Associated with Breast Cancer Deaths among Women in Sub-Saharan Africa. JAMA Oncology. 2020; 7(2): 285–289.
13. Avis NE, Crawford S, Manuel J. Quality of life among younger women with breast cancer. Journal of Clinical Oncology. 2005; 23(15): 3322–3330.
14. Gyawali B, Shimokata T, Honda K, Tsukuura H, Ando Y. Should low-income countries invest in breast cancer screening. Cancer Causes Control. 2016; 27(11): 1341–1345.
15. Ebonyi State (Nigeria). Population Statistics, Charts, Map and Location. Available from: https://citypopulation.de/en/nigeria/admin/NGA011__ebonyi/. Accessed 19th December 2022.
16. Bolarinwa OA. Sample Size Estimation for Health and Social Science Researchers: The Principles and Considerations for Different Study Designs. Nigerian Postgraduate Medical Journal. 2020; 27(2): 67–75.
17. Ifeanyichukwu O. Assessment of Breast Cancer Screening Practices among Women of Reproductive Age in Benin City, Edo State. International Journal of Tropical Disease and Heal. 2015; 6(4): 141–149.
18. Ossai EN, Onwe OE, Okeagu NP, Ugwuoru AL, Eze TK, Nwede AS. Knowledge and preventive practices against Lassa fever

among heads of households in Abakaliki metropolis, Southeast Nigeria: A cross-sectional study. Proceedings of Singapore Healthcare. 2020; 29(2): 73–80.
19. Dibisa TM, Gelano TF, Negesa L, Hawareya TG, Abate D. Breast cancer screening practice and its associated factors among women in Kersa district, Eastern Ethiopia. Pan African Medical Journal. 2019; 33: 144.
20. Gharieb Moustafa D, Shokry Abd-Allah E, Taha NM. Effect of a Breast-Self Examination (BSE) Educational Intervention among Female University Students. American Journal of Nursing Science. 2015; 4(4): 159.
21. Al-Mousa DS, Alakhras M, Hossain SZ, Al-Sa'di AG, Al Hasan M, Al-Hayek Y, et al. Knowledge, Attitude and Practice Around Breast Cancer and Mammography Screening Among Jordanian Women. Breast Cancer:Targets and Therapy. 2020; 12: 231.
22. Wang L, Mackenzie L, Hossain Z. Breast cancer screening practices and associated factors among Chinese-Australian women living in Sydney: A cross-sectional survey study. Nursing and Health Sciences. 2022; 24(1): 293–303.
23. Sreedevi A, Quereshi MA, Kurian B, Kamalamma L. Screening for breast cancer in a low middle income country: Predictors in a rural area of Kerala, India. Asian Pacific Journal of Cancer Prevention. 2014; 15(5): 1919–1924.
24. Buranello MC, Meirelles MCCC, de Walsh IAP, Pereira G de A, de Castro SS. Breast cancer screening practice and associated factors: Women's Health Survey in Uberaba MG Brazil, 2014. Ciência & Saúde Coletiva. 2018; 23(8): 2661–2670.
25. Ohaeri B, Aderigbigbe M. Knowledge and use of breast self-examination and mammogram among women of reproductive age in OyoState Secretariat, Ibadan, Oyo State, Nigeria. European Journal of Midwifery. 2019; 3: 105858.
26. El Mhamdi S, Bouanene I, Mhirsi A, Sriha A, Ben Salem K, Soltani MS. Women's knowledge, attitudes and practice about breast cancer screening in the region of Monastir (Tunisia). Australian Journal of Primary Health. 2013; 19(1): 68–73.
27. Gutnik LA, Matanje-Mwagomba B, Msosa V, Mzumara S, Khondowe B, Moses A, et al. Breast Cancer Screening in Low- and Middle-Income Countries: A Perspective From Malawi. Journal of Global Oncology. 2016; 2(1): 4–8.
28. Nebhnani MR, Phalswal U, Ohri U, Raj S, Singh S. Knowledge on prevention of breast cancer among females attending outpatient department of All India Institute of Medical Sciences. International Journal of Community Medicine and Public Health. 2021; 8(8): 3888–3894.
29. Salih S, Al-Madkhali E, Khormi A, Mhzri R, Bahkali S, Hakami S, et al. Knowledge, Attitude and Practice Study of Breast Cancer and Breast Self-Examination among Females in Jazan, Saudi Arabia. International Journal of Sciences: Basic and Applied Research. 2016; 25(2): 180–190.
30. Izanloo A, Ghaffarzadehgan K, Khoshroo F, Haghiri ME, Izanloo S, Samiee M, et al. Knowledge and attitude of women regarding breast cancer screening tests in Eastern Iran. Ecancermedicalscience. 2018; 12: 806.
31. Azimi S, Ghorbani Z, Ghasemi E, Tennant M, Kruger E. Does socioeconomic status influence oral cancer awareness? The role of public education. Eastern Mediterranean Health Journal. 2020; 26(12): 1510–1517.
32. Assefa AA, Abera G, Geta M. Corrigendum: Breast cancer screening practice and associated factors among women aged 20–70 years in urban settings of snnpr, Ethiopia. Breast Cancer: Targets and Therapy. 2021; 13: 133-134.