

Awareness and Practices of Breast Cancer Detection among Female Undergraduates of Ebonyi State University, Nigeria

ABSTRACT

Background: Breast cancer is a global health issue affecting women with, early detection through breast-self-examination and Clinical-Breast Examination being crucial for increasing the rate of survival.

Aim: This study aimed to ascertain the level of awareness of breast cancer, the risk factors, and warning signs, evaluate the practice of breast-self-examination and Clinical-Breast Examination and ascertain further steps taken when warning signs were detected.

Methods: This cross-sectional study involved 300 undergraduate female students of Ebonyi State University, Nigeria. Data were obtained using a structured questionnaire in which the students answered questions on their Knowledge of breast cancer, and practice of breast-self-examination and Clinical-Breast Examination as well as further steps taken when warning signs were detected.

Results: Results show that 91% of the participants were aware of breast cancer. It also revealed that 40.7% and 42% of the students were unaware that age and smoking respectively are risk factors. Also, 60.7% and 72.3% of the students were unaware that redness and irritation respectively are warning signs of breast cancer. Majority of the participants were aware of breast-self-examination and clinical-breast examination but 64.3% had practiced breast-self-examination and a substantial 81.3% had never practiced Clinical-Breast Examination. This study demonstrated that, 9.3% practiced breast-breast examination daily, 13% weekly and 42.3% monthly. Only 16.3% had observed breast pain, 8% observed changes in nipple shape. After noticing warning signs, 30.3% went for medical consultation, 23.7% did laboratory screening and 16.7% removed lumps.

Conclusion: These findings indicate suboptimal breast-self examination and/or Clinical-Breast Examination practice, suboptimal awareness of the warning signs, and inadequate awareness of the risk factors of breast cancer. Public health awareness and enlightenment campaign is necessary to improve early breast cancer detection among Nigerian women.

Keywords: breast cancer, Questionnaire, breast-self-examination, clinical breast examination, warning sign, risk factors, undergraduate students, female students, Ebonyi State University

1.0 INTRODUCTION

Breast cancer is the commonest form of malignancy amongst women worldwide and its early detection is fundamental to improving the disease outcome, which means that the earlier the breast cancer is detected, the better the consequence [1]. There are 3 common techniques for breast cancer screening and early detection [2]. The most commonly recognised breast screening modality is mammography, whereas, breast self-examination (BSE) and clinical breast examination (CBE), play important additional roles in early cancer detection and overall breast health care [2]. In a situation where there are unorganised screening programs, timely detection of breast cancer occurs as a result of distresses expressed by women when they have presented with symptoms in the course of routine health care, or from CBE [2]. If women do not practice BSE, due to deficiency of knowledge on BSE technique or poor knowledge of its benefits and do not practice CBE, they are more likely to be diagnosed of breast cancer at advanced stages compared to women who adhere to breast screening recommendations [3]. It has been suggested that, in populations where women are diagnosed with breast cancer at advanced stage, it would probably be cost-effective to teach BSE and to screen by CBE to improve breast cancer outcomes [1]. Thus, BSE and/or CBE plays a significant role in expediting early cancer detection [1, 3]. Previous studies reported poor BSE awareness and practice in Nigeria (Obaji *et al.*, 2013; Oluwakemi *et al.*, 2022) [4, 5]. The research aim to obtain information on the awareness of undergraduate students of Ebonyi State University (EBSU) on breast cancer, BSE and CBE and evaluate their knowledge on the risk factors of breast cancer, the warning signs as well as evaluate further steps taken when warning signs were detected.

This research is significant because it provided information on the awareness and practice of early breast cancer detection and revealed critical knowledge gaps in the practice of breast

cancer detection. It has the potential to increase the awareness of risk factors and early warning signs of breast cancer among female undergraduate students in Nigeria and help the public health workers plan for targeted interventions. It is crucial because it will help in the development of public health strategies for curbing breast cancer.

2.0 METHODS

2.1 Study design

This study is an exploratory cross-sectional research conducted on female students of Ebonyi State University, Abakalikil through a semi structured questionnaire. Questionnaire was issued to each participant during face to face interactions with research assistants. Convenient sampling methods was implemented for this study.

2.2 Questionnaire design

Extensive literature review (Maharjan *et al.*, 2019; Heng & Bae, 2021; Khaliq *et al.*, 2021; Endrikat *et al.*, 2024) [6, 7, 8, 9] was carried out before the development of a semi-structured questionnaire in English language. It covered questions related to demographic factors, Knowledge of Breast cancer and risk factors for breast cancer, Knowledge of Breast-Self Examination (SBE) and Clinical breast examination (CBE), and further steps taken after Breast Examination. The questionnaire was evaluated and validated by a Pathologist before distributing to the participants. The questionnaire was designed into sections as follows:

Socio-demographic information:

The questions in socio-demographic section consist of questions on Age (in years), marital status (single, married, divorced), Level of study (100, 200, 300, 400, 500 and 600), Levels of awareness (yes, No),

Awareness and Knowledge related questionnaire:

The awareness related questions were categorized into knowledge of Breast cancer and the options choose from were, “Yes or No”.

Risk factors related questionnaire

The questionnaire comprise of question that assessed the students’ awareness of risk factors of breast cancer such as smoking, Genes, Age, weak immune system, being obese/overweight, taking of hard drugs, and alcohol consumption. The options for response were, “Yes or No”.

Warning signs related questionnaire:

The questionnaire asked if the students aware that Redness of affected Breast, Irritation of Breast, Swelling of the Breast, Rash on Breast, Abnormal Nipple discharge, Lumps in Breast, Lumps around collar bone, abnormal pain in the breast that remains after period ends, and Sore or wound on Breast are early warning signs and symptoms of breast cancer with the option choosing either “Yes or No”.

Practice related questionnaire:

This part of the questionnaire asked if the students are aware of SBE and CBE (options to choose was either “Yes or No”). The students were asked if they have ever practiced SBE and CBE with the options of replying “Yes or No”. The questionnaire also asked how often the students check their breast in which the options to choose were Daily, weekly, monthly and never.

Questionnaire related to changes detected by participant during SBE:

The participants were asked if they detected changes like Lump in Breast, Change in Nipple, Abnormal Nipple discharge, Abnormal breast pain that remains after period end, Lumps in collar bone, Lumps in armpit during SBE (with a response option of “Yes or No”). Questionnaire also asked if the participants are aware that the above could be signs of Breast cancer (with a response option of “Yes or No”).

Questionnaire relating to further steps taken after Breast Examination:

The participants were asked if they took further steps (See Doctor, Did Lab screening, and Remove Lumps) when warning signs were detected during SBE with answer options being “Yes or No”.

Inclusion and exclusion criteria

Only undergraduate female students of EBSU who gave consent were included in this research.

Staff and post-graduate students of EBSU were excluded.

Calculation of sample size:

Simple-random sampling was applied in the sample selection.

Calculation of sample size:

$$\text{Sample size (n)} = \frac{z^2 pq}{e^2}$$

Where, n= sample size required

z= 95% confidence level (1.962)

p = predicted rate for the given indicator in the study area 26%

$$q = 1-p$$

e= error margin of 5 % (with 0.05 as the standard value)

$$\text{Sample-size (n)} = \frac{1.962 \times 0.27 (1 - 0.27)}{0.05}$$

Sample size = 303

The total sample size used = 300 (3 dropped out).

2.3 Data collection

This study was piloted from January to December 2023. A total of 300 female undergraduate female students were included in the study; the sample size calculation suggested that at 95% confidence interval. The trained researcher described the aim and the process of interview to the students. Anonymity and confidentiality of the students were emphasized and informed consent was obtained.

2.4 Data analysis

The answer to questions were coded in the format of “yes” or “no”. The age, and level of study of the students were included as the demographic factors. The collected data were documented in Excel 2013 and SPSS (Statistical Package for the Social Sciences) version

27.0.1 was used to analyse the data. To get the P-value, the questionnaire's data were entered into the SPSS and subjected to bivariate correlation analysis. P-value of 0.05 was considered significant. The interpretation of the data was via Descriptive statistics.

3.0 RESULTS

The findings show the level of awareness of Breast Cancer, the risk factors, the warning signs, their knowledge on SBE and CBE as well as steps taken after warning signs are discovered by female undergraduate students of Ebonyi State University.

3.1 Demographic factors of the participants

A total of three hundred (N=300) students participated in this study. The results obtained show that 38.3% (N=115) of the participants were between the ages of 15-20 years, 49% (N=147) were aged 21-25 years, 10% (N=30) of the participants were between the ages of 26-30 years and 2.7% (8) were above 30 years. Thirty-eight participants (12.7%) were married while two hundred and sixty (86.7%) participants were unmarried, two of the participants were divorced. The participants were selected from different levels of undergraduate study (Table 1).

3.2 Knowledge of participants about Breast Cancer and Its Risk Factors

The knowledge of the participants about breast cancer and the risk factors were assessed. Our results show that 91% of the participants responded in affirmative, that they heard of breast cancer while 9% never heard of breast cancer (Table 2). It was also observed that 45.3% of the participants said they knew that smoking is a risk factor for developing breast cancer while, 54.7% did not know that smoking was a risk factor whereas, 63.7% of the students were aware that genes risk factors of breast cancer and 36.3% was not aware that genes are risk factors for breast cancer (Table 3). The results obtained show that 64.3% (193) of the participants are not aware that age was a risk factor for breast cancer. Only 35.7% (N=107)

knew that age was a risk factor for breast cancer. Our results also show that 64% of the participants knew that weak immune system is one of the risk factors of breast cancer while 36% don't know. Our observations also revealed that only 28% (N=84) knew that Obesity was a risk factor while, 72% (N=216) were not aware that Obesity was a risk factor for breast cancer. Also 45% of the participants are not aware that taking hard drugs could predispose them to breast cancer. Whereas 55% knew that taking hard drugs can predispose to breast cancer risk. Knowledge of the participants on alcohol as a risk factor of breast cancer revealed that 61.7% said they didn't know that taking alcohol is a risk factor for developing breast cancer while 38.3 % were aware (Table3).

3.3 Knowledge of the Participants on the Warning signs of Breast Cancer

The knowledge of the participants on the warning signs of breast cancer was assessed and the results obtained show that significant ($P < 0.05$) number of the students reported that they were aware that redness, irritation of the breast, lumps around the collarbone, changes in the shape of the nipple, abnormal pain in the breast that remains after period ends, Redness of affected Breast, swelling of the Breast, rash on the Breast, and abnormal nipple discharge are warning signs of breast cancer, whereas, insignificant number ($P \geq 0.05$) of the students responded that they knew that sores or wounds are warning signs of breast cancer (Table 4).

According to the results displayed on Table 4 below, 69.7% of the students were aware that redness is a warning sign while 30.3% were not aware of the aforementioned. Our survey showed that 72.3% of the participants were aware that irritation of the breast is a warning sign while 27.7% admitted that they were unaware of it. Results also showed that 45.7% of the participants don't know that lumps around the collarbone are warning signs, 54.3% responded that they knew that lumps around the collarbone are warning signs. Some of the participants (35.3%) were unaware that changes in the shape of the nipple are actually a

warning sign where as 64.7% were aware. Only 37.7% were unaware that sores or wounds on the breast is a warning sign and 33% were unaware that abnormal pain in the breast that persists even after the end of a menstrual period, is a warning sign of breast cancer while 67% were aware (Table 4).

3.4 levels of participant awareness and practice of SBE and CBE

Based on the findings of the research displayed in the table below: Majority of the participants (80.7%) had heard of breast-self-examination and clinical breast examination but only about 64% of the population had practiced breast-self-examination (SBE) while 36% had never carried out SBE (Table 5). Majority of the participants (81.3%) had never done Clinical Breast Examination (CBE) while 18.7% of the participants responded that they had carried out clinical breast examination. Our results show that majority of the participants were aware of SBE. Few participant (9.3%) practiced SBE daily, 13% practiced weekly, 42.3% practiced SBE on monthly bases, whereas, 35.5% had never checked. Most of the participants (64.3%) heard about SBE on social media while 23.7% (N=71) heard about SBE at seminar (Table 5).

3.5 Observations made by participant during SBE

In order to investigate the possible prevalence rate of breast cancer among EBSU students, the participants were asked if they noticed any signs and/or symptoms of breast cancer while performing SBE (Table 6). Majority of the students (82%) responded that they had never felt lumps in their breasts while 18% of the students had felt lumps during SBE (Table 5). Most of the students (92%) responded that they had never observed any changes in the shape of their nipple while 8% had observed changes in the shape of their nipple (Table 6). Additionally, 93% attested that they had had abnormal discharge from their nipple while 7% indicated that they never had. Few participants (16.3%) reported that they had experienced abnormal pain in the breast that continued even after the end of their menstruation or

menstrual period. Some of the participants 11.7% (N=35) testified that they had felt lumps in their collarbones at least once while the rest 88.3 % (N=265) stated that they had not. Majority of the participants (85.7%) had felt lumps in their armpits while 14.3% had never felt lumps in their armpits (Table 6).

3.6 Further Steps Taken after discovering warning signs during SBE

Results obtained after assessing for further steps taken after discovering warning signs during SBE and CBE show that 30.3% said that they saw a Doctor while 60.7% did not (Table 7). Few participants (23.7%) admitted that they did a laboratory screening whereas, 76.3% did not go for laboratory screening. Furthermore, 16.7% reported that they had removed the lumps in their breasts, armpit or collarbone while a significant number of participants (83.3%) did not (Table 7).

4.0 DISCUSSIONS

A poor understanding of risk factors and screening methods causes the women to rarely or never checking their breasts. Increasing breast cancer awareness in Ebonyi state, Nigeria is important, feasible and effective way of increasing the number of women who will receive timely clinical-breast examinations.

Our findings shows that significant number ($P < 0.001$) of female undergraduate students of EBSU are aware of breast cancer. This is consistent with a previous research which revealed that people with higher education exhibited increased awareness level of breast cancer [10, 11, 12, 13].

Majority of the students showed noticeable gaps in their knowledge of risk factors for breast cancer. Most of the students were not aware that age, smoking, taking hard drugs, obesity and alcohol consumption are risk factors for breast cancer. This suggest that female undergraduate students of EBSU have poor knowledge of risk factors associated with breast

cancer development. This is in line with previous study which disclosed that urban women showed a very poor knowledge level of the risk factors of breast cancer[14]. Other previous studies have established that the level of breast cancer awareness is very low in several Asian and Western countries[15, 16, 17]. A previous contrasting study show that, the low level of awareness of the knowledge of the risk factors for breast cancer and low knowledge of the numerous screening methods were seen mostly among women with low educational levels[18]. Many studies have reported that Asian women have poor knowledge of breast cancer risk factors[14, 15, 16, 19]. Our present study indicated a poorer knowledge of breast cancer risk factors.

It is best for women to feel and examine their breasts for consistency, size and shape, so that any deviation from normal would lead to questioning of breast associated disorders. Our results revealed that majority of female undergraduate student of EBSU were aware of the warning signs of breast cancer such as Redness of affected Breast, Irritation of Breast, Swelling of the Breast, Rash on Breast, Abnormal Nipple discharge, Lumps in Breast, Changes in the shape of Nipple, Lumps around collar bone, Abnormal pain in the breast that remains after period ends, Sore or wound on Breast. It also agrees with the study which reported that nurses demonstrated good knowledge of warning signs of breast cancer[20].Sathianet *al.* (2014), previously reported that graduates were more aware of BSE, as well as the warning signs of breast cancer than others with lower educational levels[20].This is not consistent with a study conducted on Nepalese women in which they proved low awareness of warning signs of breast cancer[20].

Our study supports a study done in Saudi Arabia which states that awareness of breast cancer warning signs, such as breast lump, bleeding and/or nipple discharge, dimpling breast skin, changes in breast size and nipple pulling in are the most common identifiable symptoms of breast disorder[21]. Radi, (2013), also reported that some women had poor knowledge that

redness of breast skin and nipple rash are warning signs associated with cancer of the breast[21]. Our findings are in agreement with Radi's report in Saudi Arabia, which publicised that females were aware that breast lump, nipple discharge and breast skin changes are common warning signs of breast cancer[21]. Previous reports revealed that people with higher education showed an increase in the awareness level[10, 11, 12, 13].

SBE and CBE helps in early breast cancer detection which involves physical and visual inspection of one's own breasts to inspect for any indication of breast tumour.

A significant number of the undergraduate student were aware of SBE and CBE. Our findings also show that higher majority of the student practice SBE while insignificant number have practice CBE. Small number of the students examined their breast daily, weekly and monthly.

This finding is consistent with previous study which reported that there were very high awareness (93%) of breast-self-examination[22]. Kudzawu *et al.*, (2016)also reported that few participant practiced breast-self-examination weekly, which is consistent with our finding[22].Other previous study in Egypt, revealed that only 5% of female students in university have knowledge of SBE while over 90% of the female participants have never practiced SBE[23].

Our findings revealed that few participants noticed some of the warning signs symptoms of breast cancer. Few of them detected Lump in their Breast, change in nipple, abnormal nipple discharge, abnormal breast pain that remains after menstrual period end, Lumps in collar bone, and Lumps in the armpit(Table 6).Regular breast examination of a woman individual breasts helps her to detect readily any changes occurring in the breast[24]. Various studies have reported that the majority of the advanced breast cancers were detected initially by the patients themselves based on the changes she discovered as lump, and other abnormal

changes[25, 26, 27]. Radi previously reported that females in Saudi Arabia were aware that breast lump, nipple discharge and breast changes are recurrent warning signs for breast cancer[21]. The commonest complaints in the breast are breast pain, breast masses, and nipple discharge[28]. A substantial breast mass must be evaluated using various clinical breast exam[28].

The findings of current study revealed that majority of the participants never took any further step for further evaluation after discovering warning signs during SBE. Only 30.3% booked appointment with doctor, 27.3% did laboratory screening to confirm or rule out cancer whereas, 16.7% of the participants went further to remove lumps from the breast (Table 7). Once the warning signs is presented to a health care organization, the diagnostic services need to be activated to provide a prompt as well as accurate diagnosis[27].The effective diagnoses and subsequent treatment of clinically noticeable breast cancer starts with clinical breast evaluation through taking of the medical history and there after performing an intensive physical examination, together with clinical-breast examination (CBE), followed by diagnostic breast imaging and pathologic evaluation of the tissue samples, -called triple test for breast diagnosis[27, 29]. Once accessible and high-quality services, are available for diagnoses and treatment of clinically apparent breast disease, screening programs must be activated for early detection as well as effective timely diagnosis.

4.1 CONCLUSION

This study indicate that the students have adequate awareness of breast cancer, suboptimal practice of SBE and/or CBE, suboptimal awareness of the early warning signs, and inadequate awareness of the risk factors, which critical to increasing the breast cancer burden. Public awareness campaign is necessary to overcome the increasing burden of breast disease.

Ethical Approval And Consent

Ethical approval was obtained from Ebonyi State University's Ethical Committee before the research was carried out. Consent for participants was obtained. All information was kept confidential and anonymous.

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Table 1: Socio-demographic characteristics of study participants***Parameters***

<i>Age(years)</i>	Number	Percentage (%)
<i>15-20</i>	115	38.3
<i>21-25</i>	147	49
<i>26-30</i>	30	10
<i>Above 30</i>	8	2.7

Marital Status

<i>Single</i>	260	86.7
<i>Married</i>	38	12.7
<i>Divorced</i>	2	0.6

Level of study

<i>100</i>	72	24
<i>200</i>	67	22.3
<i>300</i>	62	20.7
<i>400</i>	50	16.7
<i>500</i>	48	16
<i>600</i>	1	0.3

Table 2: Participants levels of awareness of breast cancer

<i>Variables</i>	Number	Percentage (%)	P value
Heard of Breast cancer			
<i>Yes</i>	273	91	<0.001
<i>No</i>	27	9	

UNDER PEER REVIEW

Table 3: Participants knowledge of risk factors on breast cancer

<i>Parameters</i>	Number	Percentage (%)	P value
<i>Smoking</i>			
<i>Yes</i>	136	45.3	0.003
<i>No</i>	164	54.7	
<i>Genes</i>			
<i>Yes</i>	191	63.7	< 0.001
<i>No</i>	109	36.3	
<i>Age</i>			
<i>Yes</i>	107	35.7	0.003
<i>No</i>	193	64.3	
<i>Weak Immune system</i>			
<i>Yes</i>	192	64	< 0.001
<i>No</i>	108	36	
<i>Being Obese or overweight</i>			
<i>Yes</i>	84	28	0.297
<i>No</i>	216	72	
<i>Taking hard drugs</i>			
<i>Yes</i>	165	55	0.040
<i>No</i>	135	45	

Taking alcohol

<i>Yes</i>	115	38.3	0.255
<i>No</i>	185	61.7	

UNDER PEER REVIEW

Table 4: Levels of awareness of the early warning signs and symptoms of breast cancer.

<i>Parameters</i>	<i>Number</i>	<i>Percentage (%)</i>	<i>P value</i>
<i>Redness of affected Breast</i>			
<i>Yes</i>	209	69.7	< 0.001
<i>No</i>	91	30.3	
<i>Irritation of Breast</i>			
<i>Yes</i>	217	72.3	< 0.001
<i>No</i>	83	27.7	
<i>Swelling of the Breast</i>			
<i>Yes</i>	249	83	< 0.001
<i>No</i>	51	17	
<i>Rash on Breast</i>			
<i>Yes</i>	185	61.7	0.029
<i>No</i>	115	38.3	
<i>Abnormal Nipple discharge</i>			
<i>Yes</i>	231	77	0.048
<i>No</i>	69	23	
<i>Lumps in Breast</i>			
<i>Yes</i>	257	85.7	< 0.001
<i>No</i>	43	14.3	

Changes in the shape of Nipple

<i>Yes</i>	194	64.7	< 0.001
<i>No</i>	106	35.3	

Lumps around collar bone

<i>Yes</i>	163	54.3	< 0.001
<i>No</i>	137	45.7	

***Abnormal pain in the breast that remains after
period ends***

<i>Yes</i>	201	67	0.001
<i>No</i>	99	33	

Sore or wound on Breast

<i>Yes</i>	187	62.3	0.296
<i>No</i>	113	37.7	

Table 5: Participant awareness and practice of SBE and CBE

<i>Parameters</i>	<i>Number</i>	<i>Percentage (%)</i>	<i>P value</i>
<i>Heard of SBE and CBE</i>			
<i>Yes</i>	242	80.7	< 0.001
<i>No</i>	58	19.3	
<i>Have you done SBE?</i>			
<i>Yes</i>	192	64	< 0.001
<i>No</i>	108	36	
<i>Ever done CBE?</i>			
<i>Yes</i>	56	18.7	0.017
<i>No</i>	244	81.3	
<i>How often do you check?</i>			
<i>Daily</i>	28	9.3	< 0.001
<i>Weekly</i>	39	13	
<i>Monthly</i>	127	42.3	
<i>Never</i>	106	35.5	
<i>How did you know about SBE and CBE</i>			
<i>Social media</i>	193	64.3	0.022
<i>Seminar</i>	71	23.7	
<i>News paper</i>	11	3.7	
<i>Television</i>	22	7.3	
<i>Never</i>	3	1	

Table 6 Observations made and changes detected by participant during SBE

<i>Parameters</i>	<i>Number</i>	<i>Percentage</i> <i>(%)</i>	<i>P</i> <i>value</i>
<i>Lump in Breast</i>			
<i>Yes</i>	54	18	< 0.001
<i>No</i>	246	82	
<i>Change in Nipple</i>			
<i>Yes</i>	24	8	0.017
<i>No</i>	276	92	
<i>Abnormal Nipple discharge</i>			
<i>Yes</i>	21	7	0.005
<i>No</i>	279	93	
<i>Abnormal breast pain that remains after period end</i>			
<i>Yes</i>	49	16.3	0.071
<i>No</i>	251	83.7	
<i>Lumps in collar bone</i>			
<i>Yes</i>	35	11.7	0.040
<i>No</i>	265	88.3	

Lumps in armpit

<i>Yes</i>	43	14.3	0.006
<i>No</i>	257	85.7	

Are you aware that the above could be signs ofBreast

cancer

<i>Yes</i>	187	62.3	<0.001
<i>No</i>	113	37.7	

UNDER PEER REVIEW

Table 7: Further Steps Taken by the students after discovering warning signs during SBE

<i>Parameters</i>	<i>Number</i>	<i>Percentage (%)</i>	<i>P value</i>
<i>See Doctor</i>			
<i>Yes</i>	91	30.3	0.022
<i>No</i>	209	60.7	
<i>Did Lab screening</i>			
<i>Yes</i>	71	23.7	0.014
<i>No</i>	229	76.3	
<i>Remove Lumps</i>			
<i>Yes</i>	50	16.7	0.453
<i>No</i>	250	83.3	