

Breast Cancer Knowledge and Screening Practices among Female Nurses in a Tertiary Hospital in North Central, Nigeria

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Abstract

Background: Breast cancer is a global burden and has become a major public health concern. Early diagnosis through screening is the best way to achieve cure, reduce morbidity and mortality from breast cancer. Many of the women in this environment have little or no knowledge about breast cancer and the attitude and orientation of health-care professional are important determinants of the use of breast screening program. **Aim:** The aim of the study was to evaluate the knowledge and practice of breast cancer screening among female nurses in the Bida, Niger state. **Materials and Methods:** This study was a cross-sectional conducted among female nurses in Federal Medical Centre, Bida, between May and August 2021. The questionnaire contained 20 questions on the knowledge of breast cancer. Each correct answer had a score of 1 and 0 for an incorrect answer or “don’t know.” The overall score was calculated for each respondent by summing up the symptom and risk score. It was graded as 0–9 = Poor and 10–20 = Good. Data collected were analyzed by computer analysis using the SPSS version 25. **Results:** A total of 150 female nurses participated in the study with mean age of 41.7 ± 8.1 years. Overall assessment of the respondent’s knowledge of breast cancer revealed that 112 (74.7%) of them had good knowledge and 38 (25.3%) had poor knowledge. Only 59 (38.3%) practice breast self-examination monthly. Concerning clinical breast examination, 22 (14.7%) of them have had their breast examined before by a health professional while 12 (8%) of the participants had done mammography before. **Conclusion:** Our findings highlight that the knowledge of breast cancer among female nurses was good but it has not really translated into practices of the preventive measures for early detection of breast cancer.

Keywords: Breast cancer, knowledge, practice

INTRODUCTION

The estimated global burden of breast cancer is expected to cross 2 million by the year 2030.^[1] Breast cancer is a major public health problem worldwide due to its high incidence-prevalence, the over-burdened implication on the health-care system and cost of medical care.^[2] The mortality rate of breast cancer is higher among Sub-Saharan African women when compared to women in Western countries, even though the incidence is much higher in Western women.^[3,4] Apart from the fact that African women are more prone to the aggressive form of breast cancer, the higher mortality rate (22.3/100,000) compared to developed countries like Northern American 12.5/100,000 can also be attributed to a lack of public awareness of the disease, absence of organised screening programs, delayed presentation, and lack of access to health care.^[5,6]

If breast cancer is discovered early, cure can be achieved. However, the only way to reduce mortality from breast cancer is early detection through screening.^[7] For screening practice to improve, there is a need to improve the knowledge and create awareness of breast cancer among women. Breast cancer awareness is an effort geared toward improving knowledge and decrease the stigma of breast cancer through education on the symptoms, signs, risk factors, and treatment modality, hoping that the increased knowledge will lead to earlier detection of the

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disease.^[8] For any woman to go early to the hospital to see a doctor, she must be able to recognize symptoms of breast cancer which can only come through knowledge and awareness of the disease.

The nurses who constitute a major part of health workers often give health talks in clinics and interact with patients and their relations; they can play a significant role in educating the patients about breast cancer and various screening methods.^[9] For nurses and other health workers to be effective in promoting any health behavior, they must possess the appropriate and adequate knowledge, must have the right attitude and beliefs concerning the health behaviour being promoted.^[7] If the knowledge of breast cancer is poor among those who should teach others, there will be difficulty in promoting these life-saving methods in the community. There is a need for the nurses to have good knowledge of breast cancer symptoms and signs, risk factors, and various screening practices. The result of this will guide us on how to incorporate them into the breast screening practice in the hospital and their various communities.

This study aimed to evaluate the knowledge and practice of breast cancer screening among female nurses in the Federal Medical Centre, Bida, Niger State.

MATERIALS AND METHODS

This study was cross-sectional conducted among female nurses in Federal Medical Centre, Bida between May and August 2021. Data were collected using a questionnaire designed online with Google forms. A 60 itemed, structured, pretested, self-administered questionnaire was used as the tool for data collection. The questionnaire was used to obtain the following; sociodemographic characteristics, knowledge of breast cancer symptoms and signs, breast cancer risk factors, awareness, knowledge, and practice of breast cancer screening. The questionnaire was transmitted electronically to female nurses in the center through WhatsApp messaging app. Female nurses who consented to the study completed the questionnaire using their mobile electronic devices and on submission, their responses were received real time through the Google account drive of the principal investigator. The questionnaire contained 20 questions on knowledge of breast cancer, of which 10 questions assessed their knowledge about symptoms and signs of breast cancer and the other 10 questions assessed their knowledge of breast cancer risk factors. Each correct answer was assigned a score of 1 while a score of 0 was given for an incorrect answer or "I don't know." A total score for each respondent was computed by summing the number of correct answers.

Respondents' symptom and risk scores were summed up and Graded as '0-4 = poor and 5-10 = good, respectively. The overall knowledge score was then calculated for each respondent by summing up the symptom and risk scores. It was Graded as 0-9 = Poor and 10-20 = Good. Data collected were analyzed by computer analysis using the IBM SPSS Statistics for Windows 25.0. (IBM Corp., Armonk, NY, USA).

Approval was obtained from the health research ethics committee. Informed consent was obtained from all participants recruited into the study. Absolute confidentiality was observed.

RESULTS

A total of 150 female nurses participated in the study with a mean age of 41.7 ± 8.1 years. Most of them were above 40 years 98 (65.4%) with the highest respondent 76 (50.7%) were between the aged 41 and 50 years. Most of the respondents were married 132 (88%) and Nupe 58 (38.7%) by tribe, a higher proportion of respondents had Bachelor of Science as their highest level of education 76 (50.7%) [Table 1].

On the overall assessment of the respondent's knowledge of breast cancer, the study showed that 119 (79.3%) had good knowledge of the disease while 31 (20.7%) poor knowledge [Figure 1]. The overall mean knowledge score of breast cancer of the respondent was 12.6 ± 3.6 . The mean knowledge score of symptoms/signs was 6.7 ± 1.9 while the

Table 1: The sociodemographic characteristics of respondents

Variables	Frequency (150) (%)
Age in group	
21-30	15 (10.0)
31-40	37 (24.7)
41-50	76 (50.7)
51-60	22 (14.7)
Marital status	
Single	15 (8.7)
Married	132 (88.0)
Widowed	4 (2.7)
Separated	1 (0.7)
Tribe	
Nupe	58 (3.7)
Yoruba	42 (28.0)
Igbo	12 (8.0)
Hausa	3 (2.0)
Other	35 (23.3)
Rank	
SN	10 (6.7)
NO 2	16 (10.9)
NO 1	8 (5.3)
SNO	37 (18.0)
PNO	27 (18.0)
ACNO	28 (18.7)
CNO	30 (20.0)
ADNS	4 (2.7)
Level of education	
RN	69 (46)
BSc	76 (50.7)
MSc	5 (3.3)

SN: Staff nurse, NO: Nursing officer, SNO: Senior nursing officer, PNO: Principal nursing officer, ACNO: Assistance chief nursing officer, CNO: Chief nursing officer, ADNS: Assistance director of nursing service, RN: Registered nurse, BSc: Bachelor of science, MSc: Master of science

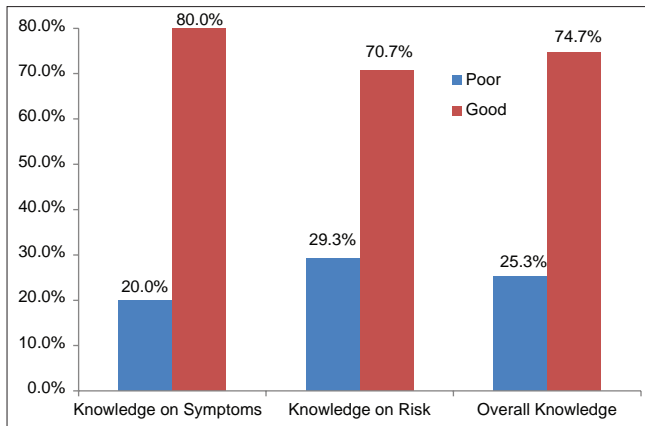


Figure 1: The knowledge score grade of respondents

mean knowledge score of risk factors was 5.9 ± 2.4 . The result revealed that their knowledge of symptoms of breast cancer is better than risk factors ($P < 0.001$).

In respect to their sociodemographic characteristics and their knowledge of breast cancer, it was only their level of education that had a significant relationship ($P < 0.01$), those with a higher degree had better knowledge of breast cancer [Table 2].

Knowledge of breast self-examination

Majority of the respondents 148 (98.7%) have heard about breast self-examination (BSE) and 147 (96.7%) believed it was a useful tool for early detection of breast cancer. A large proportion of respondents believed that BSE should start at puberty 120 (71.3%) and most 109 (65.3%) thought BSE should be done by monthly. A significant number of respondents 85 (54.0%) thought BSE is best done a week after menstruation [Table 3].

Knowledge of clinical breast examination

Majority of the respondents 141 (78.0%) have heard about clinical breast examination (CBE) and they knew CBE is a useful tool for the detection of breast cancer. A proportion of respondents 54 (36.0%) thought CBE should be done yearly while majority believed 70 (46.7%) CBE should be done using palpating hand. In response to who should perform CBE, 114 (76%) believed that it should be done by doctor, 31 (20.7%) by trained nurse and 2 (2%) by individuals [Table 4].

Knowledge of mammography

A great proportion of 139 (92.7%) respondents have heard about mammography and majority 139 (92.7%) affirmed that it is a useful tool for early detection of breast cancer. Only 60 (40%) of them thought mammography should start from 40 years and 65 (43.3%) affirmed it should be done yearly. Majority of them 86 (57.7%) were willing to pay <N 5000 for annual mammography [Table 5].

Practice of the screening methods

Concerning the BSE, majority of them practice it 143 (95.3%), however, only 59 (38.3%) practice it monthly. There were only 22 (14.7%) respondents who have done CBE before

Table 2: Relationship between sociodemographic and knowledge of breast cancer of the respondents

Variables	Knowledge score (%)			χ^2	P		
	Poor	Good	Total				
Age in group							
21-30	1 (13.3)	14 (86.7)	15 (10)	7.5	0.06		
31-40	8 (24.3)	28 (75.7)	37 (24.7)				
41-50	21 (34.2)	55 (65.8)	76 (50.7)				
51-60	1 (4.5)	21 (95.5)	22 (14.6)				
Marital status							
Single	2 (15.4)	11 (84.6)	13 (8.7)	0.5	0.90		
Married	1 (50.0)	104 (74.2)	132 (88)				
Widowed	28 (25.8)	3 (50.0)	42 (100.0)				
Separated	0	1 (1.0)	1 (0.7)				
Tribe							
Nupe	12 (20.7)	46 (79.3)	58 (100)	2.3	0.67		
Yoruba	10 (23.3)	32 (76.2)	42 (100.0)				
Igbo	1 (0.7)	11 (7.3)	12 (8.0)				
Hausa	0	3 (2.0)	3 (2.0)				
Others	8 (5.3)	27 (18.0)	35 (23.3)				
Rank							
SN	3 (2.0)	7 (4.7)	10 (6.7)	4.9	0.69		
NO 2	2 (12.5)	14 (87.5)	16 (10.7)				
NO 1	2 (25.0)	6 (75.0)	8 (5.3)				
SNO	8 (19.6)	19 (70.4)	27 (18.0)				
PNO	9 (33.3)	18 (66.7)	27 (18.0)				
ACNO	7 (25.0)	21 (75.0)	28 (18.7)				
CNO	7 (23.3)	23 (76.7)	30 (20.0)				
ADNS	0	4 (100)	4 (2.7)				
Level of education							
RN	24 (16.0)	45 (30.0)	69 (46.0)			15.9	<0.01
BSc	6 (4.0)	70 (46.7)	76 (50.7)				
MSc	1 (0.7)	4 (2.7)	5 (3.3)				

SN: Staff nurse, NO: Nursing officer, SNO: Senior nursing officer, PNO: Principal nursing officer, ACNO: Assistance chief nursing officer, CNO: Chief nursing officer, ADNS: Assistance director of nursing service, RN: Registered nurse, BSc: Bachelor of science, MSc: Master of science

while only 14 (9.8%) of them had done it in the past three years. In addition, only 12 (8%) respondents who have done mammography before and 2 of them were below the age of 40 years [Table 6]. Only 7 (4.7%) of them had done it in the past three years. When their level of education which was found to be statistically significant with the knowledge of breast cancer was compared to the practice of BSE, it was found not to be statistically significant [$P = 0.5$ Table 6].

DISCUSSION

With the growing burden of breast cancer worldwide, there is an important need for the health caregiver to also increase their knowledge of the disease to educate the timid population on how to prevent the disease and give standard care to those who have come down with the disease. This formed the basis for our study, to highlight how much of the knowledge of breast cancer the female nurses in our center have and how much they have been involved in the practice of breast cancer screening methods.

Table 3: The knowledge of breast self-examination among respondents

Variable	Frequency (150) (%)
Have you heard about BSE?	
Yes	148 (98.7)
No	2 (2.7)
BSE is useful tool detection of breast cancer	
Yes	147 (98)
No	1 (0.7)
I do not know	2 (1.3)
Have you been thought how to perform BSE?	
Yes	148 (98.7)
No	2 (2.7)
At what age should BSE start	
From puberty	120 (80)
From 20 years	25 (16.7)
From 30 years	3 (2.0)
After menopause	2 (1.3)
How often should be done?	
Daily	17 (11.3)
Monthly	109 (72.7)
Weekly	20 (13.3)
Yearly	4 (2.7)
What is the best to perform BSE?	
A week after menses	85 (56.7)
During menstrual period	36 (24.0)
Anytime	29 (19.3)
Do you practice BSE?	
Yes	143 (95.3)
No	7 (4.7)
How often do you practice BSE?	
Daily	12 (8.0)
Weekly	14 (9.3)
Monthly	59 (38.3)
Occasionally	58 (38.7)
None	7 (4.7)

BSE: Breast self-examination

Knowledge deficit among health-care professionals has been identified as a potential barrier to breast cancer prevention and early detection, given their leading role and contribution in spreading the knowledge and awareness of screening methods, particularly in primary care settings across the world.^[10-12] Previous studies have shown that nurses who have adequate knowledge about breast cancer can make a meaningful contribution toward the early detection of breast cancer.^[13,14] This present study showed that nurses in the center have very good knowledge of breast cancer. This was similar to previous studies conducted among nurses in Nigeria.^[15,16]

This is not unexpected because the subject of breast cancer would have been part of their curriculum in nursing school and also in practice; they must have seen and be involved in the management of patients with breast cancer. Nurses' knowledge about breast cancer may be a useful tool in increasing the awareness and knowledge of breast cancer among women in the hospital setting and community. They can also be sources

Table 4: The knowledge of clinical breast examination among respondents

Variables	Frequency (150) (%)
Have you heard of CBE?	
Yes	139 (92.7)
No	11 (7.3)
CBE is useful tool for detection of breast cancer	
Yes	141 (94.0)
No	6 (4.0)
I do not know	3 (2.0)
CBE can be performed by who?	
A trained	31 (20.7)
Doctor	114 (76.0)
Individual	3 (2.0)
Others	2 (1.3)
CBE is perform using	
Hand	70 (46.7)
Ultrasound	15 (10.0)
Mammography	57 (3.8)
I do not know	8 (5.3)
How often should CBE be done?	
Daily	3 (2.0)
Weekly	4 (2.7)
Monthly	39 (26.0)
Twice in a year	50 (33.3)
Yearly	54 (36.0)
Have you done CBE before?	
Yes	22 (14.7)
No	128 (85.3)

CBE: Clinical breast examination

of disseminating information about breast cancer in the wards, outpatient clinics, at home, social and religious gatherings.

From this study, they were all aware of breast cancer 100% and majority of them were aware of BSE (98.7%), CBE (92.7%), and mammography (92.7%).

Breast self-examination

The value of BSE has been a subject of debate as there is no consensus that it is a useful breast cancer screening.^[17] In developing countries where accessibility, affordability, and availability of sophisticated diagnostic screening methods are difficult to access in terms of cost and availability, BSE still remains the most readily available methods of screening.^[18] Majority of the respondents believed that it is a useful diagnostic tool for screening of breast cancer.

Majority of the female health professionals including nurses do not know the age BSE should start. Most of them think BSE should start at puberty rather than at the age year of 20 years recommended by the American Cancer Society Guideline.^[19,20] Their belief may due to the significant change that occurs in female breast at puberty. From this study, only 12.7% knew BSE should start at the age of 20 years while a significant proportion (71.3%) of nurses believed it should start at puberty. This has also been observed in other studies.^[21] Even though

the majority of them claimed to practice BSE, only 35.3% of them practice it monthly. This finding was similar to what has been previously documented in literature about the monthly practice of self-breast examination among female nurses which remain low.^[15,22,23] This study showed that knowledge is not always synonymous to practice.

Clinical breast examination

One of the recommended options of the American Cancer Society Guideline in breast cancer screening is CBE in low socioeconomic status where mammography is not easily

accessible in terms of cost and availability.^[18] CBE should be done every three years for women in their twenties and thirties, and every year for women at the age of 40 years and over.^[19] From this study, there was high awareness of CBE as useful screening tool for breast cancer. This was an improvement when compared with the result that was obtained in 2008 in Lagos where only 41% of the nurses who participated in the study knew that CBE as screening method.^[16] The time gap between the study may account for the significance as knowledge is increase daily and the dissemination is spreading fast. However, Bello *et al.* in a study on awareness of nurses on CBE as a screening tool reported an awareness rate of 93.2% among nurses which is slightly higher than that of our study. His study showed that only 26% of the participants have had their breast examined by a health professional in the past one year.^[24]

Mammography

Majority of the respondents agreed that mammography is a useful diagnostic tool for breast cancer but only 17% of those who are eligible for mammography had actually had a mammography done. This follows a similar pattern to what is generally seen among health professional including nurses in Nigeria.^[15,24,25] This is contrary to what is obtainable in the western world. From the Europe database on screening mammography among women between 50 and 69 years, majority of the women have had mammogram done at least once in their lifetime. Among the countries studied, France has the highest proportion of their women (92.9%), followed by Spain (92.3%), Austria and Germany (90%), Belgium (89.5%), and Hungary (86.9%).^[26] This great compliance may be due to an organized screening program which is absent in our country.

From the study, 40 (43%) of the respondents claimed that not availability mammography in the center was the reason why mammogram has not been done. Some of the reasons for low practice of mammography were due to lack of awareness, absence of national screening programs, and lack of facilities for mammography.^[22]

CONCLUSION

Our study highlight that nurses were fully aware of breast cancer and have good knowledge of the disease. However,

Table 5: The knowledge of mammography among respondents

Variables	Frequency (150) (%)
Have you heard about mammography?	
Yes	139 (92.7)
No	11 (7.3)
Is mammography useful tool for detecting breast cancer?	
Yes	139 (92.7)
No	4 (2.7)
I do not know	7 (4.7)
At what age should mammography?	
At puberty	33 (22.0)
From 20 years	31 (20.7)
From 30 years	26 (17.3)
From 40 years	60 (40)
How often should mammography be done?	
Weekly	1 (0.7)
Monthly	9 (6.0)
Yearly	65 (43.3)
Every five years	22 (14.7)
When a lump is found in BSE/CBE	35 (23.3)
Have you ever done mammography?	
Yes	12 (8.0)
No	138 (92.0)
How much you afford for annual mammography?	
<5000	86 (57.7)
5000-10,000	31 (20.7)
11,000-15,000	7 (4.7)
16,000-20,000	8 (5.3)
>20,000	18 (12.0)

BSE: Breast self-examination, CBE: Clinical breast examination

Table 6: Relationship between level of education, knowledge, and breast cancer screening practice

	Screening method			Total	χ^2	P
	BSE	CBE	Mammography			
Level of education						
RN	65	11	8	84	2.3155	0.677945
BSc	73	10	4	87		
MSc	5	1	0	6		
Level of knowledge						
Poor	29	4	3	36	1.2062	0.547103
Good	114	8	9	131		

BSE: Breast self-examination, CBE: Clinical breast examination, RN: Registered nurse, BSc: Bachelor of science, MSc: Master of science

the knowledge of breast cancer they possess had not really translated into practices of the preventive measures for early detection of breast cancer. It is thus recommended that health agencies in the country implement national breast cancer screening campaigns/programs to improve the uptake of screening practices. Furthermore, the government should improve access to mammography by ensuring all secondary and tertiary facilities are equipped with functional mammography machines.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

- Jemal A, Bray F, Center MM, Ferlay J, Ward E, Forman D. Global cancer statistics. *CA Cancer J Clin* 2011;61:69-90.
- Bray F, Ren JS, Masuyer E, Ferlay J. Global estimates of cancer prevalence for 27 sites in the adult population in 2008. *Int J Cancer* 2013;132:1133-45.
- Fregene A, Newman LA. Breast cancer in sub-Saharan Africa: How does it relate to breast cancer in African-American women? *Cancer* 2005;103:1540-50.
- Ly M, Antoine M, André F, Callard P, Bernaudin JF, Diallo DA. Breast cancer in Sub-Saharan African women: Review. *Bull Cancer* 2011;98:797-806.
- Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A, *et al.* Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin* 2021;71:209-49.
- Wadler BM, Judge CM, Prout M, Allen JD, Geller AC. Improving breast cancer control via the use of community health workers in South Africa: A critical review. *J Oncol* 2011;2011:150423.
- Bastani R, Maxwell AE, Carbonari J, Rozelle R, Baxter J, Vernon S. Breast cancer knowledge, attitudes, and behaviors: A comparison of rural health and non-health workers. *Cancer Epidemiol Biomarkers Prev* 1994;3:77-84.
- Asuquo IM, Olajide TE. The role of health education on breast cancer awareness among University of Calabar female undergraduates. *J Educ Pract* 2015;6:151-61.
- Wilkes L, White K, Beale B, Cole R, Tracy S. Supportive care for women with breast cancer: Australian nurses' perspective. *Nurs Health Sci* 1999;1:71-6.
- Yousuf SA, Al Amoudi SM, Nicolas W, Banjar HE, Salem SM. Do Saudi nurses in primary health care centres have breast cancer knowledge to promote breast cancer awareness? *Asian Pac J Cancer Prev* 2012;13:4459-64.
- Oluwatosin O. Primary health care nurses' knowledge practice and client teaching of early detection measures of breast cancer in Ibadan. *BMC Nurs* 2012;11:22.
- Lemlem SB, Sinishaw W, Hailu M, Abebe M, Aregay A. Assessment of knowledge of breast cancer and screening methods among nurses in University hospitals in Addis Ababa, Ethiopia, 2011. *ISRN Oncol* 2013;2013:470981.
- Lee SO, Sim ES, Ahn S. Factors affecting periodic screening behaviors for breast cancer among hospital nurses. *Korean J Women Health Nurs* 2010;16:390-8.
- Dunn RA, Tan AK. Utilization of breast cancer screening methods in a developing nation: Results from a nationally representative sample of Malaysian households. *Breast J* 2011;17:399-402.
- Odusanya OO, Tayo OO. Breast cancer knowledge, attitudes and practice among nurses in Lagos, Nigeria. *Acta Oncol* 2001;40:844-8.
- Awodele O, Adeyomoye AA, Oreagba IA, Dolapo DC, Anisu DF, Kolawole SO, *et al.* Knowledge, attitude and practice of breast cancer screening among nurses in Lagos University Teaching Hospital, Lagos Nigeria. *Nig Q J Hosp Med* 2009;19:114-8.
- Kearney AJ, Murray M. Evidence against breast self examination is not conclusive: What policymakers and health professionals need to know. *J Public Health Policy* 2006;27:282-92.
- Ojewusi A, Obembe T, Arulogun O, Olugbayela T. Breast cancer awareness, attitude and screening practices in Nigeria: A systematic review. *Clin Rev Opin* 2016;7:11-25.
- Smith RA, Saslow D, Sawyer KA, Burke W, Costanza ME, Evans WP 3rd, *et al.* American cancer society guidelines for breast cancer screening: Update 2003. *CA Cancer J Clin* 2003;53:141-69.
- Kerlikowske K, Hubbard RA, Miglioretti DL, Geller BM, Yankaskas BC, Lehman CD, *et al.* Comparative effectiveness of digital versus film-screen mammography in community practice in the United States: A cohort study. *Ann Intern Med* 2011;155:493-502.
- Madubogwu CI, Egwuonwu AO, Madubogwu NU, Njelita IA. Breast cancer screening practices amongst female tertiary health worker in Nnewi. *J Cancer Res Ther* 2017;13:268-75.
- Agwu UM, Ajaero EP, Ezenwelu CN, Agbo CJ, Ejikeme BN. Knowledge, Attitude and practice of breast self examination among nurses in Ebonyi State University Teaching Hospital Abakaliki. *Ebonyi Med J* 2007;6:44-47. Available from: <https://www.ajol.info/index.php/ebomed/article/view/41499>. [Last accessed on 2022 Mar 28].
- Yakubu AA, Gadanya MA, Sheshe AA. Knowledge, attitude, and practice of breast self-examination among female nurses in Aminu Kano teaching hospital, Kano, Nigeria. *Niger J Basic Clin Sci* 2014;11:85.
- Bello TO, Olugbenga-Bello AI, Oguntola AS, Adeoti ML, Ojemakinde OM. Knowledge and practice of breast cancer screening among female nurses and lay women in Osogbo, Nigeria. *West Afr J Med* 2011;30:296-300.
- Akhigbe AO, Omuemu VO. Knowledge, attitudes and practice of breast cancer screening among female health workers in a Nigerian urban city. *BMC Cancer* 2009;9:203.
- Wuebker A. Who gets a mammogram amongst European women aged 50-69 years? *Health Econ Rev* 2012;2:6.