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Assessment of Breast Cancer Knowledge and Screening Services amongst Women of Reproductive age group in northwestern Nigeria

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Abstract: Breast cancer is a global public health burden, with persistently low awareness and limited practice of preventive examinations. Mortality has risen sharply, making it the fifth leading cause of death and the most common cancer among women worldwide. While early detection through self-examination, clinical evaluation, and mammography improves prognosis, most patients in sub-Saharan Africa, particularly Nigeria, present at late stages due to poor awareness, lack of organized screening programs, and inadequate diagnostic and treatment facilities.

A cross-sectional descriptive study amongst 303 women of reproductive age group was used to assess the awareness, knowledge and screening practices of breast cancer among living in military cantonments in Kaduna State, Nigeria.

The results show a progressive level of low awareness of breast self-examination, clinical self-examination and mammography, underscoring the urgent need for intensified awareness campaigns and empowerment initiatives to encourage women to take responsibility for their health and wellbeing.

Keywords: *Breast self-examination, Clinical Self Examination, mammography*.

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Introduction

Breast cancer (BC) is the leading female malignancy in the world as well as in Nigeria, accounting for 35% of all female cancers and the leading cause of cancer related death in women. It is the commonest cause of death in developed countries in middle aged women.[1-6] In 2020, nearly 1.6 million women worldwide were diagnosed with breast cancer, accounting for approximately 25% of all cancer cases and 14% of the cancer deaths in women.[5] In 2022, a total of 1.7million new cases of breast cancer were identified across the globe, which represented about 12% of all new cancer cases and 35% of all cancers in women, furthermore, there were 6.3 million women alive who had been diagnosed with breast cancer in the previous five years.[7] Although, breast cancer previously thought to be a disease of the developed world but with almost 50-53 percent of all breast cancer cases and 58% of breast cancer deaths in 2012 now occurring in less developed countries, this line of thought has now changed.[3,8,9]

Early-stage disease is associated with a better prognosis than late-stage disease.[11] The five year breast cancer survival rate in Nigeria is less than 10% compared with over 70% in Western Europe and North America, Earlier stage at diagnosis, combined with therapeutic advances, was a major contributor to the sharp reductions in breast cancer mortality rates in the past two decades in most High Income Countries.[12] By contrast, most patients with breast cancer in sub-Saharan Africa present with late-stage disease, thought to be due to poor awareness, an absence of organised early detection programmes, and poor facilities for accurate and timely diagnosis and treatment.[13-20] This lapse of time between awareness of a problem and seeking medical attention can affect diagnosis, treatment and prognosis.

Women need to be 'breast aware'. By being 'breast aware', a woman is able to recognise symptoms of breast cancer through regular breast examination practice.

It is in line with this awareness campaign that the WHO chose the 5th day of October every year as a day set aside to raise awareness on breast cancer in order to increase advocacy and support for breast cancer detection and early management of the disease.

Materials and Methods

Study Area

There are three military cantonments in Kaduna State namely Ribadu Military Cantonment, Jaji Military Cantonment and Depot Nigerian Army (Depot NA). The 4 Demonstration battalion is

located in Jaji Military Cantonment (45 km from Zaria on the Kano-Kaduna high way).

The Medical centre in the cantonments offer medical services such as out-patient consultation, family health services, routine immunization services, Health Education, prenatal, antenatal and post-natal services, laboratory services, special disease clinics (TB, HIV), Pharmaceutical services, environmental health services, and referral to tertiary health centres, the medical director (usually a military officer) serves as the medical adviser to the commandant.

Study Design

Cross-sectional descriptive study involving 303 women of reproductive age group, randomly selected from military cantonments in Kaduna State.

Study Population

The study population included all women resident in Military Cantonments in Kaduna State.

Inclusion criteria

Any woman within reproductive age group who is a resident of the cantonment for at least six months before the study and shall not be relocating out of any of the cantonments during the period of the study.

Exclusion criteria: Age: If less than 20 years old. (This is because breast examination is recommended from age 20 years).

Sample Size Determination

The formula for populations less than 10,000 as given by Araoye [22] is given as follows**:**

$$n = \frac{\left(Z\frac{a}{2}\right)^2 x\ P(1-P)}{d^2}$$

Where n=minimum sample size for a single population parameter
Z=Normal standard deviation (1.96)
P=Proportion of respondents who practice BSE from previous study[2]
d=desired precision
q=proportion of respondents not practicing BSE
In addition to 10% non-response
n=302

Community entry

At the beginning of the study, familiarization and advocacy visits were undertaken to the Commandant and women leaders.

Sampling Technique

- **Stage 1 (Selection of study cantonment):** One cantonment was selected from the list of three cantonments in Kaduna State, using simple random sampling via a method of balloting;
- **Stage 2 (Selection of study barrack within the cantonment):** There are three barracks within Chindit Military Cantonment, one barrack was selected from the outcome of stage using the method of balloting.
- **Stage 3 (Selection of study participants):** In the selected barrack, the participants were stratified into civilians, soldiers and officers**.** The sample size was proportionately allocated to each of the stratum based on population size. The allocation is shown in table 3.1.

Table 3.1: Female population and sample allocation

Group	**Civilian**		**Soldiers**		**Officers**		**Total**	
	Total	Sample	Total	Sample	Total	Sample	Total	Sample
Depot NA	2960	285	133	13	36	4	3129	302

Results: The age ranged of respondents was 20 to 54 years with a mean age of 32.3 (±6.6years), majority of the participants being Christians (63%), furthermore, 74.6% of the respondents had secondary level education as their highest educational attainment as shown in table 4.1

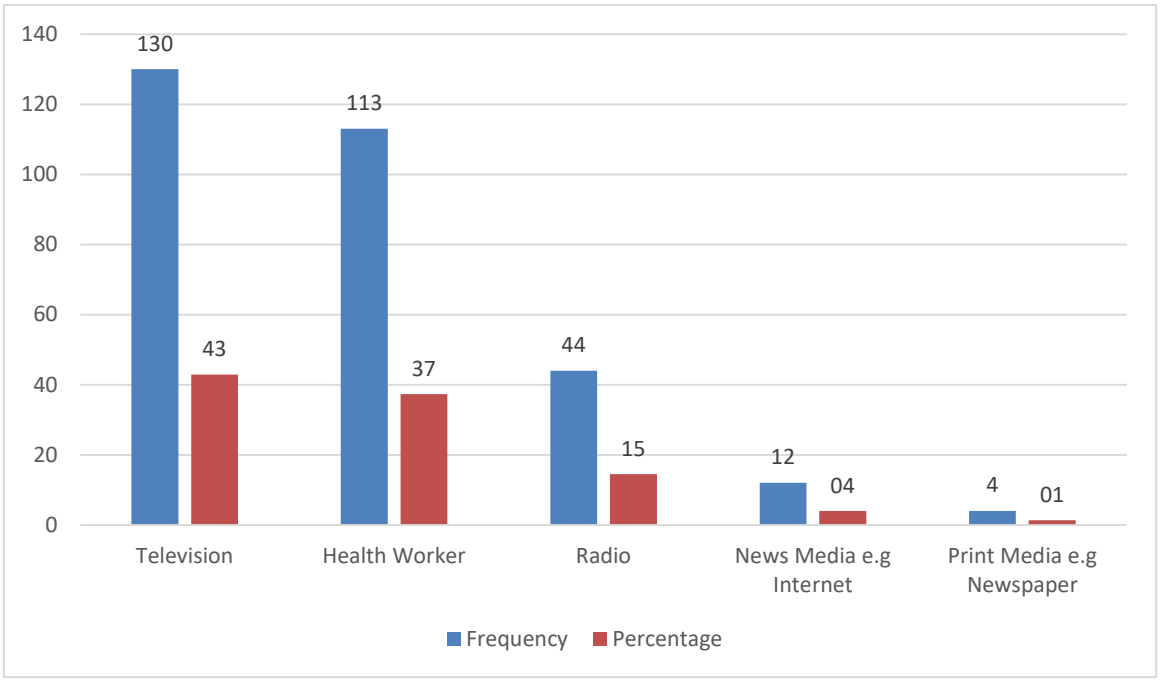
Table 4.1: Socio-demographic characteristics of respondents

Variable(s)	Frequency n=303	Percentage (%)
Age (years)		
<30	114	37.5
30-39	155	51.2
40-49	32	10.6
≥50	2	0.7
Religion		
Christianity	188	62.1
Islam	115	37.9
Level of Education		
None	1	0.3
Informal	7	2.3
Primary	52	17.2
Secondary	226	74.6
Tertiary	17	5.6
Marital Status		
Single	8	

	2.4	
Married	284	93.7
Widowed	11	3.6
Ethnicity		
Igbo	21	6.9
Hausa	159	52.5
Yoruba	55	18.2
*Others	68	22.4
Awareness of:		
Breast Cancer		
Yes	260	85.8
No	43	14.2
BSE		
Yes	170	56.1
No	133	43.9
CBE		
Yes	173	57.1
No	130	42.9
Mammography		
Yes	17	5.6
No	286	94.4
knowledge of breast cancer		
Breast cancer is the most common cancer among Nigerian women	98	32.3
Breast cancer usually presents as a painless breast lump	75	24.8
Early diagnosis improves outcome of treatment	185	61.1
Breast self-examination is useful in early diagnosis	164	54.1
Change in the colour or shape of the breast may be a sign of BC	132	43.6
Right person to carry out BSE	87	28.7
Right person to carry out CBE	95	31.4
Right person to carry out mammography	25	8.3
Frequency of Breast Self-examination	116	38.3
Frequency of Clinical Breast Examination	33	10.9
Frequency of mammography	3	1.0

The level of awareness of BC, BSE and CBE was 260 (85.8%),170(56.1%) and 173(57.1%) respectively. While awareness of Mammography was 17(5.6%), furthermore 164(54.1%) know that BSE is useful in early diagnosis, as shown in Table 4. 1

Figure 4.1: Sources of information on breast cancer



The most common source of awareness on breast cancer was television mentioned by 130(43%) of respondents, health worker 113(37%) and radio 44(15%) while the print media accounts for 4(1%).

Table 4.2: Practice of Breast self-examination by socio-demographic characteristics of respondents

Factor(s)	Practice		Test statistics (χ^2)	p-value
	Yes (n=135)	No (n=168)		
Age (years)			6.889	0.076
< 30	42(31.1)	72(42.9)		
30-39	77(57.0)	78(46.4)		
40-49	14(10.4)	18(10.7)		
≥ 50	2(1.5)	0 (0.0)		
Marital status			1.622	0.445
Single	2(1.5)	6(3.5)		
Married	127(94.1)	157(93.5)		
Widow	6(4.4)	5(3.0)		
Type of marriage			3.18	0.08
Monogamy	132 (97.8)	157(93.5)		
Polygamy	3(2.2)	11(6.5)		
Parity			5.43	0.02*
< 4	59(43.7)	96(57.1)		
≥ 4	76 (56.3)	72(42.9)		
Total	135	168		
Religion				0.408
Christianity	83(61.5)	97(57.7)	1.795	
Islam	52(38.5)	71(42.3)		
Total	135	168		
Level of Education				
None	0.0	1(0.1)	3.313	0.517
Informal	3(2.2)	4(2.4)		
Primary	28(20.7)	24(14.3)		
Secondary	98(72.6)	128(76.2)		
Tertiary	6(4.4)	11(6.5)		
Total	135	168		
Husband's occupational status				
Officer	1(0.8)	0(0.0)		0.222

soldier	129(97.7)	151(95.0)	6.170	
Civil servant	2(1.5)	4(2.5)		
Trading	0(0.0)	3(1.9)		
Others	0(0.0)	1(0.6)		
Total	132	159		
Occupational Status of woman				0.165
House wife	96(72.7)	117(71.8)	5.074	
Trading	19(14.4)	31(19.0)		
Civil servant	15(11.4)	9(5.5)		
Others	2(1.5)	6(3.7)		
Total	132	163		

Only parity was found to be associated with practice of breast self-examination as 56.3% of respondents who have had four or more deliveries practice breast self-examination (p=0.02).

Table 4.3: levels of practice of breast self-examination by awareness and knowledge of women.

Factor(s)	**Practice**		**Test statistics (χ^2)**	**p-value**
	Yes	**No**		
Awareness				, 0.018*
Yes	123(91.1)	137(82.1)	5.622	
No	12 (8.9)	31(18.5)		
Total	**135**	**168**		
Knowledge			8.088	0.004*
Good	46(34.1)	33(19.6)		
Poor	89(65.9)	135(80.4)		
Total	**135**	**168**		

P<0.05

Majority 123(91.1%) of respondents who were aware of breast cancer practice breast self-examination with a statistically significant difference (p=0.018), while 46(34.1%) of respondents with good knowledge of breast cancer practice breast self-examination, (p=0.004).

Table 4.4: Factors associated with practice of breast self-examination among respondents

Factor(s)	**P-Value**	**AOR**	**95% Confidence interval Lower-Upper**
Parity	0.015	1.800	1.122 -2.888
≥ 4		1	
< 4			
Awareness			
Yes	0.061	1.992	0.968-4.099
No		1	
Knowledge			
Good	0.005	2.162	1.263 -3.701
Poor		1	
Constant	0.000	0.269	

Parity (p=0.015), and knowledge (p=0.005) remained statistically significant in the multiple logistic model, respondents who are multiparous were 80% more likely to practice breast self-examination than non-multiparous women, also respondents with good knowledge were two times more likely to practice breast self-examination than those with poor knowledge. The confidence

intervals for parity and knowledge did not include the null value of one, making it a significant finding

Discussion

The mean age (± SD) of respondents was 32.3±7 with a range of 20 to 54 years, with majority of the respondents in the age bracket of 30 to 39 years, collaborating previous studies [23-26] however in Egypt a lower mean age and range was reported, the difference may be because the latter study was done among university students.[27] Majority of respondents in this study have secondary education, this was higher than findings from Southwest of Nigeria, this may be because the former studies were done among rural women.[23,24]

There was a progressive decline in the awareness of BC, BSE, CBE and mammography respectively, similar to findings from Zaria, Ibadan, Lagos and Benin.[1-3,23,24,26] Awareness of breast self-examination was lowest among women less than 30 years, which was a similar finding in other surveys.[4,28,] This finding underscores the need for more tailored health education messages not just on breast cancer but also on breast cancer prevention and screening services.

Television and health workers followed by radio were the mean source of information on breast cancer among respondents, This was not the same finding in Egypt where Television and health workers scored low as a source of information[29] this low value in the latter study may be because the researcher included an option of all of the above, which had a higher score, other studies also found radio as the main source of information[8,24] other sources reported by literatures include elders, neighbours, friends and siblings[30] this may be so especially for rural women. The source of information in a health education programme is important in order to enable the choice of the appropriate medium to reach the right audience, in such a way to guarantee an efficient and effective communication.

Knowledge on breast cancer among respondents was poor. This was the same finding in previous studies.[1-5,25-30] The implication of poor knowledge is that the women will not be able to recognise early symptoms and signs, therefore they present mostly with late-stage disease and complications, leading to increased morbidity and mortality as well as an increased burden on the already overstretched health care system.

Less than half of the respondents practice breast self-examination, and practice of clinical breast examination was even lower, in addition none of the respondents has had a mammography prior to the survey. This finding necessitates to need for more tailored health education messages to women in the community to take ownership and responsibility for their health by practicing breast cancer prevention and screening via Breast self-examination, clinical breast examination and mammography as may be appropriate.

Limitations

- Practice of breast examination was measured based on reported practice as opposed to observed practice because of the sensitive nature of breast examination.
- Local literature on health intervention studies on preventive services for breast cancer is few (fewer still amongst women in a community).

Conclusion

Prioritisation of Health education intervention programmes and campaigns on breast cancer prevention and control among women of reproductive age group should be welcomed by policy makers and government in order to raise awareness and empower women to take action towards their health and wellbeing.

Recommendations

1. Yearly breast cancer awareness campaigns in the month of October as declared by the World Health Organization should be supported and financed by the Nigeria army medical corps, supported and organised by the medical directors of medical centres in all cantonments and military formations, this will serve as a rallying point for women to take up breast cancer screening services, as well as support women with breast cancer disease.
2. Access to breast cancer screening services especially mammography should be provided at all medical centres in the military cantonments in Nigeria, these services should be available to all women irrespective of their ability to pay. Appropriate human resource should also be trained to provide these services; this should be the responsibility of Divisional commandants.

References

1. Agbo HA, Chingle MP, Envuladu EA, Zoakah AI. Breast Self Examination-A Necessary Preventive Tool: Knowledge and Practice among Students of College of Education Gindiri, Plateau State. Jos Journal of Medicine.6(1):47-53.
2. Gwarzo UM, Sabitu K, Idris SH. Knowledge and practice of breast self-examination among female undergraduate students. Annals of African Medicine. 2009;8(1).
3. Okobia MN, Bunker CH, Okonofua FE, Osime U. Knowledge, attitude and practice of Nigerian women towards breast cancer: a cross-sectional study. World Journal of Surgical Oncology. 2006;4(11):4-11.
4. Balogun MO, Owoaje ET. Knowledge and practice of breast self-examination among female traders in Ibadan, Nigeria. Annals of Ibadan Postgraduate Medicine. 2005;3(2):52-6.
5. Omotara B,Yahya S,Amodu M,Bimba J.Awareness attitude andprevalence of rural women regarding breast cancer in north east Nigeria,Journal of Community Medicine and Health Education 2012;2(5),1-4
6. Bellgam HI, Buowari YD. Knowledge, Attitude and Practice of Breast Self Examination among Women in Rivers State, Nigeria. Nigerian Health Journal. 2012;12(1):16-8.
7. Breast cancer statistics:world cancer research fund international 2020 [cited 2025 10 October]. Available from: www.wcrf.org/int/cancer-fact-figures/data-specific-cancer/breast.
8. Afolayan A,Olaoye O.Breast cancer trends in Nigerian population,an analysis of cancer registry

data;International Journal of life Sciences and Pharma Research; 2012;2(3),29-34

9. International Agency for Research on Cancer 2015 [cited 2025 09 August]. Available from: http://globocan.iarc.fr/Default.aspx.
10. Kene TS, Odigie VI, Yusufu LM, Yusuf BO, Shehu SM, Kase JT. Pattern of presentation and survival of breast cancer in a teaching hospital in North Western Nigeria. . Oman Medical Journal 2010;25:104-7.
11. Allemani C, Weir HK, Carreira H. Global surveillance of cancer survival 1995–2009: Analysis of individual data for 25 676 887 patients from 279 population-based registries in 67 countries Lancet 2015;8(5):977-1010.
12. Mabula JB, McHembe MD, Chalya PL. Stage at diagnosis,clinicopathological and treatment patterns of breast cancer at Bugando Medical Centre in north-western Tanzania Journal of Health Research. 2012;1(4):269-79.
13. Okobia MN, Osime U. Clinicopathological study of carcinoma of the breast in Benin city. African Journal of Reproductive Health. 2004;5:56-62.
14. Pearson JB. Carcinoma of the breast in Nigeria. A review of 100 patients. British Journal of Cancer research. 1963;17:559-65.
15. Winters Z, Mannell A, Esser JD. Breast cancer in black South Africans South African Journal of Surgery.26:69-70.
16. Gebremedhin A, Shamebo M. Clinical profi le of Ethiopian patients with breast cancer. East African Medical Journal. 1998;75:640-3.
17. Basro S, elstaedt JPA. Breast cancer in young women in a limited-resource environment. World Journal of Surgery. 2010;34(5):1427-33.
18. Ntekim A, Nufu FT, Campbell OB. Breast cancer in young women in Ibadan, Nigeria. Journal of African Health Science. 2009;9:242-6.
19. Anyanwu SN. Survival following treatment of primary breast cancer in eastern Nigeria East African Medical Journal. 2000;77:539-43.
20. Ezeome ER. Delays in presentation and treatment of breast cancer in Enugu, Nigeria. Nigeria Journal of Clinical Practice 2010;13(3):311-6.
21. Mark M,Sample size and saturation in PhD studies using qualitative interviews;Journal of qualitative social research.2010;11(3);8
22. Araoye MO. Research Methodology with Statistics for health and social sciences 2004. 123-7
23. Amoran OE, Toyobo TO, Fatugase OK. Breast cancer screening awareness and practice among women in Sagamu Local Government Area, South-Western Nigeria:a Community based study. British Journal of Applied Science & Technology 2014;4(16):20-4.
24. Ajayi IO, Onibokun AC, Soyannwo OA. Breast and cervical cancer awareness and screening practices among rural women in Ona-Ora Local Government area Ibadan. African Journal of Biomedical Research. 2013;16(1):95-9.
25. Ogunbode AM, Fatiregun AA, Ogunbode OO, Adebusoye LA. Breast examination as a cost-effective screening tool in a clinical practice setting in Ibadan, Nigeria. African Journal of Primary Health Care & Family Medicine. 2013;5(1):7-14.
26. Obaji NC, Elom HA, Agwu UM, Nwigwe CG, Ezeonu PO, Umeora OUJ. Awareness and practice of breast self examination among market women in Abakaliki,South East Nigeria. Annals of Medical and Health Sciences Research. 2013;3(1):7-12.
27. Mohammad FA, Mohammed M. Efficacy of instructional Training Program in Breast Self-Examination and Breast screening For Cancer among University Students. Public Health Research 2013;3(3):71-8.
28. Isara AR, Ojedokun CI. Knowledge of breast cancer and practice of breast self examination among female senior secondary school students in Abuja, Nigeria. Journal of preventive medicine and hygiene. 2011;4(2):52-4.
29. Seham A, Abd EH, Nabila SM. Effect of educational program about breast cancer knowledge and breast self-examination training on building accurate information and behavior among women. Journal of Natural Science Reseach. 2015;5(4):58-70.
30. Oluwatosin OO,Oladepo O.Knowledge of breast cancer and its early detection measures among rural women in Akinyele local government area,Ibadan Nigeria.Biomedical central journal, 2006.6(2)27-33