

Practice and Efficiency of Breast Self-Examination Among Female Health Workers In A Premier Tertiary Hospital In Nigeria

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Abstract: Background: Recommendation by physicians has been shown to motivate women to obtain one of the breast cancer screening (BCS), however information about the contribution of female health workers (FHWs) is generally lacking in the literature. The aim of this study was to ascertain BSE practice and its efficiency among female health workers. **Methods:** A descriptive cross-sectional study was conducted among 336 consenting FHWs at the University College Hospital (UCH), Ibadan, Nigeria, using an interviewer-administered questionnaire for data collection. Descriptive statistical tests, Chi-square test and logistic regression were used for univariate, bivariate and multivariate analyses respectively. All analysis was performed using SPSS version 21 at 5% significant level. **Results:** Nearly all the respondents (99.4%) were aware of breast cancer, and of BSE, CBE and mammography as breast cancer screening methods (99.1%, 97.5% and 94.6% respectively). One hundred and ninety-four (57.7%) respondents had good overall knowledge score of the disease. Health programmes appeared to be the major source of our respondents' information on BSE. Although a larger proportion 318/336 (94.6%) practiced BSE, only 46.3% practiced it on a monthly basis. Those who resides in urban areas were 0.049 times more likely to have practiced BSE when compared with those who resides in semi-urban locations (OR = 0.049, 95% CI = 0.037 – 0.992). **Conclusion:** The level of awareness, knowledge and practise of BSE among the FHWs in UCH was high but the efficiency of its practice was poor among them. Continuous education of health workers by primary care providers and hospital managements on BSE screening intervention with emphasizes on competence in its practice is of utmost importance. This enables them serve as positive role models through their own participation in the behaviours being promoted.

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Introduction

Breast cancer over the years, remains one of the prominent reproductive health problems confronting women globally. The incidence of breast cancer disease is on the increase globally, particularly in the developing countries [1] and Nigeria is no exception to this surge [2,3] due to increase life expectancy, increase urbanization, and adoption of western lifestyles [1]. Despite the high incidence rates in the western countries, 89% of women diagnosed with breast cancer are still alive five years after their diagnosis [4]. This has been linked to adequate preventive practices such as early detection and appropriate treatment given after diagnosis [4]. However, lack of awareness and knowledge about screening practices, poor screening practices and or non-adherence to preventive practices, low trust in prevention, fear of cancer, procrastination, social, cultural and religious beliefs, late diagnosis and presentation, and constraint in breast cancer management (treatment in particular) due to limited resources in terms of personnel and facilities have been implicated in the upsurge of this preventable and curable disease in our society [2, 5].

Breast cancer screening generally does not reduce the risk of developing breast cancer as different studies have shown that women with certain risk factors are more likely than others to develop breast cancer [6]. Conversely, the presence of these risk factors does not mean that breast cancer is unavoidable as many women with risk factors never develop breast cancer while those with no identifiable risk factors develop the disease [6]. Nevertheless, breast cancer screening significantly decreases the risk of dying from breast cancer [7] through early detection which either leads to a curative intent or increase in survival rate.

Breast self-examination (BSE), clinical breast examination (CBE), and mammography are the secondary preventive or breast screening methods used for investigation in early detection of breast cancer [8,9]. Although the American Cancer Society (ACS) recommends CBE and mammography in the early detection of breast cancer [10], reports have shown that BSE makes women more "breast aware", which in turn may lead to earlier diagnosis of breast cancer [11]. Breast self-examination is one of the cheapest and easiest ways of detecting any abnormal changes in the

breast. The best time to perform BSE for women within the premenopausal stage is about 3-5 days [12] or one week [7] after the monthly menstrual period ends as the breasts are least lumpy or less tender and hormonal levels are relatively stable; and a consistent day in the month for postmenopausal and non-menstruating women [7,13,14]. There are recommended body postures and systematic step-by-step approach in carrying out a BSE technique [12,13]. These aims at getting women to know how their breasts normally look and feel (breast aware), to detect any signs or symptoms if changes occur and to report to their health care provider for evaluation as soon as possible. The abnormal changes to look out for during BSE in relation to the size, shape, contour and colour of the breast [14,15] includes development of a lump or swelling, skin irritation or dimpling, puckering or bulging of the skin (peau d'orange sign), nipple pain or retraction (nipple turning inward instead of sticking out); redness, soreness, rash or scaliness of the nipple or breast skin; or a discharge other than breast milk which could be watery, milky, yellowish or bloody [12,13,15]. BSE is still widely practiced in most developing countries like Nigeria, where CBE and mammography are not readily available and accessible to the vast majority of the women population.

Several studies conducted among hospital respondents and various study populations have reported the existence of a poor level of health education dissemination by health workers in Nigeria towards breast cancer screening measures [16,17,18]. Female Health workers play an important role in creating an environment supportive of screening behaviours by offering positive role models and also being disseminators of information on breast cancer preventive practices even when not explicitly referring patients or recommending breast cancer screening [19,20]. However, most studies on breast cancer were conducted among health workers focusing on medical doctors [21,22], medical students [21,23], nurses [11,19,21,22,24,25] while just a few of them recruited other allied health practitioners such as radiographers, pharmacists and laboratory scientists in their studies [19,20]. According to the World Health Organisation (WHO) [26], health workers are people engaged in actions whose primary intent is to enhance health. These include the core health professionals, management and support workers. There have been no studies so far in this part of the world where all categories of workers found in the hospital as defined by the WHO were included in researches on breast cancer.

Health workers are found in the various communities where women are and with the increasing burden of breast cancer in our society [2,3], information dissemination on early detection methods and practices

especially on BSE cannot be restricted to only core health professionals (doctors, nurses and few allied health). However, if awareness, knowledge and practice of BSE is low among those who should teach others, then there will definitely be a difficulty in promoting this economical and easy breast cancer screening technique among women. Hence, this study is set to ascertain BSE practice and its efficiency among female health workers.

Materials and methods

Study Setting

The study was carried out at the University College Hospital, Ibadan, Nigeria. The hospital is located in Ibadan, the capital city of Oyo state, Nigeria. The hospital being one of the top tertiary institutions in the country functions to provide quality health care delivery, medical education, research and also serves as a referral centre. There are over 34 departments in the hospital which are subdivided into two main sections: the clinical departments consisting of the core medical professionals; and the non-clinical departments which comprises of the management and supportive workers.

Study design and population

The study design was a descriptive cross-sectional study which included consenting female health workers who are core staff of the hospital and with no clinical history of breast cancer. The definition of health workers by the WHO was used in the recruitment of participants into the study. They include the core health professionals (medical doctors, nurses and allied health); management and support workers (administrators, financial officers, health records, accountants, cooks, assistants, secretaries, etc.).

This study was part of a larger comparative cross-sectional study on breast cancer risk prevalence, perception and preventive practices among female health workers and market women in Ibadan, Oyo State, of which sample size for comparing two independent groups was used in the estimation of the number of participants required. The minimum sample size required for each studied groups was 342 based on the proportion (77.6%) of female health workers who practiced BSE [20], assuming a precision of 10%, a type I error rate of 5% for a two-sided test and an assumed non-response rate of 10%.

The computed sample size was proportionally allocated to five strata and female health workers were purposively selected to participate in the study. Three hundred and forty-two (342) female health workers consisting of 32 medical doctors, 28 allied health professionals (pharmacists, radiographers, physiotherapist, laboratory scientist, dietetics, dental technologists and medical social workers), 150 nurses (clinical nurses, nursing tutors and public health nurses), 59 domestic staff (health attendants, health

assistants, laboratory assistants, cook and darkroom technicians), and 73 non-clinical staff (medical health records, finance and account, administrative or human resources, hospital services, internal audits, public relation office, stores, procurement and information technology) were recruited into the study. However, a total of 336 female health workers out of 342 approached for the study gave consent to participate in the study giving a response rate of 98.2%.

Study Instrument and Data collection

A semi-structured, interviewer-administered questionnaire was used in obtaining information from the respondents. The first part of the questionnaire contained the basic demographical variables such as age, marital status, educational status, religion, etc. The second section contained questions reflecting respondents' awareness of: breast cancer, increasing incidence of breast cancer among Nigerian women and the screening methods. Questions on knowledge of breast cancer detection methods, risk factors, general breast cancer knowledge, BSE, source of information on knowledge of BSE; and local myths about breast cancer were also included. The third part of the questionnaire contains questions focusing on respondents' practice of BSE screening.

The questionnaire was pre-tested among 26 female health workers at the Adeoyo Maternity Hospital in Ibadan. The reliability of the questionnaire was examined using Cronbach's Alpha since the authors developed some common general questions on awareness, knowledge and local myths about breast cancer in addition to existing questions. Ethical approval was obtained (UI/EC/13/0194) from the University of Ibadan/University College Hospital Joint Ethical Review Committee, Ibadan.

Data management and analysis

The data were entered, cleaned and analysed using IBM SPSS version 21. Knowledge of breast cancer early detection methods and risk factors were scored based on the number of correct response to a 8-items and a 15-items true or false questionnaires respectively. Similarly, general breast cancer knowledge and knowledge of BSE were scored based on the number of correct response to a 14-items and a 4-items true or false questionnaire. Knowledge level was defined as total scores on each knowledge scale categorised as poor (if below average) or good (if above average).

Frequency tables, proportions, percentages, means and standard deviation were obtained for breast cancer awareness, level of knowledge and practice of BSE in the studied sample. Bivariate analysis was also carried out using Chi-square test to assess factors associated with practice of BSE. All analysis was carried out at 5% level of significance. Subsequently, variables found to be associated with practice of BSE at 10% level of significance were included into a

multivariate analysis using the logistic regression to adjust for potential confounders.

Results

Sample characteristics

The socio-demographic characteristics of respondents are shown in Table 1. In the final sample of 336 respondents, the mean age was 39.4 ± 8.0 years (range was 22-63 years), of these, 148 (44.4%) were aged between 30-39 years. Majority of the respondents were married (83.0%), had tertiary education (91.4%), Christians 298 (88.7%), Yoruba (89.0%) while just over half of them (51.2%) resided in semi-urban locations. Close to half of the respondents 145 (43.2%) were nurses. Some (41.9%) of the respondents had spent more than 10 years on their employment with average duration of employment of 10.81 ± 8.1 years.

Awareness of breast cancer

Almost all the respondents (99.4%) were aware or had heard about breast cancer and the majority (83.6%) were also aware of increasing incidence of breast cancer among Nigerian women. Also, majority of the respondents were aware of BSE (99.1%), CBE (97.5%) and mammography (94.6%) as screening methods for early detection of breast cancer. More than half (53.6%) of the respondents had attended training or seminar on breast cancer screening methods in the past.

Knowledge, source of information and local myths about breast cancer

Nearly all 330 (98.2%) the respondents knew that breast cancer is a serious disease affecting women globally as of today. Majority 279 (83.0%) acknowledged breast cancer as the leading cancer among Nigerian women, while 74.1% of them knew that breast cancer is the leading cause of death among Nigerian women. More than half 194 (57.7%) of the respondents had good overall breast cancer knowledge score ($\geq 26.60 \pm 4.50$) with 90.6% of the doctors having a significantly higher overall knowledge compared to the nurses (78.6%) and the other categories of health workers [allied health (57.1%), non-clinical staff (27.8%) and domestic staff (25.4%)], $p < 0.001$. One hundred and fifty-six (46.4%) had good knowledge of breast cancer early detection methods (BSE, CBE, mammography and breast ultrasound) and more than half (53.3%) of the respondents had good knowledge of the risk factors for breast cancer. The proportion of respondents with good general knowledge of breast cancer was 58.9%. However, a large majority 89.6% had good knowledge score of BSE. The overall mean knowledge score differences among the socio-demographic characteristics were shown in Table 2. The mean score did not significantly differ between different age groups, marital status, religion or ethnicity.

Table 1: Socio-demographic characteristics of respondents

Variables	Frequency (N)	Percentage (%)
Age (years)		
<30	34	10.2
30-39	148	44.4
40-49	105	31.5
50-59	44	13.2
≥60	2	0.6
Marital status		
Single	45	13.4
Married	278	83.0
Others	12	3.6
Educational status		
Primary and below	4	1.2
Secondary	25	7.4
Tertiary	307	91.4
Religion		
Christianity	298	88.7
Islam	38	11.3
Ethnicity		
Yoruba	299	89.0
Igbo	28	8.3
Others	9	2.7
Location		
Urban	162	48.8
Semi-urban	170	51.2
Professional group		
Medical doctor	32	9.5
Allied health	28	8.3
Nurses	145	43.2
Domestic staff	59	17.6
Non-clinical staff	72	21.4
Years of employment (years)		
<1	16	4.8
1-3	35	10.5
4-6	84	25.1
7-10	59	17.7
>10	140	41.9

Concerning the source of information about BSE, 35.5% received information on BSE through health programmes such as seminars, conferences, talks and workshops. Workplace was the next frequently-used portal of information (22.5%). Other means included the mass media (television, radio, handbills, billboard, etc.) (16.0%), school (12.7%), books such as text books, medical journals and magazines (9.8%) and other (3.6%). More than two-third (67.2%) still

believed a common myth that putting money in the brassieres could increase a woman's risk of developing breast cancer. More than half 175 (53.7%) believed the reason why people develop breast cancer in our society was due to natural occurrence, 35.3% believed it was due to other reasons, 9.2% attributed their belief to witchcraft and 1.8% believed it was a punishment from God or the gods.

Table 2. Respondents' socio-demographic characteristics and overall mean knowledge score

Variables	Mean	Mean score ±SD	p-value	F value
Age (years)				
<30	24.76	4.71	0.116	1.865

30-39	26.68	4.77		
40-49	27.15	4.33		
50-59	26.45	3.74		
≥60	25.50	0.71		
Marital status				
Single	25.80	4.60	0.452	0.795
Married	26.71	4.51		
Others	26.67	4.10		
Educational status				
Primary and below	21.00	2.58	<0.001*	12.072
Secondary	23.16	3.86		
Tertiary	26.95	4.41		
Religion				
Christianity	26.59	4.57	0.988	T= -.015
Islam	26.61	3.94		
Ethnicity				
Yoruba	26.59	4.53	0.190	1.669
Igbo	25.86	4.30		
Others	29.00	3.64		
Location				
Urban	27.12	4.52	0.041*	T= 2.053
Semi-urban	26.11	4.45		
Professional group				
Medical doctor	30.78	3.59	<0.001*	42.107
Allied health	26.96	3.33		
Nurses	28.39	2.87		
Domestic staff	23.63	3.66		
Non-clinical staff	23.40	5.08		
Years of employment (years)				
<1	29.38	4.24	0.001*	5.545
1-3	24.57	5.04		
4-6	25.60	4.78		
7-10	26.56	4.68		
>10	27.31	3.77		

*p<0.05

Practice of Breast Self-Examination (BSE)

Majority 318 (94.6%) of the respondents practiced BSE. Among the 18 (5.4%) of the respondents who had never practiced BSE, 7 (46.7%) thought it is not necessary, 20% acknowledged their lack of knowledge on how to do it, 20% of the responses were due to forgetfulness while 13.3% attributed it to lack of time. Of the 318 respondents who claimed to have practiced BSE, less than half 145 (46.3%) were aware of the frequency it should be carried out (that is, had BSE performed on monthly basis) (Table 3). Table 3 also shows several possible adoptable positions for BSE

practice. Most of the respondents 219 (65.2%) who had this practice performed adopted standing in front of the mirror while 123 (36.6%) adopted lying down without a mirror in front.

Among the 145 respondents who practiced BSE on monthly basis, 20 (14.1%) were already in the menopausal stage of which only 3 (16.7%) of them practiced BSE anytime of the month. While among those in the premenopausal 122 (85.9%), majority, 77.5% had the practice done after their monthly menstrual period (Table 4).

Table 3: Frequency of and Positions adopted during practice of BSE among respondents

Variable	N= 318	%
Frequency of Practice		
Daily	27	8.6

Weekly	33	10.5
Monthly	145	46.3
Yearly	4	1.3
Once in a year	104	33.2
Positions adopted during practice		
Standing in front of a mirror	219	65.2
Lying down on your back in front of a mirror	58	17.3
Standing without a mirror in front	98	29.2
Bending down	9	2.7
Kneeling down	3	0.9
Lying down without a mirror in front	123	36.6

Table 4: Time of practice among respondents who perform BSE monthly

Time	Premenopausal respondents N= 122		Menopausal respondents N= 20	
	N	%	N	%
Before menses	11	9.2	2	11.1
During menses	7	5.8	-	-
After menses	93	77.5	13	72.2
Anytime	9	7.5	3	16.7

Table 5: Association between BSE practice and socio-demographic characteristics

Variables	BSE practice N= 318n (%)			χ^2	p-value
	Yes	No	Total		
Age (years)					
≥40	148 (98.0)	3 (2.0)	151 (100.0)	6.315	0.012*
<40	167 (91.8)	15 (8.2)	182 (100.0)		
Marital status					
Single	41 (91.1)	4 (8.9)	45 (100.0)	1.566	0.457
Married	265 (95.3)	13 (4.7)	278 (100.0)		
Other	11 (91.7)	1 (8.3)	12 (100.0)		
Educational status					
≤Primary	3 (75.0)	1 (25.0)	4 (100.0)	3.523	0.172
Secondary	23 (92.0)	2 (8.0)	25 (100.0)		
Tertiary	292 (95.1)	15 (4.9)	307 (100.0)		
Religion					
Christianity	281 (94.3)	17 (5.7)	298 (100.0)	0.628	0.428
Islam	37 (97.4)	1 (2.6)	38 (100.0)		
Ethnicity					
Yoruba	284 (95.0)	15 (5.0)	299 (100.0)	2.163	0.339
Igbo	25 (89.3)	3 (10.7)	28 (100.0)		
Other	9 (100.0)	0 (0.0)	9 (100.0)		
Location					
Urban	149 (92.0)	13 (8.0)	162 (100.0)	4.180	0.041*
Semi-urban	165 (97.1)	5 (2.9)	170 (100.0)		
Professional group					
Medical doctor	32 (100.0)	0 (0.0)	32 (100.0)	5.971	0.201
Allied health	26 (92.9)	2 (7.1)	28 (100.0)		
Nurses	140 (96.6)	5 (3.4)	145 (100.0)		
Domestic staff	55 (93.2)	4 (6.8)	59 (100.0)		
Non-clinical staff	65 (90.3)	7 (9.7)	72 (100.0)		
Years of employment					
≤10	179 (92.3)	15 (7.7)	194 (100.0)	4.928	0.028*
>10	137 (97.9)	3 (2.1)	140 (100.0)		

*p<0.05

Variables associated with practice of BSE

In Table 5, the proportions of health workers who had ever practiced BSE across socio-demographic characteristics are reported. There was a significantly

higher proportion of BSE practice among those age 40 years and older compared to those below 40 years of age (p=0.012); those that resides in semi-urban area in comparison with urban dwellers (p= 0.041); and a

lesser proportion among those within 1-3 years of employment compared with those on employment for more than 10 years ($p= 0.048$). There were no significant associations between BSE practice and marital status, educational status, religion, ethnicity and professional group.

There was also a significant association between BSE practice and previous attendance at program on breast cancer screening ($p= 0.011$), good overall breast cancer knowledge ($p= 0.031$), good knowledge on breast cancer risk factors ($p= 0.026$) and general

knowledge of breast cancer ($p= 0.023$). BSE practice was also significantly associated with the source of information on BSE. The study showed the highest proportion of BSE practice among those who obtained information from schools and books, followed by health programs, workplace, mass media and other. Awareness of increasing incidence of breast cancer among Nigerian women, awareness of BSE as a screening method and knowledge of breast cancer early detection methods were not associated with BSE practice (Table 6).

Table 5 Association between BSE practice and other selected characteristics

Variables	BSE practice N= 318 n (%)			χ^2	p-value
	Yes	No	Total		
Heard about breast cancer					
Yes	317 (94.9)	17 (5.1)	334 (100.0)	-#	0.104
No	1 (50.0)	1 (50.0)	2 (100.0)		
Aware of increasing incidence of breast cancer among Nigeria women					
Yes	267 (95.0)	14 (5.0)	281 (100.0)	-#	0.511
No	51 (92.7)	4 (7.3)	55 (100.0)		
Aware of BSE as a screening method					
Yes	313 (94.8)	17 (5.2)	330 (100.0)	-#	1.000
No	3 (100.0)	0 (0.0)	3 (100.0)		
Attendance at programs on breast cancer screening methods					
Yes	173 (97.7)	4 (2.3)	177 (100.0)	6.533	0.011*
No	140 (91.5)	13 (8.5)	153 (100.0)		
Overall knowledge of breast cancer					
Good	188 (96.9)	6 (3.1)	194 (100.0)	4.642	0.031*
Poor	130 (91.5)	12 (8.5)	142 (100.0)		
Knowledge on breast cancer: Early detection methods					
Good	151 (96.8)	5 (3.2)	156 (100.0)	2.660	0.103
Poor	167 (92.8)	13 (7.2)	180 (100.0)		
Risk factors					
Good	174 (97.2)	5 (2.8)	179 (100.0)	4.967	0.026*
Poor	144 (91.7)	13 (8.3)	157 (100.0)		
General knowledge					
Good	192 (97.0)	6 (3.0)	198 (100.0)	5.148	0.023*
Poor	126 (91.3)	12 (8.7)	138 (100.0)		
Source of information on BSE					
Mass media	44 (89.8)	5 (10.2)	49 (100.0)	13.500#	0.001*
Health programs	108 (99.1)	1 (0.9)	109 (100.0)		
Workplace	63 (91.3)	6 (8.7)	69 (100.0)		
School & Books	69 (100.0)	0 (0.0)	69 (100.0)		

Fishers Exact Test; * $p<0.05$

Using a multiple logistic regression model, BSE practice was regressed on variables significant at 10% level on Chi square tests. Table 7 shows the odds ratios and confidence interval from the regression analysis. Respondents who reside in urban areas were more

likely to have practiced BSE than those who resides in semi-urban areas (OR = 0.049, 95% CI = 0.037 – 0.992). Age, years of employment, attendance at any breast cancer screening program, overall knowledge of breast cancer and its risk factors, and source of

information on BSE were not independent predictors of BSE practice.

Table 7. Odds ratio and 95% Confidence interval for regression of BSE practice on selected variables

Variable	OR	95% Confidence interval	p-value
Age			
≥40	1.315	0.268-6.447	0.735
<40 (Ref)	1		
Location			
Urban	0.192	0.037-0.992	0.049
Semi-urban (Ref)	1		
Years of employment			
≤10	0.300	0.030-3.039	0.308
>10 (Ref)	1		
Attendance at health program			
Yes	2.242	0.485-10.362	0.301
No (Ref)	1		
Overall breast cancer knowledge			
Good	0.244	0.027-2.192	0.208
Poor (Ref)	1		
Knowledge on breast cancer risk factors			
Good	7.712	0.884-67.309	0.065
Poor (Ref)	1		
Source of information			
Mass media	0.000	0.000	0.997
Health program	0.000	0.000	0.997
Workplace	0.000	0.000	0.997
School & Books	1		

*p<0.05

Discussion

In order to function effectively as promoters of breast cancer preventive practices, health workers must possess adequate skills in addition to the necessary knowledge and attitude about breast cancer and its screening methods. To our knowledge, this may be the first study to assess BSE practice and its efficiency among health workers in the real sense in line with the World Health Organization definition of health workers.

Awareness as described [27] is the first step in battle against breast cancer. Almost all our respondents in this study were aware of breast cancer, its increasing incidence among Nigerian women and the various available screening methods for its early detection. These outcomes are warmly expected from health workers due to the available information at their workplace and or in the course of training probably for some of the health workers. The prevalence of health workers who were aware of Breast self-examination as a screening method for early detection of breast cancer was similar to the value (92%) recorded by Kumar et al. [21] however, higher than the findings from Odusanya and Tayo [11] and Okobia et al., [28]. The differences in results between the earlier and the present studies rightly attests to the increasing effectiveness of

ongoing awareness programmes about this screening method in our society.

The majority of our respondents knew that breast cancer is a serious menace to women globally. They also acknowledged it to be the most common and leading cause of death among Nigerian women. Similar observations were also reported in two studies done in Benin, Nigeria where 63.6% and 72.6% respectively of the respondents knew about the disease as the most common cancer among women worldwide and in our environment [20,28]. This is also supported by finding from a Lagos study [23].

A little more than half (57.7%) of the respondents in this study had good knowledge about breast cancer, its early detection methods, risk factors and BSE. This is in contrast to similar studies conducted in the USA, Singapore and Nigeria [19,22,24] where the authors reported a high level of knowledge on breast cancer and its risk factors. Though all these researches were conducted mostly among clinical health workers, the differences observed may be explained by the fact that the WHO definition of health workers was used in this current study's recruitment process where aside the doctors and nurses, all other professionals working in the hospital were included in the study. This then means that most of the non-clinical health workers in this study

may not have had adequate knowledge about breast cancer due to their professional background or had direct duty relating them with patients. Hence, there is the need to enlighten female health workers on this screening method and to iterate them about their status especially the non-medical professionals as many of them ignorantly claimed they were not health workers during the course of the interview. The level of knowledge recorded in our study was however much higher than those reported (>50%, 17.5%, 32% and 22.9%) by other investigators where lower figures were recorded [9,20,25,28]. Female doctors in our study had a significantly better knowledge as about 91% of them had good knowledge of the disease which agrees with findings reported from similar studies in Benin and Lagos city, Nigeria [20,29]. The fact that the content of their undergraduate curriculum covered the subject under study may not be unrelated to the high knowledge noted among them.

The knowledge of BSE as a screening method was 89.6% in this study population which is comparable with that of a study among community-dwelling women in a semi-urban city where 87.2% was reported [28]. A greater proportion of the respondents received information on BSE from health programmes attended such as seminars, conferences, talks and workshop. Perhaps this may be explained by the higher level of attendees at health programmes as unveiled in this study. Workplace was the next frequently used portal of information. These are in keeping with findings from a survey of 1000 community dwelling women from a semi-urban neighbourhood in Nigeria [28]. Their major sources of information on BSE were equally from the doctors' offices (21.1%) and health programmes organized by different organizations (20.8%). These reports however, sharply contrasts with reports of other investigators where the media (TV, radio, etc.) was the first source of information and the health personnel and home were the least sources of information [16,23,30]. Continuous medical education for all health workers is imperative in order to keep them informed and updated with important health issues such as this for their own health sake and also to equip them in their role as health information disseminators in the society at large.

The practice of BSE in this study (94.6%) was quite close to those conducted among health workers in similar settings in Lagos (89%) and Singapore (93%) [11,24], whereas appreciably higher than some other studies done in same settings [21,22,25]. The good knowledge about breast cancer, its risk factors and screening practices recorded among these respondents did not translate into practice of BSE. Factors such as sampling technique (convenient sampling) used, small sample size [22] could be responsible for these low figures reported in the other studies. Despite the high level of knowledge and practice of BSE in this study,

less than half (46.3%) of respondents who practiced BSE performed it on a monthly basis. This finding was far different when compared with report among female secondary school teachers in Ilorin with no occupational attachment to the hospital where a higher proportion 71.8% of those who were currently practising BSE were doing it monthly [16]. This very low efficiency rate among those whom we anticipate to teach others in the community may perhaps be due to their inadequate knowledge about the procedures for the technique under study, being too busy, the nature of work leading to over-familiarization or fear of the unknown, non-participation of non-clinical health workers in seminars and health education programmes, and 'rejection' among these group and hence do not want to know about it. These factors could also be responsible for the low practice rate reported in earlier studies [21,22,25]. Therefore, if practice and efficiency of this screening technique is extremely low among expected health promoters, it could portray them as negative role models and result in low trust in prevention, late presentation and delayed treatment.

The findings from association between BSE practice and variables revealed that age, location of residence, years of employment, previous attendance at health programmes on breast cancer screening methods, overall knowledge of breast cancer, knowledge of breast cancer risk factors, general knowledge of the disease and source of information on BSE were significantly associated with BSE practice. However, following logistic regression analysis, only location of residence was found independently associated with the practice of BSE. This is unlike other studies where level of education, higher knowledge score, age and other demographic variables were found to be significant predictors of BSE practice [28].

This study has important implications for all primary care providers and hospitals managements. The key finding from this research stresses the need for continuous organization of educational programmes and establishment of evaluation methods to improve efficiency in practice of Breast self-examination among health workers- teaching health workers more about the timing and the right standard procedures for carrying it out particularly the non-clinical health workers. Future research should build on evaluating the systematic step by step method taken in performing BSE.

Conclusion

The efficiency in practice of BSE among respondents in this study was poor despite their high level of awareness, knowledge and practise of the screening. Most of the study respondents received information on BSE from health programmes attended. Continuous education of health workers by primary care providers and hospital managements on BSE

screening intervention with emphasizes on competence in its practice is of utmost importance so as to serve as positive role models through their own participation in the behaviours being promoted. Systematic evaluation of these educational programmes is also recommended.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

EEO and IOA participated in the conceptualization and development of proposal for the study.

EEO carried out the proposal writing, literature search and review, collection and generation of the data, data analysis and preparation of the manuscript.

IOA and OMA reviewed the questionnaire and the manuscript.

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