Knowledge and Practice of Clinical Breast Examination among Female Health Workers in Ibadan, Nigeria

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Abstract: *Though more than 90% of breast cancer cases are detected by women themselves, Clinical Breast Examination (CBE) offers a greater advantage for proper learning and reviewing of the Breast Self-Examination technique among women. This study aimed to assess the level of knowledge and practice of CBE among health workers in a tertiary hospital.A quantitative, descriptive cross-sectional study design was used and a stratified sampling technique with proportional allocation was employed to select 342 participants. The questionnaire was pretested, validated and checked for reliability. Ethical considerations were observed in protecting the rights of the participants. Subsequently, data was collected and analysed using both descriptive and inferential statistics with the aid of the SPSS version 21.Majority (97.5%) of the participants were aware of CBE as a breast cancer early detection method, 62.2% had good knowledge of CBE, 53.6% correctly identified physicians and registered nurses as the recommended health professionals to carry out the procedure, while 59.9% had practiced CBE. Years of employment (OR = 1.707, 95% CI = 1.023 – 2.849) and good general knowledge of breast cancer (OR = 0.575, 95% CI = 0.337 – 0.980) independently predicted CBE practice.The knowledge, attitude and practice of female health workers are essential factors required to function as effectual promoters and positive role models of breast screening behaviours. Although knowledge and practice of CBE were good in this study, the attitude demonstrated by participants reveal that the benefits of CBE are not fully understood and maximised by many health workers.*
Keywords: *Breast cancer, Clinical Breast Examination, Female Health Workers, Knowledge, Practice*

I.   Introduction

For the past few decades, breast cancer has been a leading cancer and the principal cause of death among women both in the developed and less developed world. Breast cancer in Nigeria remains a major public health problem as its increasing incidence has been observed [1,2]; likewise, the alarming upturn of its mortality rate due to late presentation, inadequate diagnostic and treatment facilities [3,4] and the poor consumption rate of the limited available resources. The peak incidence age of breast cancer among Nigerian women as well as women from Sub-Saharan and Western African countries, occur below 50 years. This is a decade earlier than the peak incidence age among Caucasoid women [5, 6, 7]. Relatively young women are being afflicted on a daily basis leaving so many homes impoverished [8], more so endangering the industrial competitiveness of the nation [9]. According to the World Health Organization (2013), numerous Nigerian women who may have had the privilege of surviving longer are dying prematurely from breast cancer when there are evidence-based strategies for its prevention and management.

Breast cancer among other cancers is preventable, curable and can offer a higher survival rate when detected early. Three main breast screening techniques have been recommended by various medical organizations which include mammography, clinical breast examination and breast self-examination (BSE) [10,11]. However, several studies have shown that awareness level of these screening techniques varied among people, socio-cultural and occupational groups [12, 13, 14, 15]. Many studies conducted on breast screening have focused more on BSE compared to CBE and mammography based on the fact that more than 90% of breast cancer cases are detected by women themselves [16]. Nevertheless, CBE which only detect about 10% of breast cancer [11] offers a greater advantage for proper learning and reviewing of the breast self-examination technique from the right persons by women who do not know how to examine their breast and for those already carrying out the procedure [17,18].

Clinical breast examination is one of the better and widely recommended screening tests after mammography [10,19]. As the incidence of breast cancer increases with age, women in their 20s and 30s are recommended to have CBE as part of their periodic health examination at least every three years while those 40 years or older are to be examined every year [18,20]. Unlike other screening methods, CBE provide opportunities for women to be educated by healthcare professionals about normal breast composition and its variations, and possible breast diseases most especially breast cancer – its risk factors, symptoms, prevention and early detection methods.CBE also detects some cancers not found by mammography and provides opportunity for women who cannot obtain mammography either due to age, cost or non-availability of the facility [17]. Nonetheless, there are still challenges regarding the use of CBE such as its precision and accuracy, and its cost in low resource countries such as Nigeria. CBE is a complement or adjunct to mammography as most expert groups recommend it alongside mammography, starting at age 40 to 50 [17,18].

Despite the benefits of CBE, several previous studies demonstrated poor knowledge and practice among different study populations in the developing world [12,13,21, 22, 23]. Even studies that found a high (93.2%) knowledge of CBE as a breast cancer screening tool among nurses reported that the utilization of the procedure was lacking [24]. However, educational status has been identified as a relevant factor associated with the practice of CBE [22].

In contrast to breast self-exam, CBE is only carried out by few trained health care professionals such as doctors, nursesor doctor's assistants [18]. Nurses generally are identified as great resource for promoting healthy behaviours owing to their role in patient care. However, with the increasing burden of breast cancer in the Nigerian society [1,2,25], there is need for all health workers by virtue of their work place and irrespective of their professional group to complement approved frameworks and strategies targeted towards creating awareness among women in the various communities. Health workers are a source of information on most preventive health practices to patients, general public, friends and family inclusive [26]. Conversely, a trait of negative attitude towards screening practices from the expected health promoters can affect other women and their recommendation of the screening procedure. It is pivotal then, that the information they transmit is accurate and supportive in propagating awareness about CBE technique among the diverse women populace. By better understanding the knowledge and practice of CBE among female health workers (FHWs), more effective and evidence-based programs can be developed to enable health workers function as effectual promoters and positive role models of breast screening behaviours.

II.   Methodology

2.1. Methods

A descriptive cross-sectional study design was adopted for this survey to assess the level of knowledge and practice of CBE among FHWs at the University College Hospital (UCH), Ibadan, Nigeria. The hospital is one of the top tertiary institutions in the country. Aside provision of quality health care delivery, medical education, research; it also serves as the main referral centre across Nigeria and other neighbouring countries in Africa due to the availability of medical facilities and specializations in medicine and other areas of health sciences.

Eligible and consentingFHWs encompassing core healthcare professionals (doctors, nurses, allied health), managerial staff (accountants, auditors, administrators, procurement officers, medical records, secretaries, public relation officers, etc.) and support workers (cooks, hospital attendants and assistants, laboratory assistants, and darkroom technicians) were recruited into the study using the definition of health workers by the World Health Organization (WHO) [27]. Eligibility criteria were age ≥18 years, no history of breast cancer and pensionable staff of the hospital. The study was approved by the University of Ibadan/University College Hospital Joint Ethical Review Committee, Ibadan.

The study was part of a larger comparative study that looked into breast cancer risk prevalence, perception and preventive practices among FHWs and market women in Ibadan, Oyo State. A total of 308 FHWs were required in order to detect the differences in the response variables among the study groups based on breast self-examination practice rate of 77.6% among FHWs [14], assuming a precision of 10%, a power of 80% with a significance level of 5%. Assuming a rate of 5% of non-responders, the target size was set to 342 participants.

The study utilized a stratified sampling technique to allocate the FHWs into five strata to ensure homogeneity. With the percentage total of each stratum; the computed sample size (342) was proportionally allocated to each stratum and the study participants were randomly selected into the study. The strata comprise 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 or support staff, and 73 managerial or non-clinical staff.

The required information was drawn from a pretested interview using, semi-structured, questionnaire conducted in English language by one of the researchers and a trained research assistant with appreciable

experience in the field. In addition to the adapted and modified questionnaires from selected literatures reviewed, some common questions on awareness and knowledge on breast cancer were developed by the researchers. The validity (face validity) and reliability (Cronbach's alpha = 0.925) of the questionnaire were tested.

Information was collected on socio-demographic characteristics such as age, marital status, educational status, religion, etc.; respondents' awareness of breast cancer, increasing incidence of breast cancer among Nigerian women and the screening methods; knowledge of breast cancer preventive measures, detection methods, risk factors, general breast cancer knowledge, CBE, sources of information on knowledge of CBE; and practice of CBE screening.

2.2. Statistical method

Data was entered, cleaned, organised into frequency tables and statistically edited to check for errors and outliers, and analysed using IBM SPSS version 21. Questions on knowledge were then scored; a correct response being that based on current literature. One point was given for a correct response and zero point for a wrong/don't know response. Questions reflecting participants' awareness on breast cancer screening methods and practice were excluded from the scoring. The maximum attainable scores were 3, 9, 8, 15 and 14 for knowledge on CBE, breast cancer preventive practices, early detection methods, risk factors, and general breast cancer knowledge respectively. Knowledge level was defined as total scores on each knowledge scale categorised as good ($\geq$ mean score) or poor ($<$ mean score). Frequency distributions were employed to describe the data.

Bivariate analyses were conducted using independent t test and ANOVA test in comparing means of continuous variables between groups and subgroups; and Chi-square test to determine associations between study variables and practice of CBE among participants. A p-value of < 0.05 was considered significant. Subsequently, logistic regression model for multivariate analysis at 15% level of significance was conducted to investigate independent predictors of CBE practice.

III. Results

A total of 336 out of 342 FHWs approached for the study gave their informed consent and were recruited into the study. The mean age of participants was 39.4 years (SD = 8.0) and the majority of them were of Yoruba tribe (89.0%), married (83.0%), Christians (88.7%), and had a tertiary education (91.4%). A fifth (51.2%) resides in semi-urban areas while a little more than half (58.1%) had been employed for at most 10 years in their various career. The largest number of participants (n = 145; 43.2%) were nurses (see Table 1).

Table 1 Demographic characteristics of participants

Characteristics	Frequency (n = 336)	Percent (%)
Age (years)[a]		
Mean [SD, min-max]	39.4 [8.0, 22-63]	
<30	34	10.2
30-39	148	44.4
40-49	105	31.5
50-59	44	13.2
≥60	2	0.6
Ethnicity		
Yoruba	299	89.0
Igbo	28	8.3
Others*	9	2.7
Marital status[b]		
Single	45	13.4
Married	278	83.0
Others**	12	3.6
Religion		
Christianity	298	88.7
Islam	38	11.3
Educational level		
Primary and below	4	1.2
Secondary	25	7.4
Tertiary	307	91.4
Location of residence[c]		
Urban	162	48.8
Semi-urban	170	51.2
Employment (years)[d]		
≤10	194	58.1
>10	140	41.9
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

[a]Data missing for 3 participants;
[b] Data missing for 1 participant;
[c] Data missing for 4 participants;
[d] Data missing for 2 participants;
 *Edo, Ishan, Igara, Annang, Oworo;
**Separated, divorced, widowed, co-habiting

Nearly all (98.2%) the participants identified breast cancer as a serious disease affecting women worldwide. The majority (83.6%) were aware about the increasing upturn of breast cancer among women in Nigeria. Most of them knew that breast cancer is the leading cancer (83.0%) and the principal cause of death (74.1%) among women in our society. Out of the 336 participants, (20.8%) did not agree to the fact that the cause of breast cancer is unknown. Most (83.6%) knew breast cancer is preventable, can be detected at an early stage 313 (93.2%) and (92.0%) a cure is possible when detected early. One hundred and seventy-nine (53.3%) had good knowledge of breast cancer risk factors; 58.9% had good general knowledge of the disease; and similarly, (58.6%) had good knowledge on breast cancer preventive measures.

Most participants were aware of mammography, CBE and BSE as breast cancer early detection methods [94.6%, 97.5% and 99.1%] respectively. However, less than half of the participants (46.7%) had good, in-depth knowledge of these early detection methods. A larger proportion (89.6/100) had a good knowledge of BSE, while less than two-third (62.2%) of the total population had good knowledge of CBE, the nurses (74.5%) being significantly more knowledgeable about CBE than other categories of health workers (p<0.001). In response to the question on who performs CBE for a woman who wants to carry out the screening procedure, only 180 (53.6%) correctly identified the eligible professionals as both the physicians and registered nurses. In terms of the recommended timing to perform CBE, participants' indications were - at every opportunity a woman visits the hospital 96 (28.7%); every six months (29.0%); every month (n = 50; 15%); every year (11.7%), while 52 (15.6%) declared they don't know.

The mean total knowledge score was 31.1 ±5.5 (min=7; max=43). Only 50.6% of the participants had good overall breast cancer knowledge score (≥31.1) with (81.3%) of the doctors having a significantly higher overall knowledge score compared to nurses (67.6%), allied health (53.6%), non-clinical staff (25.0%) and domestic staff (22.0%), p<0.001. Figure 1 shows the knowledge score of breast cancer among participants. Factors that significantly affected the overall knowledge score were educational status, professional group, years of employment and age groups (Table 2). Just over half (53.6%) had previous attendance at a health training on breast cancer screening methods. Majority of the participants (38.2%; n = 113) received CBE information via health programmes. This was followed by workplace (25.1%), books such as textbooks, journals and magazines (12.5%), school (10.8%), mass media (9.2%) and friends, families and relatives (4.1%).
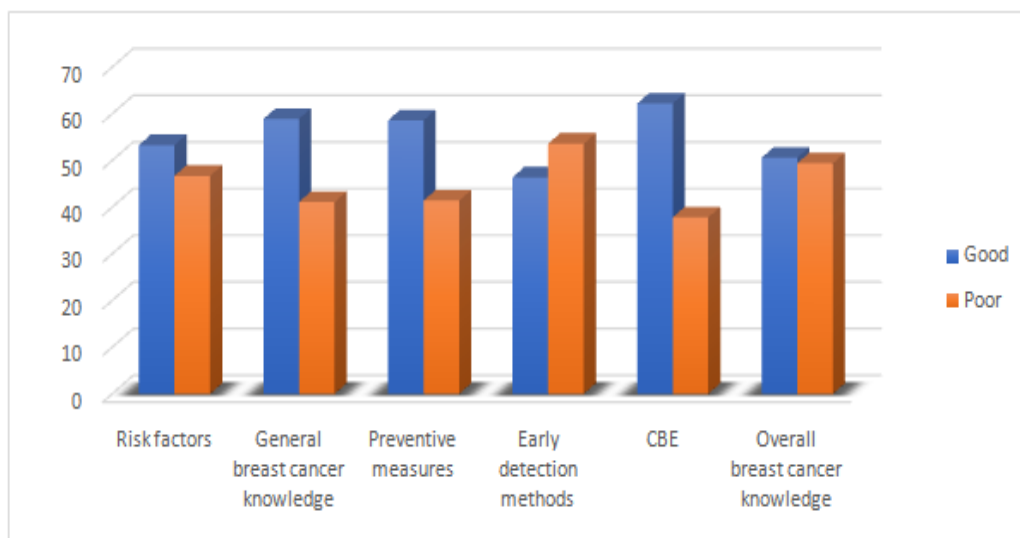

Fig 1: Knowledge of breast cancer among participants

Table 2 Mean knowledge score difference between socio-demographic characteristics of respondents

	Mean score (±SD)	p-value	T value
Age (years)			
<40	30.5 (5.8)	0.043*	-2.028
≥40	31.8 (5.0)		
Educational status			
Primary and below	24.8 (4.5)	0.000**	11.464[a]
Secondary	26.9 (5.2)		
Tertiary	31.5 (5.3)		
Employment (years)			
≤10	30.3 (5.7)	0.002*	-3.165
>10	32.2 (4.8)		
Professional group			
Medical doctors	35.5 (4.9)	0.000**	36.657[a]
Allied Health	31.5 (4.0)		
Nurses	33.3 (3.9)		
Domestic staff	27.6 (4.6)		
Non-clinical staff	27.4 (5.8)		

[a] F test
*p< 0.05; **p< 0.001
Note: Mean score calculated for the following variables: ethnicity (F = 2.174, p> 0.05), marital status (F = 0.760, p> 0.05), religion (T = -.170, p> 0.05), and location of residence (T= 1.237, p> 0.05)

Only 191 (59.9%) had ever practiced CBE. On univariate analysis, most of those who practiced CBE were age less than 40 years (54.7%; n = 104), married (82.65%), had tertiary education 93.2%, Christian (89.0%), Yoruba (89.5%), semi-urban dwellers (51.6%), and predominantly nurses (n = 83; 43.5%). Of those who had ever practiced CBE, 76.2% of them confirmed they had it performed by a physician while less than half a third 13.8% were performed by a nurse. Also, most (61.9%) had the screening last less than 3 years ago. One hundred and twelve (59.3%) had it done for routine screening, 21.7% had it for anti-natal purposes while (16.9%) had it as part of examination for complaint in the breast. Of the 128 (40.1%) who had never had CBE done, majority (n =57; 44.5%) of them were nurses. The main reasons for not having CBE were that many thought it not necessary 49 (39.5%) - most being domestic staff (49.0%); and 23.4% acknowledge that clinical breast examination was never recommended to them by a health practitioner (see Fig.2). The overall mean knowledge score did not differ between those that had ever performed CBE (31.39 ±5.5) and those that never had it done (31.40 ±4.9) p > 0.05.
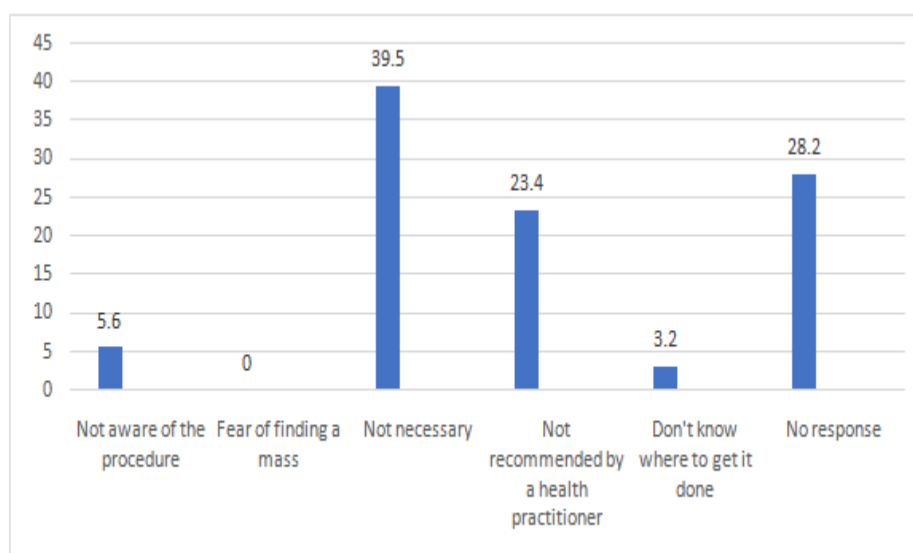

Fig.2 Respondents' reasons for not performing clinical breast examination

Variables associated with the practice of CBE at bivariate level included years of employment and source of information on CBE. The study showed a significantly higher proportion of CBE practice among respondents who had been employed for at most 10 years compared to those employed for more than 10 years in their various profession (p=0.045). Also, a significantly lesser proportion of those whose source of information

on CBE were workplace 32 (47.1%) compared with 80 (71.4%) whose source of information were from health programmes had practiced CBE, p=0.020 (see Table 3).

Table 3 Associations between variables of interests and practice of CBE (n = 319)

Variable	Practice of CBE		χ^2	p-value
	Yes (%)	No (%)		
Age (years)				
<40	104 (61.9)	64 (38.1)	0.473	0.492
≥40	86 (58.1)	62 (41.9)		
Marital status				
Single	26 (63.4)	15 (36.6)	0.357	0.837
Married	157 (59.0)	109 (41.0)		
Other	7 (63.6)	4 (36.4)		
Educational status				
Primary and below	1 (33.3)	2 (66.7)	1.541	0.463
Secondary	12 (52.2)	11 (47.8)		
Tertiary	178 (60.8)	115 (39.2)		
Religion				
Christianity	170 (60.3)	112 (39.7)	0.169	0.681
Islam	21 (56.8)	16 (43.2)		
Ethnicity				
Yoruba	171 (60.0)	114 (40.0)	1.071	0.585
Ibo	16 (64.0)	9 (36.0)		
Other	4 (44.4)	5 (55.6)		
Location of residence				
Urban	91 (60.7)	59 (39.3)	0.115	0.734
Semi-urban	97 (58.8)	68 (41.2)		
Professional group				
Medical doctors	19 (59.4)	13 (40.6)	3.789	0.435
Allied Health	16 (61.5)	10 (38.5)		
Nurses	83 (59.3)	57 (40.7)		
Domestic staff	28 (50.9)	27 (49.1)		
Non-clinical staff	45 (68.2)	21 (31.8)		
Employment (years)				
≤10	116 (64.4)	64 (35.6)	4.024	0.045*
>10	73 (53.3)	64 (46.7)		
Source of information				
Mass media	15 (60.0)	10 (40.0)	11.712	0.020*
Health programs	80 (71.4)	32 (28.6)		
Workplace	32 (47.1)	36 (52.9)		
Books &School	38 (55.1)	31 (44.9)		
Families & Friends	2 (50.0)	2 (50.0)		

*p< 0.05

Note: Chi-square calculated for the following variables: overall knowledge of breast cancer (χ^2 = 0.474, p > 0.05), knowledge of [preventive measures (χ^2 = 0.011, p > 0.05), CBE (χ^2 = 0.135, p > 0.05), risk factor (χ^2 = 2.447, p > 0.05), early detection (χ^2 = 0.009, p > 0.05) and breast cancer general knowledge (χ^2 = 2.637, p > 0.05)], attendance at health programmes on breast cancer screening methods (χ^2 = 1.247, p > 0.05), and reasons for performing CBE (χ^2 = 0.327, p > 0.05)

However, on the multivariate level at 15% level of significance, general knowledge of breast cancer (p = 0.104) and its risk factors (p = 0.118) were included with other variables significant on bivariate analysis into the model. The logistic regression showed years of employment and general knowledge of breast cancer as independent predictors of CBE practice (Table 4). Participants with at most 10 years of employment were about 2 times more likely to have practiced CBE than those with more than 10 years of employment (OR = 1.707, 95% CI = 1.023 – 2.849). FHWs with good general knowledge of breast cancer were significantly more likely to have practiced CBE (OR = 0.575, 95% CI = 0.337 – 0.980). Source of information and knowledge of breast cancer risk factors were not associated with practice of CBE.

Table 4 Factors predicting the practice of CBE among participants

Variable	Odds Ratio (OR)	95% Confidence Interval	p-value
Employment (years)			
≤10	1.707	1.023 – 2.849	0.041*
>10	1		
Source of information			
Mass media	1.652	0.194 – 14.087	0.646
Health programmes	2.990	0.393 – 22. 746	0.290
Workplace	1.023	0.132 – 7.906	0.983
Books & School	1.283	0.167 – 9.834	0.811

Families & Friends	1		
General knowledge of breast cancer			
Good	0.575	0.337 – 0.980	0.042*
Poor	1		
Knowledge on risk factors			
Good	1.570	0.928 – 2.657	0.093
Poor	1		

*p < 0.05

IV.   Discussion

The WHO [27] defines health workers as people involved in actions whose primary intent is to improve health. They comprise people who provide health services – the health care professionals, as well as management and support workers. Health workers not only play an important role in either diagnosing, treating, caring or providing support for patients in any form but are also source (direct and indirect) of medical information to the community, even on healthy screening behaviours.

The majority of our participants were not only aware about breast cancer as a disease entity and a common cancer among women worldwide but were also aware about its increasing incidence among Nigerian women. They knew that breast cancer is the leading cancer and the principal cause of death among women in our society. This finding is indeed comparable to similar studies in Nigeria [28] and in Singapore, another developing country where breast cancer is also the most common cancer among women [26]. The increasing epidemic and menace of breast cancer among women globally and in Nigeria is no longer an under circulated information in our society unlike in Iraq another developing nation, were majority of their populace even the supposed educated were neither aware of the disease as the commonest cancer in their country (71%) nor among women worldwide (56%) [29] despite the global awareness of the shift in the disease from developed to developing world. Even among the less educated women, (61%) breast cancer is still believed to be relatively common among Iranian women [21].

The knowledge of respondents about a cure when breast cancer is detected early was high in 92% in our study, while Seah, Kumar, Javed and Esan have reported 94%, 92%, 97.2% and 90.8% respectively in a similar study setting [15, 26, 30, 31]. These are in contrast to an earlier study conducted on 207 female healthcare professionals (FHPs) in Nigeria, where the authors reported 86.5% [32]. The difference in knowledge between this recent study and the former study in our locality could further attest to the unrelenting awareness programmes embarked upon by individuals, groups and even the government in combatting the disease.

In this study, the knowledge of breast cancer and its risk factors, preventive and screening measures demonstrated by participants was relatively good (50.6%). This level of knowledge is however higher than FHWs studied in Benin, Nigeria [14] and among Egyptian nurses [33]. In their study, Lemlem et al.[34] also reported a similar finding with nurses in Addis Abba. Comparable with the present study also, a cross sectional study conducted among rural women in Nigeria indicated that 56.2% participants had good breast cancer knowledge [22]. Conversely to our finding, adequate or good knowledge were reported among FHPs in Ethiopia (85%), Northern and Southwest Nigeria, (67%, 77% and 75.9%) respectively [23,31,35]. The discrepancy observed in this study with other studies conducted among health professionals on knowledge of breast cancer - risk factors and screening methods may possibly be related to the composition of the study population as this current study employed the WHO's definition of health workers in the recruitment process. The sociodemographic characteristics in our study though showed that majority (91%) of the participants had tertiary education, there was a statistically significant mean difference between the professional groups with medical doctors, nurses and allied health professionals having a higher mean score as compared to other professional groups in the study. These then implies that some of the participants mostly, non-clinical and domestic staff do not possess adequate knowledge of breast cancer probably due to their professional background and or their nature of job in the hospital setting [4]. The authors therefore suggest that a course module or content on breast cancer prevention and early screening education should be incorporated into the undergraduate curriculum aside the on-going general awareness campaign in our society knowing full well that virtually all fields of human studies not only the medical field, are needed for the smooth running of any hospital. Also, workplace educational training on breast screening should be organised regularly for all health workers so as to enlighten and develop them in their role as models and as their own health lies in their hands likewise the health of other women in their community. The number of questions asked in the instruments used; the scope of the questions as many of the studies were limited to only BSE, mammography or both; the method of scoring and or the sample size are other possible reasons for the differences in knowledge score reported in these studies.

Barriers to early diagnosis and treatment of any disease such as breast cancer can be addressed by raising awareness about the disease and its screening practices. Several studies have shown the existence of a positive correlation between breast cancer awareness and screening practice [26]. In our study, the proportion of participants who were aware about the different breast screening methods (BSE, CBE and mammography) was

79.6% though, less than half of them had satisfactory knowledge of these screening methods. In many studies performed in our country among health professionals [23,24,36], the rate for awareness of breast screening methods ranged from 30% to 95.9%. In Ethiopia, the rate was 62.9% [37]. Almost all the participants in this study were aware of CBE as a breast cancer early detection method, only 62.2% demonstrated a good knowledge of CBE, the nurses being more knowledgeable than others. These findings were higher than the study done on FHPs [14,23,31,32,37, 38, 39], medical doctors and nurses [24,34]. In Nigeria, these rates are even lower in women with no professional link to the hospital [13,22]. This unveils that knowledge about CBE and other breast screening methods among health professionals varies considerably across the regions emphasising the need for regular health education among health workers as well as the general population on breast cancer.

When asked, who should perform CBE for women who wants to carry out the procedure, just over half of FHWs in this study knew the qualified health personnel as both physicians and registered nurses. Seventy-seven (23%) identified the physicians alone, 7.2% registered nurses, (6%) the woman herself, anybody (4.2%), (1.5%) her husband while 4.5% had no idea. In support of these findings, a more recent and similar survey among FHWs in a tertiary hospital in the Eastern part of Nigeria showed that 75.6% of their participants correctly noted doctors, 1.9% indicated trained nurses and the individuals whereas, 20.6% acknowledged that they don't know. Again, the lack of knowledge on this vital aspect of CBE further accentuate the need for urgent interventional measures to improve health workers' knowledge and their leading role in breast screening awareness and information dissemination. Only physicians (medical doctors) and registered nurses with adequate knowledge and skill on CBE are recommended to perform the screening. Recognising eligible physicians and nurses to practice this screening method coupled with the issue of accuracy due to sensitivity and specificity of the test poses a serious threat to its practice. Hence, there is need for continuous on-the-job training and having a standard protocol in place to ensure uniformity in performance and reporting among the concerned personnel. Trained nurse's or doctor's assistants in acquisition of adequate CBE technique skill are also eligible to carry out this procedure. These category of workers falls into the domestic staff group in our local setting.

The American Cancer Society recommends that women in their 20s and 30s should have CBE as part of their periodic health examination at least every three years while those 40 years or older are to be examined every year [17,18]. Like findings from indigenous and foreign studies, this study also showed that the knowledge on frequency of CBE practice was dismal as majority opted for every six months, while 28.7% indicated at every opportunity a woman visits the hospital. Participants who identified monthly practice of CBE were about half a third (15%) of the study population, which is consistent with studies of Dellie et al. [37], Olowokere et al. [22], and Madubogwu et al. [39]. Participants that indicated every year practice and acknowledge they have no idea of the timing in our study were fewer than those of other studies [22,37,39]. Though not specific about the different age range and their recommended time of practice, only 5.2% Ethiopian FHWs knew CBE should be done once in every 3 years [37] whereas 28.1% Nigerian FHWs in a more recent study reported that CBE should be done only when abnormality is observed [39]. Actually, in this part of the world where comprehensive healthcare and national cancer early detection programs are elusive; where most women (elites and health workers inclusive) only visit the hospital when forced by ill health; and where routine medical check-up is still a mirage; the authors would encourage that CBE should be performed at every opportunity a woman has to visit the hospital in our society and in other developing countries facing similar challenges. This will reduce unnecessary late stage presentation and high mortality of the disease being reported among us.

The main source of information about CBE to the participants was health programmes (38.2%) such as workshops, seminars and conferences; whilst workplace provided 25.1%; emphasising the plausible success of public health awareness programmes and the positive influence of workplace among this category of workers. Dellie et al. [37] report that health professionals were the major (80.2%) source of CBE information among FHWs in government hospitals in Ethiopia. Another study carried out among postgraduate students in Nigeria demonstrated that majority of the participants learnt of CBE from health workers [40]. Continuous health education is vital for all health workers to get them abreast of major public health issues of concern and also prepare them as role models of breast screening behaviours. However, to allow for wider coverage among female health workers which in turn will ultimatelyspread out to other women in the community, other contributed sources of information on CBE in our study mostly books, journals, magazines, mass media should be employed.

Unlike most developed countries such as the USA and many other western countries where clinical breast exam is an age long, extensive practice method included into the population-based screening programmes [17], reports from many less developed countries where awareness of early signs and symptoms and screening by BSE and CBE are the recommended early detection strategy, had repeatedly shown low rates of CBE screening practice [32,33,37,41,42]. These studies showed 30%, 26%, 31.5%, 22.5% respectively among

Nigerian FHPs; Egyptian nurses (32.3%); 24.8% among doctors and nurses in Turkey; 32.5% among Ethiopian FHWs; 26.2% among female postgraduate students, 31.7% and 9.1% rural and semi-urban community-dwelling women in Nigeria respectively [12,22,23,32,33,36,37,39,40,42].In a Uganda study, evaluating breast cancer knowledge, attitudes and screening practice among 100 women, only 40% of them had performed CBE [41]. Although, the women who specifically reported for a mammogram exam at the Mulago hospital were excluded from the study, the higher rate of CBE demonstrated among a study population where majority had primary education level, unemployed and cohabiting, could perhaps be due to breast complaints as knowledge of breast cancer and its risk factors were lacking. The result of this present study showed that the rate of those who performed CBE was rather high (59.9%). A similar study among Cosmetologists African American women in California also indicated that only 57% of those hair dressers reported having had a CBE [43]. Though higher (76.2%; 13.8%) than that from other studies, similar findings were documented in these studies where a higher proportion of doctors (17.8%; 18.3%) than nurses (13.9%; 7.9%) performed CBE for the participants [22,40].

Of those who had ever practiced CBE, most had it for the purpose of routine screening; whereas 21.7% had it for routine anti-natal examination, a rate lower than that reported among rural women [22]. Unlike Ibrahim &Odusanya[32] and Olowokere et al. [22]who found in earlier studies, the least acknowledged reason for performance of CBE was due to breast complaints. The reasons indicated for non-performance of CBE were that some (39.5%) thought it was not necessary, 28.2% had no response, that it was not recommended by a health professional (23.4%), 5.6% not aware of the procedure and (3.2%) do not know where to get the screening done. Similar and dissimilar reasons for not having CBE had been noted across the regions in other reports and these, even among doctors and nurses reputed to be directly closer to the patients than other health professionals [12,23,33,42]. Perhaps fear of finding a mass could be an explicable reason for non-performance of CBE however, none of our participants specified this. In their study among nurses, Elshamy&Shoma[33] unexpectedly showed that some of the nurses reported the reason for not having CBE was because they do not want to expose their breast to strangers but fatefully, these nurses by virtue of their training and role in CBE practice, are to examine other women's breast. According to these results, it can be concluded that acceptance of this breast screening method is poor among health workers let alone the women populace in developing countries. This is a serious concern which calls for urgent interventional measures to correct this obvious behavioural and attitude related health issue.

Just as Elsie et al. [41] and Gali[23] observed, in a culturally and religious setting like Nigeria, embarrassment can be a crucial reason for not having CBE particularly when screening is performed by either a male doctor or nurse. In this study, it was observed that many female health workers with the exception of the medical doctors do not know what CBE meant and yet those that had practiced, had it done either during pre-employment screening, ante-natal clinic or as part of examination for complaint in the breast. The high practice rate however obtained in the study was due to the explanation given by the interviewers on CBE as to whether anybody had ever examined their breast and of which many of them were able to recollect. This relatively high practice of CBE among this study participants could be due to the fact that one of the criteria for employment at the study location is pre-employment medical screening examination carried out by designated physicians. The chest region is one of the areas for physical assessment and in the process, the breast is included in the examination. This way of examining the breast may not actually be referred to as clinical breast exam as its effectiveness in terms of detail and systematic guideline of performance is questionable. Bearing in mind the nation's cultural and religious sensitivity, many of those who claimed to have practiced CBE during their pre-employment screening, might probably had performed it as against their own will. Another observed issue of concern is the fact that many of the non-medical staff were ignorant that they are also identified as health workers by virtue of their workplace while a few of the medical doctors argued and refuted the inclusion of domestic and non-clinical staff into the study as also part of health workers. These striking findings in this study call for proper orientation of all health workers with no exception on the definition of health workers by the WHO and training in this regard on their expected roles to the larger society. Also, having found out from this study that the benefits of CBE are not fully understood and maximised by many health workers, intensive educational intervention programs aimed at positive screening behavioural changes are urgently needed to address this issue.

Bivariate statistical analysis indicated performance of CBE was significantly associated with years of employment and the source of information on CBE. Dellie et al. [37] found that age, marital status, education level, type of profession and work experience were significantly related to participants' practice of CBE. This present study did not show a significant association between age, marital status, educational status, religion, ethnicity, location of residence, professional group and knowledge of risk factors and CBE practice, which is in keeping with study of Ibrahim &Odusanya[32]. However, at multivariate level of analysis to identify the best predictors of CBE practice, years of employment and general knowledge of breast cancer were found independent predictors of CBE practice.

Evaluation of literature show that clinical breast exam and mammography investigations are not readily accessible and affordable in less developed and economically transitioning countries. However, in partial agreement with an earlier remark by Ibrahim &Odusanya[32] in a study conducted among similar population, CBE is more available and affordable in Nigeria despite the constraints in comprehensive healthcare delivery. We therefore propose that much emphasis should be directed towards competency training of the recommended health professionals on the standardized performance and reporting of the procedure and which should also be optimized by continuous training and experience [17]. To all health workers, CBE screening is readily accessible to them by virtue of their workplace than to the general public. Therefore, a pursuit of positive screening behavioural changes among health workers will certainly affect them in their role as worthy models and for better control of breast cancer in the society.

The current sample consisted of a small proportion of the FHWs in Nigeria, thus limiting the generalisability of the study findings to all FHWs in Nigeria. Future study is recommended to employ a larger sample size of FHWs and such study should focus on assessing the practice of CBE among health workers based on the recommended age range and frequency of practice. This should be done without having to inquire whether their breast has been examined before by anyone.

V. Conclusion

Participants in this study had relatively good knowledge of breast cancer and CBE screening, knowledge on frequency of CBE practice was lacking, practice of CBE was rather high however, attitude shown by participants who never had CBE calls for urgent educative interventional measures to correct this obvious behavioural and attitude related health issue. Introduction of breast cancer prevention and early screening education module into the undergraduate curriculum is necessary as other fields of study along with the medical fields are needed in the smooth running of any hospital. Conscious efforts should be made by the concerned government agencies to establish and maintain continuous workplace health training focused on knowledge of and positive attitude towards breast screening measures most especially CBE, as it offers a greater advantage for proper learning and reviewing of the breast self-examination technique from the right persons. A standard protocol should be developed to ensure uniformity in performance and reporting. Due to the health seeking behaviour of women in our society, practice of CBE at every opportunity a woman has to visit the hospital is highly recommended.

Acknowledgements

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