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CONTENTS

WILLINGNESS TO UPTAKE BREAST CANCER SCREENING AMONG RURAL WOMEN IN SOUTHWESTERN NIGERIA

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ABSTRACT

Background: The mortality attributed to breast cancer remains high especially among rural dwelling women in low-income countries. Late diagnosis that may be as a result of poor knowledge and non-utilization of available screening has been implicated in the high mortality burden. Enhancing access to and uptake of breast cancer screening will reduce the cancer burden.

Objectives: This study was conducted to assess the willingness to uptake breast cancer screening among rural women in South Western Nigeria. Factors associated with willingness to uptake breast cancer screening were also determined.

Methods: A community-based cross-sectional design using multi-stage sampling was used to select 920 women in Igbo-Ora, South Western Nigeria. An interviewer-administered questionnaire was used for data collection. Data was analysed using SPSS at a 5% level of statistical significance.

Results: The respondents were aged 15 to 86 years with 795 (86.4%) being within the reproductive age group. Of total respondents, 546 were aware of breast cancer of which 171 (31.3%) had good knowledge about the symptoms of breast cancer. Of the 834 respondents who had never screened for breast cancer, 651 (78.1%) were willing to screen. Respondents within the reproductive age group and those that knew someone with breast cancer had odds of 2.7 and 2.5 respectively of being willing to uptake breast cancer screening. (OR=2.9; 95% CI=1.8-5.1 and OR=2.5; 95% CI 1.2-5.7)

Conclusion: Although the knowledge of breast cancer and the awareness of screening methods among women in rural area is low, their willingness to get screened remains high. The use of survivors as well as survivor relatives should be considered during community-based health programmes aimed at improving uptake of screening among this population.

Keywords:
Breast cancer, Screening, Willingness to uptake, Rural women

BACKGROUND

Globally, cancer is a major public health problem. It has been identified as the second most common cause of death in developed countries and among the three leading causes of death in developing countries[1,2]. Breast cancer has not only been identified as the most prevalent cancer in the world but also as the leading cause of cancer-related deaths in women [3]. It has been estimated that 50% of breast cancer cases and 58% of breast cancer-related deaths occur in developing countries [4].The incidence of breast cancer in Nigeria between 2009-2010 was

54.3 per 100,000 representing over a 100 percent increase from 24.7 per 100,000 in the last decade. It also accounted for 56.6% of all cancer diagnosis between 1995-2002 [5,6].

Although the incidence of breast cancer is lower in African women relative to their Caucasian counterparts, mortality from breast cancer has been reported to be appreciably higher in African women [7–9]. This disproportionate mortality of breast cancer in developing countries has been attributed to the: earlier age of disease onset[10], more aggressive nature of the disease among blacks[11], unequal access to high quality screening and treatment for breast cancer[12] and late presentation to the hospital by women in developing countries.[4,13], In Nigeria, about 70% of women present at advanced stage of the disease when little or no benefit can be derived from any form of treatment [14–17].

Lifestyle modification which includes consumption of food high in unsaturated fatty acids and alcohol, smoking, increasing life expectancy and ageing, and increased use of hormone replacement therapy by women in developing countries, increases the risk of developing breast cancer [18–20]. Early detection will therefore be expedient in enhancing early presentation and commencement of treatment thereby giving the women increased treatment options with eventual improvement in the overall survival rate. Furthermore, review of studies conducted about three decades ago reported poor screening practices due to lack of access and perceived non-affordability of the screening methods in resource poor countries as the reason for the late presentation of the disease. Another factor reported to be associated with the late presentation is the low level of awareness and practices relating to cost-effective screening methods such as breast self-examination (BSE) [9,21].

Despite the availability in developing countries of variety of screening methods for detection of breast abnormalities and potential malignancies ranging from the highly recommended, sensitive and costly mammography to the cost-effective, easy to carry out BSE,[22–26] late detection and late presentation still constitute a problem[27–30]. BSE has been said to be associated with increased hospital visits, increased level of cancer related anxiety as well as increased healthcare cost however, it gives women a sense of control over their health, increases their awareness of breast changes and helps women in developing countries to take prompt decision or actions if they detect breast changes following BSE. Furthermore, there is some evidence that majority of the early self-discovered breast tumors are in BSE performers. [25,31]

The high incidence and mortality associated with late presentation in developing and resource-constrained countries has made screening for early detection of breast cancer a public health practice of importance [32–34]. Many studies have looked at the knowledge, attitude and practice of screening for breast cancer among women in Nigeria[13,14,35–37], while few have looked at practice of BSE among Nigerian women in urban and semi-urban settlements or health facilities[34,38]. Despite this, there still remains a high incidence and mortality from breast cancer that has been attributed to poor screening, late presentation and poor access to treatment. It is therefore imperative to enhance the uptake of simple, easily accessible and less costly breast cancer screening methods. In order to enhance screening uptake there must be a willingness by women in resource-poor countries who lack access to health care services and comprehensive diagnostic facilities to utilize the screening methods[16].

The Andersen health belief model which has been used extensively to assess willingness to utilize health services is predicated on three factors; predisposing, enabling and need factors[39–43]. Predisposing factors are demographic factors in individual (gender, age, highest level of education) and background variables that predate the need and enabling factors. Enabling factors are those variables that facilitate or prevent the utilization of health services (income, health insurance, availability of personnel/facilities and satisfaction from previous use of such services). Need factors are the most immediate cause of use of health services which are closely related to patient's perceived needs (knowledge of and perception about the disease) as well as evaluated need (quality of services provided after patient presented to a care

provider)[39,40,43]. This study was therefore conducted to assess willingness to uptake screening methods among rural dwelling women in Southwestern Nigeria and to identify factors (predisposing, enabling and need factors) associated with the willingness to utilize breast cancer screening by these women.

METHODOLOGY

Study location

This study was conducted in Igbo-Ora, Oyo State. Igbo-Ora, is a rural town in Oyo State South-Western Nigeria located 80km North of Lagos with an average population of 92,719 and geographical coordinates latitude 7.43333 and longitude 3.28333 [44]. The town is the headquarters of Ibarapa Central Local Government and has seven wards. Majority of the population are of the Yoruba tribe with most adults working as farmers and traders. Like most parts of the country, it is patriarchal but women contribute significantly in the communities socially and economically. Women in Igbo-Ora belong to a variety of social groups either through their occupation or faith-based organizations. Advocacy and implementation of interventions addressing reproductive and family health and other social issues among women are often channeled through these groups. [45, 46]

Study population

Study participants were consenting females who were 15 years and above as at the time of the study, residing in Igbo-Ora community for not less than one year and had no history of breast cancer or on treatment for breast cancer.

Sampling technique

Multistage sampling technique was used to select participants. The first stage involved the selection of three out of seven wards by balloting. In the second stage, using the house numbering done by the Department of Community Medicine, College of Medicine, University of Ibadan, systematic selection of alternate houses in the selected wards was done. In the event that the selected house did not have an eligible respondent, the next house with an eligible respondent was selected. In the third stage, a household was selected from each house by balloting and the fourth stage involved selection of an eligible female respondent from the selected household by balloting (in instances in which more than one woman was eligible).

Data collection

A total of 920 females were selected for this study. An interviewer administered questionnaire developed from the Breast Cancer Awareness Measure (BCAM) [47] and extensive literature review, was used to obtain data from respondents. The questionnaire was translated into the predominant local language (Yoruba) and back translated into English to ensure it retained its original meaning. It was thereafter pre-tested in another ward eight kilometers (8km) from Igbo-Ora, with communities similar to the study location in socio-demographic characteristics and subsequently amended as necessary.

Interviewers were Community Health Extension Workers (CHEW) who participated in a two-day training session before commencement of data collection. Data on socio-demographic characteristics, knowledge on symptoms and risk factors of breast cancer, perception of breast cancer, treatment seeking behaviour, awareness of breast cancer screening, practice of and willingness to practice breast cancer screening was collected from respondents after obtaining verbal and written informed consent from them. After completing the section that assessed the women's awareness, knowledge and perception of breast cancer, all women were informed about breast cancer with the aid of pictorial teaching aids to ensure all respondents are aware of the disease entity prior to assessing their willingness to uptake screening.

Data analysis

Outcome variable: The outcome variable for this study was willingness to uptake breast cancer screening.

Willingness to uptake breast cancer screening: This was assessed among the women who had never

screened for breast cancer prior to this study using a "Yes" or "No" option to a question each in three domains: "overall willingness to screen" i.e. willingness to be screened with or without payment; "willingness to be screened if free" (i.e. without payment) and "willingness to be screened if it requires payment" [40,47].

Independent variables: Using the Andersen Model of healthcare utilization[48], the following variables were utilized to determine factors associated with willingness to uptake breast cancer screening:

Predisposing Factors

Age: The respondents' age was dichotomized into those "within the reproductive age group" (WRAG) that is 15-49 years and those "not within reproductive age group" (Not WRAG) that is respondents who were >49 years.

Marital status: was grouped into "currently married" and "not currently married".

Number of living children: The number of respondents' living children was grouped into three categories using the expected maximum number of children per family in Nigeria[49] into "no children", "1-4 children" and ≥ 5 children".

Level of education: For both the respondents and their spouses, this was dichotomized into those with "less than secondary education" (no formal education and primary education) and those with "secondary education or more" (secondary and tertiary education).

Enabling Factors

Income: The national minimum wage of 18,000 Naira ($57.10)/month (at $1=315.25 Naira[50,51] was used to dichotomize average monthly income into "minimum wage and above" and "less than minimum wage".

Need Factors

Knowledge of breast cancer symptoms: This was assessed among respondents who had heard of breast cancer using 23 questions with "Yes" or "No" options. Twelve (12) out of the 23 questions were correct symptoms of breast cancer while 11 were wrong symptoms. A score of "1" or "0" was assigned to every correct or wrong response respectively. Respondents were said to have good knowledge of breast cancer symptoms if they had scores of at least 13 comprising of all 12 correct symptoms and at least 1 of the questions that listed a wrong symptom as the answer.

Perception of breast cancer: Using a five point Likert scale (strongly agree, agree undecided, disagree and strongly disagree), respondents' overall perception of breast cancer was assessed with a total of 16 items. Responses on the Likert scale were assigned scores between 1 and 5. The most appropriate response to each item was assigned a score of "5" while the least appropriate and undecided were assigned a score "1" and "3" respectively. Median scores (48) for overall perception was computed and used as the cut-off point for dichotomizing into "poor perception" and "good perception" Perception to treatment was identified as an important need factor on its own (4 items; median score = 12).

Knowing someone that has had breast cancer and having ever noticed any changes in breast were both assessed using a "Yes" or "No" option to each of the questions.

Data collected was analysed using SPSS version 23[52]. Categorical variables were summarized using frequencies and proportions. Age was summarized using means and standard deviations (SD) while medians and inter-quartile ranges (IQR) was used to summarize average monthly income and knowledge score of breast cancer symptoms because the data was skewed. The associations between, the outcome and independent variables was tested using Chi square test while multiple regression analysis was used to identify variables independently associated with willingness to uptake breast cancer screening. Variables significant at 10% were entered into logistic regression model. Level of significance for all tests was at 5%.

RESULTS

Socio-demographic Characteristics

Respondent's mean age was 32.5 years (SD = 12.3), the median income was 20,000 Naira

($63.4), Inter-Quartile Range (IQR) of 30,000 Naira ($95.2). Majority (86.4%) of the respondents were within the reproductive age group with less than a third of them having less than secondary school education (Table1).

Table 1: Socio-demographic distribution of study population

Variable	Frequency	%
Age (n=915)		
WRAG	795	86.4
Not WRAG	125	13.6
Marital Status (n=915)		
Currently married	611	66.8
Not currently married	304	33.2
Respondent's level of education (n=894)		
No education	104	11.6
Primary	169	18.9
Secondary	331	37.0
Tertiary	290	32.5
Spouse's level of education (n=640)		
No education	89	13.9
Primary	115	18.0
Secondary	236	36.9
Tertiary	200	31.3
Number of children (n=920)		
No children	280	30.4
1-4 children	550	59.8
≥ 5children	90	9.8

Respondents' knowledge and perception of breast cancer and their willingness to uptake screening

The median score for the knowledge of breast cancer symptoms was 11.0 (IQR = 8.0) out of a maximum score of 23.Approximately 59.3% of the respondents had heard about breast cancer, however the knowledge of symptoms of breast cancer was found to be poor in 68.7% of the study population. Perception about treatment and overall perception was poor in majority of the respondents as shown in Table 2.

Less than a quarter (24%) of the study population was aware of breast cancer screening measures. About 86 (9.4%) of the total respondents have ever had any form of breast cancer screening while 651 (78.1%) of the 834 who had never done any form of screening reported willingness to uptake breast cancer screening. Of the 651 women who indicated that they were willing to be screened, 98.9% (643) said they would uptake screening if it was free while 577 (88.6%) said they would uptake screening even if it requires any payment.

Factors associated with willingness to uptake breast cancer screening

The overall willingness to get screened was significantly higher among respondents within reproductive age group (81.5%), those with e" secondary level of education (82.3%), those whose spouse's had ≥ secondary level of education (81.7%) and those who knew someone with breast cancer (89.9%). On logistic regression however, significantly higher odds of willingness to be screened for breast cancer was only found among respondents within the reproductive age group and those who knew someone with breast cancer.

Table 2: Respondents' knowledge and perception of breast cancer symptoms, and willingness to uptake screening

Variable	Frequency	%
Ever heard of breast cancer (920)		
Yes	545	59.3
No	375	40.7
Knowledge of breast cancer symptoms (n=546)		
Good	171	31.3
Poor	375	68.7
Perception of treatment of breast cancer (n=546)		
Good perception	186	34.1
Poor perception	380	65.9
Overall perception of breast cancer (n=546)		
Good perception	150	27.3
Poor perception	396	72.7
Awareness of breast cancer screening (n=920)		
Yes	221	24.0
No	699	76.0
Ever done breast cancer screening (n=920)		
Yes	86	9.4
No	834	90.6
Willingness to screen (n=834)		
Yes	651	78.1
No	183	21.9
Will screen if free (n=651)		
Yes	643	98.9
No	7	1.1
Will screen if it requires payment (n=651)		
Yes	577	88.6
No	74	11.4

DISCUSSION

This study was conducted among women aged 15 to 86 years in a rural community in South West Nigeria to assess and determine factors associated with willingness of the women to utilize breast cancer screening. The study showed that approximately 59% of the study population had heard about breast cancer. Similar findings were reported by Omotara *et al* who documented that 58% of rural dwelling women in North Eastern part of Nigeria had heard of breast cancer[53]. However, other researchers have documented higher levels of awareness (97% to 91.7%) of breast cancer among women in Nigeria[35,54,55]. The higher levels of awareness reported can however be attributed to the study population for those studies who differed from our study population being health workers and undergraduates in urban areas.

` The knowledge of breast cancer symptoms was found to be poor in 68.7% of the study population and this was similar to the finding from another study in Osun State in South Western Nigeria which reported poor knowledge in 56.6% of women who had a family history of breast cancer[56]. This study did not find associations between age, marital status, level of education and knowledge of breast cancer symptoms which is contrary to other studies[56,57] where these factors were found to influence knowledge of breast cancer. This could have been due to the differences in characteristics of study population as well as study area. The mean age of women studied by Adelekan

Table 3: Factors associated with willingness to uptake screening

Variable	Overall willingness (920)		Willingness if free (651)		Payment required (651)	
	% Yes	p- value	% Yes	p- value	% Yes	p- value
Age						
Not WRAG	57.5	**<0.001**	98.6	0.546*	89.9	0.732
WRAG	81.5		99.0		88.5	
Marital Status						
Currently married	77.6	0.589	99.3	0.218*	87.0	0.373
Not currently married	79.3		98.1		89.3	
Respondent's level of education						
<Secondary education	70.0	**<0.001**	99.5	0.680*	89.4	0.695
≥ Secondary education	82.3		98.7		88.3	
Spouse's level of education						
<Secondary education	70.6	**0.002**	99.3	1.000*	88.0	0.451
≥ Secondary education	81.7		99.1		90.3	
Number of children						
None	80.7		98.4		87.8	
1-4 children	78.2	0.110	99.3	**0.599^**	88.3	0.452
≥ 5 children	70.1		98.4		93.4	
Income						
<minimum wage	78.3	0.249	99.5	1.000*	87.5	0.365
≥ minimum wage	82.5		99.5		90.4	
Knowledge of symptoms						
Good	80.7	0.243	100.0	0.268*	91.8	0.127
Poor	85.1		98.9		86.7	
Perception of treatment						
Good	87.5		100.0	0.567*	88.4	0.078
Poor	82.0	0.128	99.0		94.0	
Overall perception						
Good	86.8		100.0	0.554*	93.3	0.217
Poor	82.7	0.291	98.8		89.2	
Ever noticed breast changes						
Yes	100.0	0.083*	100.0	1.000*	100.0	0.381*
No	77.7		98.9		88.4	
Know someone with breast cancer						
Yes	89.9	<0.001	98.1	0.324	89.7	0.694
No	76.1		98.9		88.4	

**Fisher's exact reported* *^Likelihood ratio reported*

Table 4: Predictors of overall willingness to uptake breast cancer screening

Variable	Overall willingness				
	% Yes	p-value	AOR	95% CI	
				Lower	Upper
Age					
Not WRAG	57.5	**<0.001**	**1**		
WRAG	81.5		**2.981**	**1.751**	**5.075**
Respondent's level of education					
<Secondaryeducation	70.0	**<0.001**	1		
≥ Secondaryeducation	82.3		1.632	0.971	2.742
Spouse's level of education					
<Secondaryeducation	70.6	**0.002**	1		
≥ Secondaryeducation	81.7		0.956	0.562	1.627
Number of children					
None	80.7		1		
1-4 children	78.2	0.110	1.236	0.483	3.164
≥ 5 children	70.1		1.317	0.442	3.926
Know person with breast cancer					
Yes	89.9	**<0.001**	**2.580**	**1.162**	**5.729**
No	76.1		**1**		

et al[56] was 43.4±9.2, about 65% of the study population had less than secondary level of education and were resident in a semi-urban community in Nigeria while Niksic[57] *et al* studied about 49, 270 women residing in a developed country. However the findings in this current study is similar to the results from a cross-sectional study conducted among female secondary school teachers in a rural community in Oyo State Nigeria, showed no significant association between the age of respondents and their knowledge about breast cancer[38]

The perception of the causes of breast cancer was found to be good in about two third of the respondents in this study. Perception of treatment and overall perception however remained poor in a larger proportion of respondents (72.7% and 65.9% respectively) and these figures were higher than what was found by Odongo *et al* in their study which assessed patient delay factors among women who presented with breast cancer in Uganda and found that breast cancer perception was poor in 48.8% of their study population[58]. Conversely, good perception of treatment of breast cancer was reported in some studies in developed countries[59–62].

About a quarter (24%) of this study population were aware that there are available measures for screening for breast cancer and about 76%, 53.4%, 37.1% and 34.8% of those who were aware of available screening knew about BSE, clinical breast examination, breast ultrasound scan and mammography respectively. Less than two fifth (38.1%) of those who were aware had ever done any form of screening. About 90.6% of the total study population had never done any form of breast cancer screening and 78.1% of these were willing to be screened while 88.6% would be screened even if payment is required while an extra 10.3% would be willing to uptake screening if the screening were to be free. Although low-socioeconomic status in rural areas had been associated with low participation in screening programme[63], higher level of education of both the respondents and their spouses as well as level of income were not significantly associated with

willingness to uptake breast cancer screening in this study population. A significantly higher proportion of women within the reproductive age group were willing to get screened which is similar to the findings of Balogun and Owoaje who reported that willingness and practice of breast cancer screening was higher among women in the reproductive age group[64]. Knowing a person with breast cancer was found to be independently associated with willingness to uptake screening and this is similar to the findings of previous studies which showed that knowing a close acquaintance or relative who had breast cancer was significantly associated with willingness to screen[41,42]. This could suggest that having breast cancer survivors share their experiences with other women could play an important role in helping to increase the uptake of screening programmes even in the rural community.

CONCLUSION

The knowledge of symptoms and the perception of breast cancer among rural women in rural community of South Western Nigeria was found to be poor. The socio-demographic characteristics were found not to be associated with the knowledge of breast cancer among these women. This may imply that there are peculiar factors aside the socio-demographic characteristics that may be associated with the knowledge of breast cancer among rural women in South Western Nigeria. Similarly, their awareness of breast cancer screening methods was poor but the willingness to uptake screening among them is high. Women's age, levels of education of women as well as their spouses' level of education and knowing a breast cancer survivor were found to be associated with willingness to screen for breast cancer among these women. Breast cancer survivors can therefore be used as change agents to increase the uptake of screening for breast cancer among rural women.

Further studies can be conducted to determine the relationship between other factors such as myth and cultural beliefs with the knowledge of breast cancer. Also further studies can look into the type of screening method the rural women will be more willing to uptake so as to provide acceptable screening services for them.

LIMITATIONS

The authors did not utilize contingent valuation method to assess the maximum monetary value placed on breast cancer screening as a quantitative measure of the willingness. While this would have provided the maximum amount that women in the study area are willing to pay for breast cancer screening services, the method adopted here still subsists as a proxy for their level of willingness to utilize breast cancer screening. The overall willingness reported in this study did not take into cognizance the different types of breast cancer screening method.

REFERENCES

1. Reddy KS. Global Burden of Disease Study 2015 provides GPS for global health 2030. The Lancet. 2016;388(10053):1448–1449.
2. Mortality G 2015, collaborators causes of death. Global, regional, and national life expectancy, all-cause-specific mortality for 249 causes of death, 1980-2015: a systematic analysis for the Global Burden of Disease Study 2015. The Lancet. 2016; 388(10053).
3. Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S and Mathers C. GLOBOCAN 2012 v1. 1, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Globocan Iarc Fr. 2015;
4. Ferlay J, Shin H, Bray F, Forman D, Mathers C and Parkin DM. Estimates of worldwide burden of cancer in 2008: GLOBOCAN 2008. Int J Cancer. 2010;127(12): 2893–2917.
5. Jedy-Agba E, Curado MP, Ogunbiyi O, Oga E, Fabowale T, Igbinoba F, *et al.* Cancer incidence in Nigeria: a report from population-based cancer registries. Cancer Epidemiol. 2012;36(5):e271–278.

6. Mandong BM, Madaki AKJ and Mannaseh AN. Malignant diseases in Jos: a follow up. Ann Afr Med. 2003; 2(2): 49–53.
7. Asiago VM, Alvarado LZ, Shanaiah N, Gowda GN, Owusu-Sarfo K, Ballas RA, *et al*. Early detection of recurrent breast cancer using metabolite profiling. Cancer Res. 2010; 70(21): 8309–8318.
8. Raftery MD, Asiago VM, Gowda GN and Alvarado L. Early detection of recurrent breast cancer using metabolite profiling. 2012 Sep 21;
9. Ginsberg GM, Lauer JA, Zelle S, Baeten S and Baltussen R. Cost effectiveness of strategies to combat breast, cervical, and colorectal cancer in sub-Saharan Africa and South East Asia: mathematical modelling study. BMJ. 2012; 344:e614.
10. Porter PL. Global trends in breast cancer incidence and mortality. Salud Pública México. 2009 Jan;51:s141–146.
11. Hopkins Tanne J. Young black women have more aggressive breast cancers than white women. BMJ. 2004 Jul 3;329(7456):13.
12. Torre LA, Bray F, Siegel RL, Ferlay J, Lortet-Tieulent J and Jemal A. Global cancer statistics, 2012. CA Cancer J Clin. 2015 Mar 1;65(2): 87–108.
13. Adebamowo CA and Ajayi O. Breast cancer in Nigeria. West Afr J Med. 1999;19(3):179–191.
14. Anyanwu S. Breast cancer in eastern Nigeria: a ten year review. West Afr J Med. 1999;19(2):120–125.
15. Ihekwaba F. Breast cancer in Nigerian women. Br J Surg. 1992;79(8):771–775.
16. Okobia MN, Bunker CH, Okonofua FE and Osime U. Knowledge, attitude and practice of Nigerian women towards breast cancer: a cross-sectional study. World J Surg Oncol. 2006;4(1):11.
17. Azubuike S and Okwuokei S. Knowledge, attitude and practices of women towards breast cancer in Benin City, Nigeria. Ann Med Health Sci Res. 2013;3(2):155.
18. Chaka EE. Breast Cancer Incidence, Mortality and Its Risk Factors among Women Worldwide, 2015. Breast Cancer. 2015;16.
19. Demchig D, Mello-Thoms C and Brennan PC. Breast cancer in Mongolia: an increasingly important health policy issue. Breast Cancer Targets Ther. 2017; 9: 29.
20. Fregene A and Newman LA. Breast cancer in sub Saharan Africa: How does it relate to breast cancer in African American women? Cancer. 2005;103(8):1540–1550.
21. Ogunbode AM, Adebusoye LA, Fatiregun AA and Ogunbode OO. Breast examination as a cost-effective screening tool in a clinical practice setting in Ibadan, Nigeria: review article. Afr J Prim Health Care Fam Med. 2013; 5(1): 1–7.
22. Breast cancer screening: the controversies - Cancer - Canoe.com [Internet]. [cited 2017 May 16]. Available from: http://chealth.canoe.com/channel/cancer/breast-cancer/breast-cancer-screening-the-controversies
23. Nelson AL. Controversies regarding mammography, breast self-examination, and clinical breast examination. Obstet Gynecol Clin North Am. 2013;40(3): 413–427.
24. Final Update Summary: Breast Cancer: Screening - US Preventive Services Task Force [Internet]. [cited 2017 May 16]. Available from: https://www. uspreventive servicestaskforce.org/Page/Document/UpdateSummaryFinal/breast-cancer-screening1
25. Allen TL, Van Groningen BJ, Barksdale DJ and McCarthy R. The breast self-examination controversy: what providers and patients should know. J Nurse Pract. 2010; 6(6): 444–451.
26. Schwarz EB, McNamara M, Miller RG and Walsh JM. Update in women's health for the general internist. J Gen Intern Med. 2011; 26(2): 207–213.
27. Elzawawy AM, Elbahaie AM, Dawood SM, Elbahaie HM and Badran A. Delay in

seeking medical advice and late presentation of female breast cancer patients in most of the world. Could we make changes? The experience of23 years in Port Said, Egypt. Breast Care. 2008; 3(1): 37–41.
28. Caplan L. Delay in breast cancer: implications for stage at diagnosis and survival. Front Public Health. 2014; 2: 87.
29. Clegg-Lamptey J, Dakubo J and Attobra YN. Why Do Breast Cancer Patients Report Late or Abscond During Treatment in Ghana? A Pilot Study. Ghana Med J. 2009 Sep;43(3): 127–131.
30. Pakseresht S, Ingle GK, Garg S and Sarafraz N. Stage at diagnosis and delay in seeking medical care among women with breast cancer, Delhi, India. Iran Red Crescent Med J. 2014; 16(12).
31. Smith E, Francis A and Polissar L. The effect of breast self-exam practices and physician examinations on extent of disease at diagnosis. Prev Med. 1980;9(3):409–417.
32. Oladimeji KE, Tsoka-Gwegweni JM, Igbodekwe FC, Twomey M, Akolo C, Balarabe HS, *et al.* Knowledge and beliefs of breast self-examination and breast cancer among market women in Ibadan, South West, Nigeria. PloS One. 2015; 10(11): e0140904.
33. Adesunkanmi A, Lawal O, Adelusola K and Durosimi M. The severity, outcome and challenges of breast cancer in Nigeria. The Breast. 2006;15(3):399–409.
34. Bellgam HI and Buowari YD. Knowledge, attitude and practice of breast self examination among women in Rivers State, Nigeria. Niger Health J. 2012;12(1):16–8.
35. Odusanya O and Olumuyiwa OOT. Breast cancer knowledge, attitudes and practice among nurses in Lagos, Nigeria. Acta Oncol. 2001; 40(7): 844–848.
36. Odusanya O. Breast cancer: knowledge, attitudes, and practices of female schoolteachers in Lagos, Nigeria. Breast J. 2001;7(3):171–175.
37. Uche E. Cancer awareness among a Nigerian population. Trop Doct. 1999; 29(1): 39–40.
38. Faronbi JO and Abolade J. Breast self examination practices among female secondary school teachers in a rural community in Oyo State, Nigeria. 2012;
39. Kim H-K and Lee M. Factors associated with health services utilization between the years 2010 and 2012 in Korea: using Andersen's Behavioral model. Osong Public Health Res Perspect. 2016;7(1):18–25.
40. Lee S and Jang Y. Factors Associated with Willingness to Use Mental Health Services in Korean Immigrants. Soc Work Public Health. 2016; 31(3): 196–203.
41. Gummersbach E, in der Schmitten J, Mortsiefer A, Abholz H-H, Wegscheider K and Pentzek M. Willingness to participate in mammography screening: a randomized controlled questionnaire study of responses to two patient information leaflets with different factual content. Dtsch Arztebl Int. 2015; 112(5): 61.
42. Nsubuga P. Willingness to screen for breast cancer among adult females attending Mulago National Referal Hospital. 2016; Available from: http://www.dspace.mak.ac.ug/handle/10570/5630
43. Aday LA and Andersen R. A framework for the study of access to medical care. Health Serv Res. 1974; 9(3): 208.
44. Igbo Ora, Western State, Nigeria, 2338669 [Internet]. [cited 2017 May 16]. Available from: http://1worldmap.com/Nigeria/Western-State/Igbo-Ora/2338669
45. VanEnk L, Wilson A and Jennings V. Faith-based organizations as partners in family planning: Working together to improve family well-being. 2011; Available from: http://www.popline.org/node/222273
46. Burket MK. Advancing reproductive health and family planning through religious leaders and faith-based organizations. 2006;

Available from: http://www.popline.org/node/177034
47. Linsell L, Forbes LJ, Burgess C, Kapari M, Thurnham A and Ramirez AJ. Validation of a measurement tool to assess awareness of breast cancer. Eur J Cancer. 2010; 46(8): 1374–1381.
48. Aday LA and Andersen R. A framework for the study of access to medical care. Health Serv Res. 1974; 9(3):208.
49. The World Factbook — Central Intelligence Agency [Internet]. [cited 2017 May 16]. Available from: https://www.cia.gov/library/publications/the-world-factbook/fields/2127.html
50. 5860.pdf [Internet]. [cited 2017 Jul 31]. Available from: http://www.nassnig.org/document/download/5860
51. National Minimum Wage (Amendment) ACT, 2011 - Laws of the Federation of Nigeria 1999 - 2016 [Internet]. [cited 2017 Jul31]. Available from: http://www.lawnigeria.com/LawsoftheFederation/National-Minimum-Wage-(Amendment)-Act,-2011.html
52. IBM Corp. IBM SPSS Statistics for Macintosh Version 23.0. Armonk, NY: IBM Corp; 2015.
53. Omotara B, Yahya S, Amodu M and Bimba J. Awareness, attitude and practice of rural women regarding breast cancer in Northeast Nigeria. J Community Med Health Educ. 2012; 2(5): 148.
54. Irurhe NK, Raji SB, Olowoyeye OA, Adeyomoye AO, Arogundade RA, Soyebi KO, *et al.* Knowledge and awareness of breast cancer among female secondary school students in Nigeria. Acad J Cancer Res. 2012; 5(1): 01–5.
55. Eguvbe AO, Akpede N and Arua NE. Knowledge of breast cancer and need for its screening among female healthcare workers in Oshimili south local government council area of delta state, Nigeria. Afrimedic J. 2014; 5(1): 59–64.
56. Adelekan AL and Edoni ER. Awareness, Knowledge and Practices of Breast Cancer Prevention among Women with Family History of Breast Cancer in Ede, Osun State, Nigeria. Age Years. 2012;25(34):35–44.
57. Niksic M, Rachet B, Warburton FG, Wardle J, Ramirez AJ and Forbes LJ. Cancer symptom awareness and barriers to symptomatic presentation in England—are we clear on cancer? Br J Cancer. 2015;113(3): 533.
58. Odongo J, Makumbi T, Kalungi S and Galukande M. Patient delay factors in women presenting with breast cancer in a low income country. BMC Res Notes. 2015; 8(1): 467.
59. Hunter MS, Grunfeld EA and Ramirez AJ. Help-seeking intentions for breast-cancer symptoms: A comparison of the self-regulation model and the theory of planned behaviour. Br J Health Psychol. 2003; 8(3): 319–333.
60. Marlow LA, McGregor LM, Nazroo JY and Wardle J. Facilitators and barriers to help-seeking for breast and cervical cancer symptoms: a qualitative study with an ethnically diverse sample in London. Psychooncology. 2014; 23(7):749–757.
61. Cameron A and Hinton J. Delay in seeking treatment for mammary tumors. Cancer. 1968; 21(6): 1121–1126.
62. McCutchan GM, Wood F, Edwards A, Richards R and Brain KE. Influences of cancer symptom knowledge, beliefs and barriers on cancer symptom presentation in relation to socioeconomic deprivation: a systematic review. BMC Cancer. 2015; 15(1): 1000.
63. Segnan N. Socioeconomic status and cancer screening. IARC Sci Publ. 1996; (138): 369–376.
64. Balogun M and Owoaje E. Knowledge and practice of breast self-examination among female traders in Ibadan, Nigeria. Ann Ib Postgrad Med. 2005; 3(2): 352–56.