ORIGINAL ARTICLE   Open Access

Predictors of breast self-examination practices among female undergraduates in selected tertiary institutions in Ogun State, Nigeria: The Health Belief Model Approach

Authors: Funmito O. Fehintola[1,*]; Oluwaseun T. Onasoga[1]; Olorunfemi. A. Ogundele[2]; Caleb A. Adegbenro[3]

Affiliations: [1]*Department of Community Health, Faculty of Clinical Sciences, Obafemi Awolowo University, Ile-Ife;* [2]*Department of Community Medicine, University of Medical Sciences, Ondo;* [3]*College of Health Sciences at Bowen University, Iwo Osogbo, Nigeria*

ABSTRACT

INTRODUCTION: The study assessed the knowledge and practices of breast self-examination and predictors among female undergraduates at Olabisi Onabanjo University and Babcock University in Ogun State using the Health Belief Model.

METHODS: This descriptive cross-sectional study was conducted among 396 female undergraduates selected by multistage sampling technique. Data were collected using a pretested self-administered questionnaire and analyzed using IBM SPSS Version 25. A chi square test was used to assess the association, while logistic regression was used to determine the predictors. A p-value of <0.05 was considered statistically significant.

RESULTS: The mean age of respondents was 16 ±2.5 years. The majority of the respondents, 292 (74.4%), had heard about breast self-examination, and more than half, 235 (59.9%) of the study participants had performed breast self-examination. Perceived susceptibility (AOR=1.62, 95%CI=1.31-1.87, p=0.003), perceived severity (AOR=1.81, 95%CI=1.53-1.91, p=0.034), perceived benefits (AOR=1.21, 95%CI=1.20-1.59, p=0.021) and perceived self -efficacy were predictors of self –breast examination (AOR=3.7, 95%CI=2.33-5.92, p<0.001).

CONCLUSION: There was low practice of breast self-examination among respondents. Constructs of the health belief model were predictors of the practice of self-breast examination. There is a need for educational programs to enhance the constructs of the health belief model that can improve the practice regarding breast self-examination.

Keywords: Self-breast examination, Predictors, Undergraduates

INTRODUCTION

Breast cancer is a global health concern and a leading cause of morbidity and mortality among women. It is the most common malignancy affecting women [1–3], and it is also ranked second after lung cancer in causing cancer-related deaths globally [1,4,5]. World Health Organization (WHO)

report of 2020 revealed that 2.3 million women were diagnosed with breast cancer and 685,000 deaths occurred worldwide [6]. The report also showed that, at the end of 2020, there were 7.8 million women alive who were diagnosed with breast cancer in the past five years, which makes breast cancer the world's most prevalent malignancy. Most patients with breast cancer are found in low-and middle-income countries (LMICs), particularly sub-Saharan Africa [7–10]. It has been shown that approximately 627,000 breast cancer-related deaths occurred globally in 2018, and a significant proportion of them (15%) were from Sub-Saharan Africa [11]. Three preventive methods have been prescribed to reduce breast cancer mortality and morbidity [12]. They include breast self-examination, clinical breast examination (CBE), and mammography [12]. Mammography and Clinical Breast Examination need professionals and specialized equipment. Breast Self-Examination, on the other hand, is cheap and can be carried out by females themselves [13]. Breast Self-examination is advantageous to women in some ways: they become accustomed to both the appearance and the feel of their breasts and detect any changes in their breasts as early as possible [14]. Therefore, preventive measures remain the bedrock of the fight against breast cancer world. Although some preventive measures have been available, many remain inaccessible to females in developing countries who need prevention the most. Breast self-examination (BSE) is still recommended as a general approach to increasing breast health awareness, and thus, it potentially allows for the early detection of any anomalies [15]. Furthermore, many healthcare providers recommend BSE because it is free, painless, and easy to practice.

The health belief model (HBM) is widely used as a conceptual framework to study BSE and other breast cancer detection behaviors. HBM is frequently utilized to examine the beliefs about breast cancer screening behaviours, such as BSE [16,17]. The framework comprises five domains: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and self-efficacy [18]. Despite the high prevalence rate of breast cancer and the benefits of BSE, few studies have been published regarding these subjects among female undergraduates in Nigeria. Also, using the HBM model will further help to explain and predict individual changes in health behaviour. Given the importance of knowledge on breast cancer and its screening tools for students, this study aimed to assess the predictors of breast self-examination practices among female undergraduates in selected tertiary institutions in Ogun State.

METHODS

Study design and site: The research used a quantitative descriptive cross-sectional study design, and was carried out in Ogun State, Southwestern Nigeria. Ogun State was founded in 1976, and Abeokuta served as its capital. According to the 2006 census, Ogun State has a population of around 3,751,140. There are 15 tertiary institutions in Ogun State. Olabisi Onabanjo University and Babcock University were chosen for the study as they are the most populous public and private universities in Ogun State. Olabisi Onabanjo University has around 50,000 students (both undergraduate and postgraduate students). Babcock University has about 25,000 students (both undergraduate and postgraduate students). The Babcock University Teaching Hospital (BUTH) serves Babcock University, and Olabisi Onabanjo University Teaching Hospital serves the Olabisi Onabanjo University.

Study population: The study participants were female undergraduate students from the two selected Universities. Female undergraduate students in 100 to 500 levels of study were included. Female undergraduates who were ill or absent when the data were collected, and female undergraduates who refused to consent while enrolled at either university were excluded.

Sample size determination: Leslie Fischer's formula for a population greater than 10,000 was used to calculate the sample size. The prevalence of 63.6%, the % of respondents who had good practice BSE in a study carried out in Ebonyi State, was used [19]. The level of significance was 0.05. A 10% non-response rate was anticipated. After correcting for 10% non-response, the sample size became 392.

Sampling technique: A multistage sampling technique was used to select the participants. First Stage: From each University, three Faculties were chosen from each of the two institutions using a

Fehintola et al.   Predictors of breast self-examination practices among female undergraduates

RMJ

simple random sampling technique (balloting), making a total of six Faculties. Second stage: Three departments were chosen from each faulty (totaling 18) using a simple random sampling technique (balloting). Third Stage: From each of the 18 departments, the lists of students were collected, and eligible students were selected using simple random sampling techniques.

Data collection tools and procedures: A pretested structured facilitated self-administered questionnaire was used to collect data from the study respondents. The questionnaire for the study was adapted from the tool used by Agbonifoh et al. [21]. Trained research assistants with MBBS degrees collected the data for this study using paper-based questionnaires. This tool had four sections. Section A was on the sociodemographic characteristics of respondents, and Section B was on the Knowledge of Breast Self-examination of the respondents. Breast self-examination (BSE) knowledge was tested using alternative responses. Correct answers received a score of 1, while all other responses received a 0. For the total knowledge score range from zero to twelve (0 - 12), knowledge score of 5 and > eight was linked as poor and sound knowledge.

Section C was on Practices of Breast Self-examination with scores ranging from zero to eight (0- 8); practice scores of 4 and > four were related to poor and good practices.
Section D consisted of the Champion Health Belief Model Construct Scale (CHBMS) [20], which consisted of six constructs: Perceived susceptibility construct (6 items); Perceived seriousness of breast cancer (12 items); Perceived benefits of self-breast examination (5 items); Perceived barriers to self-breast examination (8 items); Perceived self-efficacy to self-breast examination (13 items) and cues to action (8 items). The constructs of the health belief model were measured using the 5-point Likert Scale ranging from strongly disagree (1 point) to agree (5 points). The Likert Scale was dichotomized using the mean score for the different constructs. Respondents greater than or equal to the mean score were categorized as "YES," while respondents with less than the mean score were categorized as "NO."

Data analysis: The IBM Statistical Product for Service Solutions (IBM-SPSS) version 25 software was used. Descriptive analysis was employed to calculate the frequency proportion for respondents' age, religion, marital status, etc. At the bivariate level, chi-square was used to determine the association between sociodemographic variables like age, religion, and practice of breast self-examination among respondents. The level of statistical significance was set at $P < 0.05$. The adjusted odds ratio and 95% confidence interval were obtained to determine factors that were significantly associated with the practice of breast self-examination amongst our respondents.

The Institute of Public Health at Obafemi Awolowo University in Ile-Ife, Nigeria, provided ethical clearance for the study (PH/OAU/12/2051). Permission was sought and obtained from the undergraduates before their study enrollment. Consent was obtained from respondents after explaining the aim and objectives of the study to them. Participation of the undergraduates was also voluntary, and their confidentiality was guaranteed by making the questionnaire anonymous: names of respondents were not requested when completing the questionnaire.

RESULTS

Three hundred ninety-two questionnaires were distributed, duly completed, and returned, yielding a response rate of 100%. Adults 16 years of age or older made up the entirety of the sample respondents. The sociodemographic details of the study's respondents are shown in Table 1. The results showed that 63.2% of respondents were between the ages of 16 and 20; 29.4% were between the ages of 21 and 25; 1.3% were between the ages of 26 and 30; 4.8% were between the ages of 31 and 35; and 1.3% were between the ages of 36 and over.
More than half of respondents (59.7%) said they practiced Christianity, 38.1% said they practiced Islam, and 2.3% said they practiced traditional religion. According to the results, 79.0% of respondents were Yorubas, 11.0% were Igbos, 7.4% were Hausas, and 2.6% were from other ethnic groups. The percentage of respondents who were single was around 92.9%; 3.2% were cohabiting, and 3.9% were married. The results also indicate that 32.3% of respondents were 100-level students, 23.2% were 20-level, 8.4% were 300-level, 28.7% were 400-level, and 7.4%

Table 1: Sociodemographic Characteristics of the Respondents (n = 392)

Sociodemographic Characteristics		Frequency (Fx)	Percent (%)
Age	16-20	248	63.2
	21-25	115	29.4
	26-30	5	1.3
	31-35	19	4.8
	36 and above	5	1.3
Religion	Christianity	234	59.7
	Islam	149	38.1
	Traditional	9	2.3
Ethnicity	Yoruba	310	79.0
	Igbo	43	11.0
	Hausa	29	7.4
	Other	10	2.6
Marital status	Single	364	92.9
	Cohabiting	13	3.2
	Married	15	3.9
Year of Study	100level	126	32.1
	200level	91	23.2
	300level	33	8.4
	400level	113	28.8
	500level	29	7.4

were 500-level students.

Table 2 shows the respondents' knowledge of self-breast examinations. More than three-quarters (74.4%) of the respondents have heard about self-breast examinations, whereas just 25.6% have never heard of them. 16.3% of respondents said they learned about breast self-examination from television, 7.3% from radio, 12.5% from an education camping program, 34.2% from the internet, 6.1% from a medical journal, 6.7% from primary health care, 7% from friends, and 9.9% from other sources. Additionally, 86% of respondents indicated that BSE is a helpful tool for the early identification of breast cancer, while 14% said that it is not. When asked if they had been trained to do BSE, 58% said they had, while 42% said they had not. Regarding individuals who taught the respondents, 33.1% learned from a parent, 25.8% from a teacher, 30.1% from a doctor, 20.8% from friends, and 30.9% from a nurse.

Table 3 reveals that 59.9% of the respondents ever practiced breast self–examination, and 29.7% practiced it weekly. Out of the respondents that have ever practiced breast self-examination, the majority (85.9%) had never detected any abnormality. At the same time, a third (30.4%) of those who detected abnormality during examination visited a doctor.

Table 4 shows factors associated with the practice of breast self –examination. There is a statistically significant relationship between age (p <0.001), knowledge (p = <0.001), perceived susceptibility, perceived severity, cues to action, self–efficacy (p< 0.001), and breast self –examination.

Table 5 shows that respondents with perceived susceptibility were more likely to perform self-breast examination than those who did not perceive themselves as susceptible (AOR=1.62, 95%CI=1.31-1.87, p=0.003). Respondents with perceived severity were likelier to perform self-breast examination than those without perceived severity (AOR=1.81, 95%CI=1.53-1.91, p=0.034). Respondents with perceived benefits were likelier

Fehintola et al.   Predictors of breast self-examination practices among female undergraduates

RMJ

Table 2: Knowledge of the Respondents about Breast Self-Examination (n = 392)

Knowledge of the Respondent's Responses		N	%
Have you heard about breast self-examination before?	Yes	292	74.4
	No	100	25.6
Is BSE a valuable tool for early detection of breast cancer	Yes	336	85.8
	No	56	14.2
Have you been taught how to perform BSE	Yes	226	57.6
	No	166	42.4
If yes, who taught you:	Parent	75	33.1
	Teacher	58	25.8
	Doctor	70	30.9
	Nurse	70	30.9
	Friend	47	20.8
How often should breast self-examination be done	Daily	98	24.9
	Weekly	95	24.3
	Monthly	81	20.7
	Yearly	13	3.2
	No idea	105	26.9
What is the best time to do breast self-examination	During menstrual flow	58	14.9
	A week after the period	109	27.8
	During pregnancy	19	4.9
	During breastfeeding	15	3.9
	No idea	190	48.5
Breast self-examination should be done by those who	Doctor	99	25.2
	Trained nurse	49	12.6
	The individual	230	58.6
	Others	14	3.6
Breast self-examination is done by:	Inspecting the breast in the mirror	156	45.1
	Feeling the breast in the mirror	283	81.7
	Feeling the armpit with the hand	119	34.4
	Doing an ultrasound of the breast	132	38.1
	Mammography	103	29.7

to perform self-breast examination than those with no perceived benefits (AOR=1.21, 95%CI=1.20-1.59, p=0.021). Respondents with perceived self-efficacy were more likely to be willing to perform self–breast examination compared with those without self-efficacy (AOR=3.7, 95%CI=2.33-5.92, p<0.001).

Fehintola et al.   Predictors of breast self-examination practices among female undergraduates

RMJ

Table 3: Practices of Breast Self-Examination (n = 392)

Practices Responses		N	%
Have you ever practiced breast self-examination before	Yes	235	59.9
	No	157	40.1
If yes, how often	Weekly	70	29.7
	Monthly	47	20.0
	Occasionally	69	29.2
	Rarely	49	21.1
	Declined to indicate	0	.0
If not, why not	Scared of being practice	28	17.7
	no benefit	24	15.3
	I don't think it is necessary	46	29.0
	Trust in God	13	8.1
	Declined to indicate	47	29.8
If you have been practicing Breast self-examination, have you ever discovered any abnormality in your breast	Yes	29	12.4
	No	202	85.9
	I have not done BSE before	4	1.6
If yes, what did you do	Prayed over it	5	17.4
	Did some lab test	6	21.7
	saw a doctor	9	30.4
	Did nothing	9	30.4
	Others	0	.0
	Not applicable	0	.0
Do you think breast self-examinatio is a good practice	Yes	320	81.6
	No	72	18.4

DISCUSSION

Breast self-examination is one of the vital screening techniques for early detection of breast lumps, most especially cancer of the breast. Though simple, non-invasive, and requires little time, the procedure can only be practiced with the right attitude to sustain it and achieve the desired goal [22]. This study used the Health Belief Model to determine the predictors of breast self-examination habits among female undergraduates at a few higher institutions in Ogun State. More than two-thirds of the respondents have heard of BSE. This is similar to the findings of previous studies that revealed that the majority (97.3%) of respondents had heard of breast cancer and breast self-examination [23,24]. Respondent's primary source of information on BSE was electronic media (internal); this was consistent with the findings of a study conducted in Ilorin Kwara [22], but contrary to the findings of a survey carried out by Irurhe et al. in Lagos and a study by Ibnawadh et al. among Qassim college students [23]. The differences in the sources of awareness on BSE and breast cancer might be due to increased access to social media following the COVID-19 knockdown.

More than half of the respondents had ever practiced breast self–examination, a finding similar to a study in Port-Harcourt, Nigeria, where 59.1% had ever practiced BSE and 40.9% had never done a BSE [24]. The present study revealed that 29.7% of the respondents practice it weekly, a frequency that is not recommended as BSE is recommended to be done monthly. The reasons for this incorrect practice could be attributed to a lack of proper understanding of the procedure or

Table 4: Factors associated with the practice of BSE

Variables	Not Practice	Practice	Total	Chi-square	
	157	**235**	**392**		
Age in years				20.103	<0.001
15-25	134(36.9)	229(63.1)	363		
26-35	23(79.3)	6(20.7)	29		
Knowledge					
Good	30(16.7)	150(83.3)	180	75.802	<0.001
Poor	127(59.9)	85(40.1)	212		
Perceived susceptibility					
No	120(77.4)	35(22.6)		149.101	<0.001
Yes	37(15.6)	200(84.4)			
Perceived Severity					
No	143(51.0)	135(49.0)		51.631	<0.001
Yes	14(12.3)	100(87.7)			
Perceived Benefits					
No	32(45.1)	39(54.9)		7.994	0.005
Yes	203(63.2)	118(36.8)			
Cues to action					
No	101(49.5)	103(50.5)		15.850	<0.001
Yes	56(29.8)	132(70.2)			
Self-efficacy					
No	103(58.5)	73(41.5)		45.390	<0.001
Yes	54(25.0)	162(75.0)			

misconceptions about its frequency.

Out of the respondents that have ever practiced breast self-examination, the majority (85.9%) had never detected any abnormality. This might be due to the need for more skills regarding the proper practice of this screening measure. The reason is that BSE requires self-efficacy, which is regarded as an indispensable prerequisite for the training of both BSE and BCE [25,26]. Findings from this study revealed that respondents who perceived themselves as susceptibility to breast cancer perceived that they benefit from carrying out the self-breast examination, and those with perceived self-efficacy were more likely to practice BSE compared to their counterparts who perceived themselves as less susceptible, less likely to benefit and are not competent to carry out the self-breast examination. This is similar to the findings of a study by Johnson N and Dickson-

Swift V in Australia, which revealed that women who perceived that they were less susceptible to breast cancer were less likely to carry out BSE [27]. This is also corroborated by findings of a study done among female students in Malaysia that revealed that young women perceived themselves as healthy. Hence, they are less likely to practice BSE [28]. Early detection of breast cancer could remarkably contribute to effective treatment and increase the survival rate. Therefore, educational interventions must be developed based on the HBM to enhance perceived susceptibility and self-efficacy, such as the common concerns about BSE. This study provided a baseline on knowledge and practice of BSE among undergraduates in Ogun State. The instrument used for the study was comprehensive, pretested, and modified before data entry. However, since the findings are restricted to a sample of female university

Fehintola et al.   Predictors of breast self-examination practices among female undergraduates

RMJ

Table 5: Predictors of Practice of Breast Self-Examination

Variables	AOR	95% CI	P-value
Age in years			
15-25(ref)			
26-35	1.45	1.23-1.55	0.034*
Marital Status			
Single(ref)			
Married	1.65	1.42-1.78	0.025*
Knowledge			
Good(ref)			
Poor	0.25	0.21-0.45	0.002*
Perceived susceptibility			
No(ref)			
Yes	1.62	1.31-1.87	0.003*
Perceived severity			
No(ref)			
Yes	1.81	1.53-1.91	0.034*
Perceived benefits			
No(ref)			
Yes	1.28	1.20-1.59	0.021*
Perceived Barrier			
Yes(ref)			
No	1.22	1.03-1.64	0.052
Cues to Action			
No(ref)			
Yes	1.35	1.17-1.59	0.041*
Self-Efficacy			
No(ref)			
Yes	3.7	2.33-5.92	<0.001*

Statistically significant, p<0.005), AOR: Adjusted odd ratio, CI: Confidence interval

students, this limits their generalizability to the whole country.

CONCLUSION

The study concluded that there was low knowledge of breast cancer and practice of breast self-examination among female undergraduates.

The respondents' knowledge and practice can be improved by focusing on health education with well-defined strategies. Also, knowledge and education on the practice of BSE should be enhanced by using all available means, including news media, schools, social networks, hospital waiting areas, and health pamphlets. Furthermore, secondary school teachers should be taught both

in theory and practical on BSE.

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Fehintola et al.   Predictors of breast self-examination practices among female undergraduates

RMJ

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