Breast Cancer Knowledge and Breast Self-Examination Practices Among Female University Students in Kampala, Uganda: A Descriptive Study

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ABSTRACT

Objective: The purpose of the study was to assess female university students' knowledge of breast cancer risk factors, signs and symptoms, and identify breast self-examination (BSE) practices. Using this information we aimed to design an education intervention tailored to address any knowledge and practice gaps identified. *Methods*: We conducted a cross-sectional study with 204 female Makerere University students. Data was obtained through the use of a structured questionnaire over a period of two months (1 April 2013 to 30 May 2013). *Results:* Our study revealed a high awareness of breast cancer (98.0%) and BSE practices (76.5%) among female students. Over half the students (61.3%) had an intermediate level of knowledge about risk factors related to breast cancer and the signs and symptoms of the disease. Skills related to BSE practices were found to be low (43.6%). The majority (56.9%) of students received information about breast cancer via mass media. *Conclusion:* Pre- post-education intervention studies need to be conducted to evaluate the intervention outcomes related to breast cancer knowledge and BSE practices among female students in Uganda.

reast cancer is the second leading cause of cancer deaths in women and poses a global public health concern.[1] There is an increased burden of breast cancer in both developed and developing countries including Uganda.[1,2] Globally, over one million breast cancer cases are diagnosed annually.[1] These amount to a total 411,000 deaths from breast cancer accounting for 14% of female cancer deaths worldwide.[3,4] It is estimated that about half (60%) of breast cancer deaths occur in economically developing countries.[4,5]

The incidence of breast cancer in Uganda is unknown, although reports show that breast cancer is the third most common cancer among women with a low five-year survival rate estimated at 56%.[6] This is attributed to breast cancer being an invasive and aggressive disease and is associated with a poorer prognosis in older women.[6] Early detection rates through breast self-examination (BSE) plays an important role in decreasing the morbidity and mortality rates in addition to several other factors.[7] Contributory factors to breast cancer mortality rates include genetics and poverty and unequal access to prompt quality treatment coupled with inadequate awareness and knowledge of the disease.[2] Inadequate knowledge about breast cancer is documented as an important factor in preventing women visiting screening facilities, engaging in BSE, and delayed treatment, and thus contributes to the high morbidity and mortality rates.[3,8,9]

Numerous studies have indicated the need for conducting more research on breast cancer knowledge, screening practices, and factors such as lifestyle changes to address the increasing morbidity and mortality rates.[10] Such studies should be extended to female university students to strengthen BSE behaviors and practice to reduce breast cancer-related deaths in women under the age of 35.[11]

In Uganda, guidelines published suggest that mammograms are only reliable and dependable when conducted in women above 35 years due to increased breast density.[12,13] This means that Ugandan female university students, who in most cases are under the age of 35, remain with ultrasound and BSE as their only screening options. However, in Uganda, not many studies are conducted to assess female university students' knowledge of breast cancer and BSE. A recent study, also conducted at Makerere University, found that the practice of BSE among students was low: only 1% of the students

knew the BSE technique and only 14% regularly carried out BSE.[13] Moreover, evidence shows that knowledge and appropriate use of screening methods significantly reduced the mortality rates associated with breast cancer in the United States and the United Kingdom.[14,15] Therefore, the purpose of this study was to assess female university students' knowledge of breast cancer and to identify their BSE practices with the aim of designing an education intervention tailored to address knowledge and practice gaps.

METHODS

We conducted a cross-sectional study of breast cancer knowledge and BSE practices in female university students enrolled at Makerere University. Makerere University is one of the oldest and prestigious public University's in Uganda and Africa and is located in Kampala Central division.

Female university students and residents of the three female on-campus housing facilities at Makerere University were recruited for the study. A sample size of 204 students was determined using the Kish Leslie formula: $n = z^2pq/e,^2$ where p = proportion of BSE among female students (14%),[13] e = desired level of precision (5%), z = 95% CI (1.96). The calculation also considered a 10% nonresponse rate.

Sixty-eight female on-campus residents were interviewed from each of the housing facilities making a total of 204. Residents of university housing were considered for this study as it is assumed that they have fewer opportunities to be involved in nationwide breast awareness programs both on- and off-campus. A systematic sampling method was used to identify rooms in the three female on-campus residents. The simple random technique was then employed in which students found in each room were requested to pick a paper randomly in a semi-sealed box. Students who picked the paper requesting her to participate were included in the study as long as she was not admitted to any health-related program and was willing to participate in the study.

We developed a self-administered questionnaire to obtain the students sociodemographic characteristics, breast cancer knowledge, sources of information, and BSE practices. The breast cancer knowledge section of the questionnaire was developed based on information in the literature about risk factors and common signs and symptoms of breast cancer. The questionnaire was reviewed by two breast cancer specialists at Mulago Hospital and Makerere University College of Health Sciences, respectively. Their review comments were then incorporated into the revised questionnaire before a pretest with a convenient sample of 21 female students at a nearby private University. Results of the pretest were then reviewed, and questions items were modified to clear ambiguity in the responses. Of a total 29 question items on breast cancer knowledge, 21 were retained. The questions were designed to elicit "yes" and "no" or "false" and "true" responses. The correct (yes and true) responses were assigned one mark each while the incorrect (no and false) responses were assigned zero or no marks. The level of knowledge was categorized as follows: low (0–7 marks), intermediate (8–14 marks), and high (15–21 marks). The maximum score was 21 marks.

Before data collection, the study obtained ethical clearance from the institutional review board (IRB) of the Makerere University, School of Health Science (SHSREC REF2013-009). Data collection was conducted over a period of two months commencing from 1 April 2013 to 30 May 2013. Permission was obtained from the respective female on-campus resident directors/wardens). Verbal and written informed consent was obtained from students after explaining the study objectives and assuring the confidentiality and privacy of the data obtained. Trained research assistants then administered the questionnaire, which was then checked by the authors for completeness.

Data obtained was coded and entered in SPSS Statistics (SPSS Inc., Chicago, US) version 18 for analysis. Descriptive statistics were run for all variables including sociodemographic characteristics, knowledge of breast cancer, breast cancer information as well as BSE practices.

RESULTS

The student's mean age was 21.9±2.0 (range = 18–38 years). Almost three-quarters of the students (n = 154) were aged 21–25 years old. At the time of data collection, 66 (32.4%) students were in their first year of study at the university. The majority (n= 169; 82.8%) of students reported starting menarche between the ages of 13–17 years (mean = 13.8±1.5). The majority of participants were single (n = 184; 90.2%) and Catholic (n = 109; 53.4%). Of these,

Table 1: Participants' demographic characteristics (n = 204).

Variables	Frequency	Percentage
Age range		
18–20	43	21.1
21–25	154	75.5
26–30	7	3.4
Age at menarche		
8–12	35	17.2
13–17	169	82.8
Year of study		
Year I	66	32.4
Year II	55	27.0
Year III	60	29.4
Year IV	20	9.8
Year V	3	1.5
Tribe		
Ganda	52	25.5
Nyankole	30	14.7
Langi	23	11.3
Kiga	19	9.3
Itesot	10	4.9
Others*	70	34.3
Marital status		
Single	184	90.2
Married/cohabiting	11	5.4
Divorced	9	4.4
Religion		
Catholic	109	53.4
Anglican	65	31.9
Pentecostal	27	13.2
Muslim	2	1.0
Seventh-day Adventist	1	0.5

Others includes; Acholi, Alur, Japadhola, Kamba, Kapsubing, Karamojong, Kenyan, Kumam, Lugbara, Madi, Fumbira, Gere, Gishu, Konjo, Nyarwanda, Nyole, Nyoro, Soga, Toro and Sabiny tribes.

one-quarter (n = 52) were from the Ganda tribe [Table 1].

Almost all students (n = 204; 98.0%) were aware of breast cancer. Sixty-four (31.4%) students correctly responded that breast cancer did not only affect females, and 141 (69.1%) knew that breast cancer was not transmitted from one person to another. Almost half of the students (n = 99; 48.5%) correctly identified that a family history of breast cancer was a risk factor. Few participants identified late menopause (n = 42; 20.6%) and late initiation of breastfeeding (n = 71; 34.8%) as risk factors associated with breast cancer. More than half of the students (n = 112; 54.9%) knew of an association between cigarette smoking, a low-fat diet (n = 175;

Table 2: Participants' knowledge of breast cancer (n = 204).

Breast cancer awareness question (answer)	Frequency	Percentage
Have you ever heard about breast cancer (Yes)	200	98.0
Risk factor knowledge questions (answers)		
Breast cancer affects only females (False)	64	31.4
Breast cancer can be transmitted from one person to another (False)	141	69.1
Old age (Yes)	51	25.0
Family history of breast cancer (Yes)	99	48.5
Birth of first child after the age of 30 years (Yes)	38	18.6
Early onset of menses (before the age of 12 years) (Yes)	49	24.0
Late menopause (after the age of 55 years) (Yes)	42	20.6
Late initiation of breastfeeding (Yes)	71	34.8
Being a woman (Yes)	111	54.4
Cigarette smoking (Yes)	112	54.9
Low-fat diet (Yes)	175	85.8
Use of oral contraceptive (Yes)	111	54.4
Exposure to radiation (Yes)	144	70.6
Signs and symptoms		
Large breasts (Yes)	22	10.8
Painless breast lump (Yes)	127	62.3
Nipple discharge (Yes)	162	79.4
Pain in breast region (No)	27	13.2
Lump under armpit (Yes)	100	49.0
Change in breast shape (Yes)	153	75.0

85.8%) and the use of oral contraceptives (n = 111; 54.4%) with breast cancer. The majority of students (n = 144; 70.6%) correctly reported that exposure to radiation was a risk factor for breast cancer.

The students were asked about the signs and symptoms of breast cancer; the majority identified nipple discharge (n = 162; 79.4%) and change in breast shape (n = 153; 75.0%) as major signs and symptoms. Other signs and symptoms identified were painless breast lump (n = 127; 62.3%), a lump under the armpit (n = 100; 49.0%), pain in breast region (n = 27; 13.2%) and large breasts (n = 22; 10.8%)

Table 3: Participants' level of knowledge of breast cancer.

Level of knowledge	n (%)
Low (0–7 marks)	53 (26.0)
Intermediate (8–14 marks)	125 (61.3)
High (15–21 marks)	26 (12.7)

Table 4: Participants' sources of information about breast cancer (n = 204).

Source of information	Frequency*	Percentage
A friend	48	23.5
A family member	25	12.3
A health facility	92	45.1
Mass media	116	56.9
Other	18	8.8

*Multiple responses were recorded.

[Table 2]. Assessment of the students' knowledge of breast cancer revealed that the majority of the participants (n = 125; 61.3%) had an intermediate knowledge about breast cancer risk factors and its signs and symptoms [Table 3]. The majority of the participants 116 (56.9%) reported mass media as sources of information about breast cancer [Table 4].

The majority of the participants (n = 156; 76.5%) had heard about BSE, but less than half (n = 89; 43.6%) had ever performed it. Among the participants who had responded "no" to having performed BSE, a small proportion of the participants (n = 44; 38.3%) reported that they would perform BSE in the next month. Less than half of participants (n = 40; 44.9%) stated that they performed BSE at least once a month [Table 5]. Of those who had not performed BSE before, 38% (n = 44) planned to perform BSE in the next month.

Table 5: Participants' breast self-examination (BSE) practices (n = 204).

Variable/Response	Frequency	Percentage
Have you ever heard of breast self-examination?		
Yes	156	76.5
No	48	23.5
Have you ever performed breast self-examination?		
Yes	89	43.6
No	115	56.4
If no, are you planning to perform a breast self-examination?		
Yes in next month	44	38.3
Yes not in next month	34	29.6
No	7	6.1
I do not know	30	26.1
If Yes, how often do you perform a breast self-examination?		
Twice a week	11	12.4
Once a month	40	44.9
Once a week	10	11.2
Once a year	28	31.5

DISCUSSION

Knowledge of breast cancer is paramount in promoting BSE practices. Although this study found that a good proportion of the participants had an intermediate level of knowledge about breast cancer compared to other studies in the same population, knowledge of breast cancer risk factors was still low. For example, half of the students were unaware that a family history of breast cancer was a risk factor. Additionally, few participants were able to identify late menopause, late initiation of breastfeeding, and having the first child after the age of 30 years as risk factors. It can be inferred from our study that knowledge about risk factors is limited and, therefore, needs to be bolstered to promote screening practices.[16]

A good level of knowledge about breast cancer was exhibited by the participants regarding that fact that breast cancer is not contagious. Similarly, many were aware of the links with radiation and oral contraceptives use. Having false information about breast cancer risk factors is associated with negative attitudes towards seeking screening services.[17,18] Interestingly, and surprisingly, this study found that participants were knowledgeable about the association between low-fat diets and a low risk of breast cancer. This is contrary to studies conducted in Nigeria that found that respondents were unable to identify high-fat diets and obesity as risk factors for breast cancer.[1,3] This knowledge may be attributable to the increased general awareness of health issues through mass media. Issues regularly discussed in the mass media include, and are not limited to, control of weight and obesity and high intake of low-fat diets to be associated with low risk for many other chronic diseases including cardiovascular disorders.

It was suggested that breast cancer knowledge begins with self-awareness of the disease and its risk factors, signs, and symptoms to influence BSE behaviors. Previous studies conducted in the sub-Saharan region observed a high awareness of breast cancer as a disease among female university students. However, awareness of BSE and BSE practices was lower.[13] Other studies conducted in Nigeria recorded poor knowledge and attitudes of breast cancer risk factors.[17,19] It is not surprising that our study found an overall intermediate level of knowledge about breast cancer as female students admitted to Makerere University have undertaken a thematic curriculum at both primary and high school level

with exposure to health sciences. It is also likely that the information about breast cancer is made readily available and accessible through internet services on campus and individual's mobile phones.

Unfortunately, many studies conducted in Africa and elsewhere continue to reveal the gap between awareness and knowledge of breast cancer disease with relation to BSE.[20,21] Despite the high awareness of breast cancer and intermediate level of knowledge about risk factors, female students in our study were unable to identify complex breast cancer risk factors, which could have affected their ability to perform the recommended regular BSE. Our findings were similar to those reported in a cross-sectional study of knowledge and belief conducted in British and Egyptian women.[22,23]

A good proportion of the students were able to identify the correct signs and symptoms of breast cancer. This may be attributable to ongoing breast and cervical cancers campaigns in Kampala and across the nation. Our findings are similar to earlier studies conducted in the United Kingdom and Ghana, where participants were able to respond correctly and identified at least four of five statements describing breast cancer symptoms.[24,25] Age among other demographic characteristics could be implicated in the intermediate knowledge levels recorded in our study. The knowledge level in our study was higher than other studies including older women.[23]

BSE knowledge and skills is an important aspect of early detection of breast cancer.[3,20] Although our study found a high awareness of BSE among female university students; its practice was low. Of those who attempted to perform BSE, few performed it regularly (at least once a month) and of those who had not attempted BSE, few could promise to perform a self-examination in the next month. The poor BSE practices observed among the students may be related to inadequate knowledge of breast cancer symptoms, risk factors as well as inadequate skills in performing BSE.[26-28] It is, therefore, imperative to establish to what extent female university students can perform BSE to match the awareness scores.

CONCLUSION

Our study found high awareness of breast cancer and BSE among female university students. The students had an intermediate level of knowledge about breast cancer risk factors and signs and symptoms. They reported receiving information from mass media. BSE practices were low with few students regularly performing self-examination every month. Our findings highlight a need to emphasize the importance of BSE equally with cervical cancer screening. Health care providers conducting cervical cancer screening to communities of interest should take advantage of the teaching moment and include breast cancer screening and education as a package. Training all health care providers on BSE is the way to propagate BSE skills across the entire communities. Pre-post education intervention studies need to be conducted among female university students to assess the knowledge and skills outcomes of the education session on breast cancer risk factors, signs and symptoms, BSE practices and techniques.

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