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Knowledge and Practice of Breast Self-Examination among Undergraduate Midwifery Students of the University for Development Studies, Ghana

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Authors' contributions

This work was carried out in collaboration among all authors. All authors were involved in the manuscript title selection, critical review of the design, literature analysis, and report writing. They all participated in data collection and analysis, data interpretation, and report writing. All authors read and approved the final manuscript.

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ABSTRACT

Background: Against the background of the worldwide harm caused by breast cancer, as well as the benefits of early detection through simple techniques such as breast self-examination, this study investigated the knowledge and practice of breast self-examination among, midwifery undergraduate students of the University for Development Studies, Tamale-Ghana.
Methods: The study is an institutional-based descriptive cross-sectional survey conducted among second-year female students at the Midwifery Department of the University for Development Studies. The data was collected through a pre-tested structured paper based-questionnaire. The data were analyzed descriptively and presented in frequencies, percentages, tables and figure.
Results: The study recruited 100 participants with an age range between 20 and 39 years with the majority within 20-24 years. The overall knowledge score was 73.0%, a majority of the participants indicated practising breast self-examination (81.0%), but with a low practice score of (49.0%). The study found significant associations between practices of breast self-examination, age (p= 0.022) and marital status (p=0.001) of study participants.
Conclusion: The study found high knowledge of breast self-examination with the majority of study participants saying that they practise breast self-examination. However, the overall practices score of breast-self-examination was relatively low. Additional efforts by the directorate of health services at universities including our study setting are needed to increase knowledge and practices of breast self-examination among students, irrespective of their programme of study.

Keywords: Knowledge; practices; breast self-examination.

1. INTRODUCTION

Breast cancer is the most common cancer in women worldwide, the contributing factor to the rising prevalence includes a lack of knowledge and practices about possible causes and non-performance of regular breast self-examinations [1–3]. Apart from being the most frequent cancer type in Ghana, the age of diagnosis might be as young as 14 years old [1]. In 2020, 2.3 million women were diagnosed with breast cancer, with 685 000 deaths worldwide. By 2024, 19.5 million women are expected to be newly diagnosed with breast cancer, with a rate of 55 % of this rate coming from Low and Middle-Income Countries [3].

The technique of breast self-examination (BSE) is a screening method that can be used to detect breast cancer. It involves the woman examining and evaluating each breast for lumps, deformities, and swelling. The American Cancer Society suggests commencing the BSE monthly throughout high school [4] since it is an important part of any adult woman's health regimen for early detection of the disease and to reduce mortality. However, Breast screening rates in Ghana seem to be generally low [3]. Several investigations conducted in different countries revealed that university students have a fair and good understanding of BSE; however, only a small number perform BSE regularly. For instance, a study conducted to assess Breast Cancer Knowledge and Practice among Female University Students in Gaza showed that the students (80.2%) had prior knowledge of breast cancer from various sources, including university coursework (57%) and the Internet (45%). In terms of general awareness about breast cancer disease, techniques of early diagnosis and management, and applying BSE processes, poor knowledge scores (70%) were found. Almost all students (96.5%) have heard of BSE, and 69.8% know when to do it; however, only 31.4% practice it regularly [5].

In a separate survey conducted in Ethiopia, approximately 190 (85.6%) of 222 students heard about breast self-examination. One hundred forty-three (75.3%) had good knowledge about the sign and symptoms of breast cancer. Breast self-examination was practised by 120 (54.1%) of the study's total respondents [6]. Yet, another related study showed that Participants reported inadequate knowledge (45.5%), fairly positive attitude (56.3%) and low BSE practice (37.5%) [7]. Women who consistently perform BSE had smaller tumours and are found to be in the early stages of illness [6].

Notwithstanding research indicating that breast self-examination can aid in the early detection of non-invasive breast cancer and is a simple and private method of detection [8], there is a knowledge and practice gap, which is worsened by the rising frequency of cancer morbidity and

mortality, particularly in developing countries. Although breast cancer and its related studies can be cited from a literature search in Ghana, (2,3,9) there is a scarcity of current research on university students' knowledge and practice of breast self-examination. The current study addressed this gap by assessing midwifery students at the University for Development Studies knowledge and practices of BSE. Since BSE has been proven to be an effective method for increasing awareness of breast health.

2. MATERIALS AND METHODS

2.1 Study Design and Settings

The study is an institutional-based observational cross-sectional survey conducted among second-year female students at the Midwifery Department of the University for Development Studies in February 2020.

2.2 Study Population

All second-year female students at the Midwifery Department were considered the population for the study. Participants who were present at the time of the survey and agreed to participate in the survey through informed consent were included in the study. Both those who were absent or failed to provide informed consent were excluded from the study.

2.3 Sample Size and Sampling Procedure

The Department of Midwifery at the time of the study had 135 female students and only 3 male students and all the female students were included in the study.

2.4 Data Collection Tools and Techniques

A structured paper based-questionnaire was used to collect data from the study participants. The study questionnaire was designed after a careful examination of similar studies [10–14]. The drafted data collection tool was subsequently reviewed by two senior physicians at the Tamale Teaching Hospital (Ghana) experienced in BSE. The questionnaire was subsequently piloted and modifications were made where necessary to adequately address the objectives of the study. The pilot study was conducted among 20 second-year female nursing students at the Department of Nursing, University for Development Studies. Further to that, the standardized questionnaire was distributed among 131 students representing 97% of the total class size present at the time of the study. This was done after the successful introduction of the study to the students during their last lecture for the day. The study participants were allowed to complete the survey at home and submit the completed questionnaire at a later date using the envelopes provided. The data collection tool was structured into three sections. The first section collected the socio-demographic data of the respondents, the second section assessed participants Knowledge of BSE, whilst the last section gathered respondent's data on BSE practices.

2.5 Data Processing and Analysis

Out of 131 questionnaires distributed only 125 students returned their questionnaires. All the returned questionnaires were checked for completeness and signing of the consent form before they were entered directly onto the Statistical Package for Social Science version 24 (SPSS). After a careful review, only 100 questionnaires were entered into the SPSS for data analysis based on completeness. We conducted descriptive statistics analysis and outcomes presented using tables, and charts. A Pearson Chi-square analysis was performed and was considered significant at a p-value of less than 0.05 at a 95% confidence interval.

In each section of the survey, respondents were scored based on the number of correct answers they provided to the series of questions under the section. To calculate participants' knowledge level, eight sets of questions were used. Participants were given a score of one [1] when they answer the question correctly and zero (0) when an incorrect answer was supplied. Participants who did not attempt the question(s) were not considered in the score computations. We computed the total score for each respondent and calculate the knowledge mean score (6.7) and SD (1.5). All those with a cumulative score less than the mean (6.7) or above it was classified as insufficient knowledge and sufficient knowledge respectively. The mean cut off was based on the number of questions factored into computations of the knowledge score. Breast self-examination practices were assessed using six variables, again the cumulative and the mean score (6.4) with SD (3.8) were calculated, those found below the mean score (6.4) were considered to have Poor BSE practice whilst those with the mean score greater than the mean score (6.4) as good practice.

2.6 Ethical Clearance

Permission to conduct the study was sought from the Head of Department, (Department of Midwifery). Similarly, we carefully followed the dictates of the Helsinki Declaration of Ethical Principles for Medical Research involving human subjects. Participants gave informed written consent after they got full information about the study. In addition, confidentiality was maintained by numeric coding of questionnaires and their names were not required in the questionnaire. The participants were also informed that they have full right not to participate in the study or to stop participation at any point.

3. RESULTS

3.1 Socio Demographics Characteristics of Study Respondents

The study recruited 100 female second-year undergraduate students from the Department of Midwifery. The minimum age was 20 and the maximum 39. The majority of the study participants (60%) were within the ages of 20-24. More than half of the participants (68%) were single while the remaining were married. With regards to religion, the majority of the participants (60%) were Christians, 40% Muslims as shown in Table 1.

Table 1. Socio-demographic characteristics of respondents

Variables	Frequency (No)	Percent%
Age		
Below 25	60	60.0
25 and over	40	40.0
Total	100	100.0
Marital status		
Married	32	32.0
Single	68	68.0
Total	100	100.0
Religious background		
Christianity	60	60.0
Muslim	40	40.0
Total	100	100.0

Table 2. Knowledge of respondents on BSE

Variables	Frequency (No)	Percentages (%)
Have you heard of breast self-examination?		
Yes	98	98.0
No	2	2.0
Total	100	100.0
Do you know that BSE is a useful tool for the early detection of breast cancer?		
Yes	95	94.0
No	5	5.0
Total	100	99.0
Have you been taught how to do BSE?		
Yes	96	96.0
No	4	4.0
Total	100	100.0
If yes in Q8, who taught you?		
Parents	3	3.0
Lecturer	54	54.0
Doctor	3	3.0
Nurse	27	27.0
Friend	7	7.0
Others	3	3.0
Total	96	100.0

Variables	Frequency (No)	Percentages (%)
At what age should BSE be started?		
from puberty	69	69.0
from 20years	26	26.0
from 30years	1	1.0
no idea	4	4.0
Total	100	100.0
How often should BSE be done?		
Daily	2	2.0
Weekly	2	2.0
Monthly	83	83.0
Yearly	4	4.0
no idea	9	9.0
Total	100	100.0
What is the best time to do BSE?		
During menstrual flow	10	10.0
A week after menstrual flow	76	76.0
During pregnancy	3	3.0
During breastfeeding	1	1.0
No idea	10	10.0
Total	100	100.0
BSE should be done by?		
Doctor	3	3.0
Trained nurse	12	12.0
The individual	85	85.0
Total	100	100.0
If you discover any abnormality during BSE what will you do?		
Pray over it	4	4.0
Do some lab. Tests	3	3.0
See a doctor	93	93.0
Total	100	100.0
Would you want to know more about BSE?		
Yes	95	95.0
No	5	5.0
Total	100	100.0
Overall BSE knowledge		
Sufficient knowledge	73	73
Insufficient knowledge	27	27
Total	100	100.0

BSE; Breast Self-Examination

3.2 Knowledge on Breast Self-Examination

Almost all respondents (98%) have heard of breast self-examination before. The majority of respondents (94%) knew breast self-examination was a useful tool for early detection of breast cancer. From the results, 96% of the respondents indicated that they have been taught how to conduct BSE. On the source of BSE education, lecturer and nurses were the major sources of education with (59%) and (27%) responses respectively. With regards to the age at which breast self-examination should begin, a greater percentage of the respondents (69%) thinks breast self-examination should start at puberty, while (26%) of them were of the view that breast self-examination should start at age 20. About (4%) do not have an idea as to when breast-examination should start and (1%) thinks it should start at age 30.

On the frequency of BSE, 83% of respondents were of the view that breast self-examination must be done every month, (9%) had no idea on how often it should be performed while (2%) each thinks it should be done daily and weekly whilst 4% said yearly. More than half (76%) of respondents think the best time to conduct BSE is one week after menstrual flow, (10%) said it

should be done during menstrual flow. 85% of the respondents were of the view that BSE should be conducted by oneself, 12%,3% said it should be done by a doctor or a trained nurse respectively. Commendably, almost all (93%) of respondents said they would seek medical advice should they found any abnormality during breast self-examination. We used eight selected knowledge variables (Q1, Q2, Q3, Q5, Q6, Q7, Q8 and Q14), all correct answers were scored 1 and incorrect, unanswered or missing values were score as 0. We calculated the cumulative mean (6.65), SD (1.0481). All those with a cumulative score <6.65 were classified as "insufficient knowledge" and those with >6.65 and over as "sufficient knowledge." 73% of the study participants had sufficient knowledge of BSE (as shown in Table 2).

3.3 How Breast Self-examination is Done

From the results, a significant number of respondents did not know the difference between breast self-examination and having breast examined through the laboratory. This is seen through the responses of (76%) of respondents who said breast self-examination is done through ultrasound. Another (47%) indicated breast self-examination is done using mammography.

However, the majority of them knew feeling the breast with a hand was one of the ways one can self-examined her breast (93%). Almost all respondents indicated that feeling the armpit with the hand is one of the ways to perform breast self-examination (98%) (as shown in Fig. 1).

3.4 Practices of Respondents Towards Breast Self-examination

About (81%) of respondents practice breast self-examination, most of the respondents practice BSE monthly (50.6%) and occasionally (38.3%). Out of those who practice BSE, only 16% of the participants have observed breast abnormality. After observing an abnormality, close to 77% saw a medical doctor for further diagnosis. Also, it was found that about (71.6%) of respondents usually perform breast self-examination in the morning, (22.2%) does it in the afternoon while (6.2%) does it in the evening. At least (28.4%) of respondents have performed breast self-examination less than two weeks to the study, (33.3%) have done it less than three months to the study, (18.5%) have done it about six months to the study while (19.8%) did it less than a year to the study. The study also shows that 60.6% of the respondents perform BSE in front of a mirror, however, only 24% of the respondents were afraid of performing BSE.

We used six selected SBE practices variables and computed the total score of each participant; (Q2, Q3, Q4, Q5, Q7 and Q8). Also, all correct answers were scored 1 and incorrect, unanswered or missing values were score as 0. We calculated the cumulative mean (6.370) with an SD (3.82). All those with a cumulative score <6.370 were classified as "Poor practice" whilst those with >6.370 were classified as "Good practice". Only 49% of the study participants had good BSE practice (as shown in Table 3).

3.5 Sociocultural Factors that Influence Breast Self-examination

Sociocultural factors such as the beliefs and values of a person can influence a person's attitude towards breast self-examination. From the 4 below, (90%) of respondents mentioned that their religious beliefs do not teach against breast self-examination. Only (10%) indicated that their religious beliefs are against breast self-examination. Also, (75%) of respondents stated that their cultural beliefs are in support of breast self-examination. However, (25%) of them indicated that their cultural beliefs are against breast self-examination.

Unfortunately, only (32%) of respondents have had encouragement from their parents to practise breast self-examination. The remaining (68%) have never had any form of education or advice from their parents on breast self-examination. More than half (58%) of respondents indicating that they have never heard their family discuss breast self-examination. While about (59%) of respondents thinks they need support from their parents to practise breast self-examination, only (12%) have heard their family discuss breast self-examination very often (as shown in Table 4).

3.6 Association between Total Knowledge, Practices of Breast Self-examination and Age, Marital Status, Religious Background, Knowledge and Practices Score

The study revealed a statistically significant relationship between age and marital status with practices of BSE ($p = 0.022$ and 0.001, respectively) (as shown in Table 5).

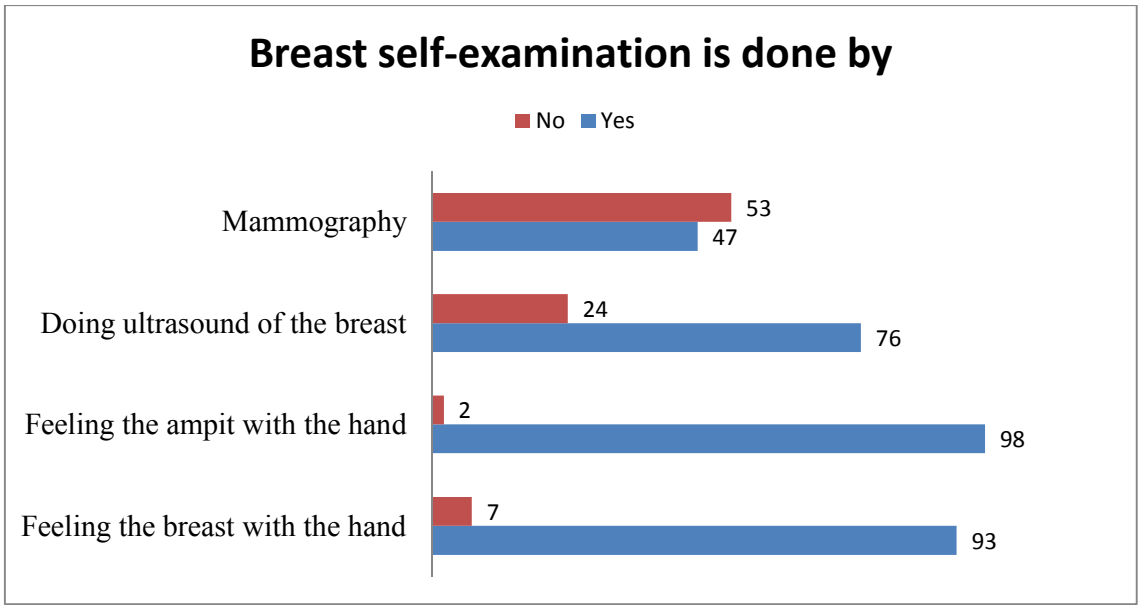

Fig. 1. How breast self-examination is done

Table 3. Practices of respondents towards breast self-examination

Variables	Frequency (No)	Percentages (%)
Do you practice BSE?		
Yes	81	81.0
No	19	19.0
Total	100	100.0
If yes how often		
Weekly	5	6.2
Monthly	41	50.6
Occasionally	31	38.3
Rarely	4	4.9
Total	81	100.0
if you have been practising BSE have you ever discovered any abnormality in your breast		
Yes	13	16.0
No	68	84.0
Total	81	100.
if yes in the above, what did you do		
prayed over it	1	7.7
saw a doctor	10	76.9
did nothing	2	15.4
Total	13	100.0
when was the last time you performed BSE		
less than a week ago	23	28.4
less than three month	27	33.3
six months	15	18.5
less than a year	16	19.8

Variables	Frequency (No)	Percentages (%)
Total	81	100.0
what time of the day do you normally perform BSE		
Morning	58	71.6
Evening	18	22.2
Afternoon	5	6.2
Total	81	100.0
Where do you usually perform BSE?		
In front of a mirror	49	60.5
Lying on the bed	18	22.2
In the bedroom	14	17.3
Total	81	100.0
Are you afraid to perform BSE?		
Yes	24	24
No	76	76
Total	100	100
Overall SBE practice score		
Good practice	49	49.0
Poor practice	51	51.00

BSE; Breast Self-Examination

Table 4. Sociocultural factors that influence breast self-examination

Variables	Frequency (No)	Percentages (%)
Does your religious beliefs teach against BSE		
Yes	10	10.0
No	90	90.0
Total	100	100.0
Does your cultural beliefs support BSE		
Yes	75	75.0
No	25	25.0
Total	100	100.0
Have you ever been encouraged by your parent to practice BSE		
Yes	32	32.0
No	68	68.0
Total	100	100.0
How often do you hear your family discuss BSE		
very often	12	12.0
Sometimes	30	30.0
Never	58	58.0
Total	100	100.0
Do you think you need the support of your parent to practice BSE		
Yes	59	59.0
No	41	41.0
Total	100	100.0

BSE; Breast self- examination

Table 5. Association between total knowledge, practices of breast self-examination and age, marital status, religious background, knowledge and practices score

Variables	Knowledge of breast self-examination			Practices of breast self-examination		
	Insufficient knowledge	Sufficient knowledge	p-value (x^2, d.f)	Yes	No	p-value (x^2, d.f)
Age			0.053(3.729,1)			0.022 (5.241,1) *
Below 25	12	48		28	12	
25 and over	15	25		53	7	
Marital status			0254(1.299,1)			0.001 (10.465, 1) *
Married	11	21		20	12	
Single	16	52		61	7	
Religious background			0.408(0.685,1)			0.176 (1.830, 1)
Christianity	18	42		46	14	
Muslim	9	31		35	5	
Knowledge						0.099 (2.715,1)
Insufficient knowledge	-	-	-	19	8	
Sufficient knowledge	-	-	-	62	11	
Practices of self-breast examination			0.315(1.010,1)			
Poor practice	16	35				
Good practice	11	38				

*X^2= Chi-square; d.f = degrees of freedom; * = significant value at p < 0.05.*

4. DISCUSSION

Multiple studies have shown the importance of BSE in the early detection of BC among women. It is a well-recognized method that allows women to self-examine their breasts for risks of Breast Cancer (BC) including lumps, dimpling of the breast, redness, or pain in the nipple area of the breast as well as anatomical change in the breast [6]. We, therefore, conducted a study to assess the knowledge and practices on BSE among second-year midwifery students of UDS. The sociodemographic findings from the study revealed an age range of 20 and 39 years with the majority of our study participants (60%) within the ages of 20-24 years, single (68%) and Christians (60%). Comparatively, our study has in common, certain sociodemographic characteristics reported by Tewabe et al. [6] comprising single (88.7%), and Christians (78.4%) enough though there exist varying sample sizes.

The knowledge level observed in our study was sufficient among the study participants. This is in sharp contrast to the evidence reported by Nde et al. [14]. Nde et al. [14] reported a low level of knowledge among undergraduate students in a related study. Similarly, Alsaraireh et al. [7] and Mihret et al. [18] reported low knowledge on BSE among a group of female undergraduate students in related studies. A previous study by Ayed et al. [19] among nursing students reported poor knowledge of BSE. However, Atashi et al. [20] and Erbil et al. [21] reported a high level of knowledge of BSE among nurses and midwives in related studies. As evident from our study and the previous studies, there exist varying levels of knowledge on BSE combined with varying programmes of study. It would have been expected that students from health backgrounds (nurses and midwives) would have higher levels of knowledge on BSE compared to other students in the humanities. That is not the reality. The argument could be made that the level of exposure to BSE among students can partly be associated with the varying levels of knowledge on BSE. For explaining in our study majority of the study participants (96.0%) indicated ever being taught or educated on BSE by their teachers. Similarly, Ayed et al. [10] indicated that the mass media (57.6%) was the main source of information on BSE. Mihret et al. [18] also reported that only 16.7% had ever discussed BSE.

Study participants who practised BSE were high among our study participants. Mihret et al. [18], Dinegde et al. [22] and Mekonnen et al. [23] reported low practices of BSE among students with health training backgrounds (nursing and midwifery) and humanities. Students from all backgrounds of training should be encouraged to practice BSE as a simple and cost-effective method for the early detection of BC among women of their reproductive age [4,24]. It is equally important to highlight the need to practice BSE in the right way. Overall, practices of BSE were poor in our study, though the majority indicated practising BSE. The important findings on how BSE is performed is the acknowledgement by study participants that it is performed by feeling the breast and armpit with the hand. Mekonnen et al. [23] maintained in a related study that the commonly used methods included concentric circles and parallel lines. It is therefore important that experts in BC screening and health education and promotion place much emphasis on the correct practices of BC.

Factors including religion, cultural background, and encouragement from parents have a positive influence on the practices of BSE among our study participants. The study revealed a statistically significant relationship between age and marital status with practices of BSE ($p = 0.022$ and 0.001, respectively). Dinegde et al. [22], Fondjo et al. [1], and Ayed et al. [10] reported significant associations between age and practices of BSE at $p< 0.01$, $p<0.0001$ and $p < 0.001$ respectively.

The current study revealed that those students who have a better understanding of how to conduct BSE, when to do it, and why they should do it are more focused on knowing their state of health by the practice of BSE. This means that raising awareness about BSE is an important element of early breast cancer detection, prevention, and informed treatments. Finally, the authors would advise readers to proceed with caution when interpreting the findings because the study surveyed only a specific group of participants.

5. CONCLUSION

The study found high knowledge of BSE with the majority of study participants saying that they practise breast self-examination. However, the overall practices score of breast-self-examination was relatively low. Additional efforts by the directorate of health services at universities including our study setting are needed to increase knowledge and practices of BSE among students, irrespective of their programme of study.

6. STUDY LIMITATIONS

The study's scope was limited among second-year midwifery students. This may affect the generalizability of the study among undergraduate students of the University for Development Studies, including the School of Nursing and Midwifery. Again, the study was a prospective that mainly relied on the responses of the study participants. The responses given could be associated with information bias.

7. DATA AVAILABILITY

The datasets employed in the current study can be made available from the corresponding author upon reasonable request.

CONSENT

As per international standard or university standard, Participants' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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