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Breast Self-Examination (BSE): Association between "Belief in BSE" and "Awareness of BSE" among University Female Students in Uganda

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Abstract

Background: Regular breast self-examination (BSE) has been known to effectively detect breast cancer occurrence early. Are Women who consider BSE effective in detecting breast cancer more likely to be aware of BSE, or vice versa? The present study was an attempt to answer this question. **Methods:** A cross-sectional study was performed for 259 female University students in Kampala, Uganda. Data were analyzed using SPSS. Univariate and bivariate analyses were carried out. **Results:** The majority (64.1%) were aware of the BSE technique. Women considering BSE to be effective for early cancer detection were significantly more likely to be aware of the BSE technique. **Conclusions:** University students who believed in the benefits of BSE were more likely to be aware of BSE than those who did not. More emphasis should be placed on health education for women of younger ages to increase the knowledge of the practice of BSE.

Keywords

Breast Self-Examination (BSE), Benefits, Awareness

1. Introduction

The leading cause of amongst women throughout the world is Breast Cancer (Hortobagyi GN, *et al.*, 2005) [1]. The increase in mortality is mainly due to late

diagnosis of the disease, which is a consequence of a lack of knowledge and awareness regarding breast cancer, primarily in women in developing countries. Early detection of breast cancer increases the treatment's effectiveness, resulting in a better prognosis, and reducing morbidity and mortality rates (Elmore, *et al.*, 2005) [2].

A Breast Self-Examination (BSE) is a technique which allows an individual to examine his/her breast tissue for any physical or visual changes. It is often used as an early detection method for breast cancer. Although most BSEs are carried out by women, self-breast examinations should be carried out by both men and women at least once each month beginning at age 18. The core purpose of Breast Self-examinations is to detect early breast cancer during screening (Gupta, S.K, *et al.* 2009) [3]. Breast Cancer Screening (BCS) are test performed to find disease before symptoms begin, thereby increasing its chances for treatment, cure and other prognostic outcomes.

In Africa, breast cancer is responsible for 28% of all cancers and 20% of all cancer deaths in women. (Fidler, 2012) [4]. Incidence rates are still generally low in Africa and estimated to be below 35 per 100,000 women in most countries (compared to over 90 - 120 per 100,000 in Europe or North America). A study on breast cancer in low-income states revealed that the incidence rates based on age (per 100,000 women) scored 20.2 in eastern Africa, 13.5 in middle Africa, 24.8 in western Africa, and 31.8 in southern Africa (Sandelin K, *et al.* 2002) [5].

In a cohort study on the breast cancer survival experiences at a tertiary hospital in sub-Saharan Africa, it was suggested that the main problem with cancer treatment in Uganda is that patients come to the hospital when the cancers have already developed to advanced stages (Galukande, Wabinga, *et al.* 2015) [6]. The researchers of this study urged the government of Uganda to invest in sensitizing the public and extending cancer screening services for early detection. Furthermore, according to a study on Knowledge and Awareness of Breast Cancer and Screening Methods among Female Undergraduate Students in a Semi-Urban College of Culture and Humanities, Nigeria (Olufemi, *et al.* 2017) [7], 62% of the respondents had good knowledge about breast cancer, 68.2% were aware that a breast self-examination is a form of screening methods and sixty-seven percent, 67.3% were aware that mammogram is effective in detecting lumps early while 68.8% of the respondents were not aware that clinical breast examination is a screening method for breast cancer. A significant association was observed between the perceived level of threat from cancer and screening practice and the perceived benefit from breast cancer screening methods and screening practice.

Additionally, a study showing Breast self-examination awareness and practices in young women in developing countries revealed the overall response rate was 90.9%. Although 71.4% of the women knew what BSE was, only 33.1% had performed it. The majority of the participants considered that BSE is important in the early detection of breast cancer. With 59.7% of the population having adequate knowledge, 87.2% had a positive attitude toward BSE. A medical background was found to be a significant predictor of adequate knowledge and a

positive attitude toward BSE (Ahmed, *et al.* 2018) [8].

Last but not least, a study that was performed on female university students relating to the associated factors with the practices of BSE in Ethiopia; revealed that 64% of the participants had heard about BSE and 30.25% had good knowledge about BSE and about 28.3% had performed BSE (Birhane, *et al.*, 2017) [9]. Inadequate knowledge of the BSE techniques was cited as the main reason for not practising BSE. Ultimately, being well-conversant on the BSE technique was important and useful in identifying early signs of breast cancer deemed statistically significant with the practice of BSE (Birhane, *et al.*, 2017) [9].

2. Methodology

2.1. Study Design

The study design utilized a cross-sectional study design and employed a quantitative method of data collection.

2.2. Study Setting and Location

The data collection was conducted from different Universities in Kampala Uganda.

2.3. Study Population

The study population was Female University students aged 19 - 30 years in Kampala, Uganda.

2.4. Sample Size

The sample size was determined by the population of University students in Kampala, Uganda in 2019 as drawn from the Uganda Bureau of Statistics, 2014. This population was computed into Fisher's formula.

It was determined by using fisher's formula;

$$n = Z^2 * p(1-p)/e^2$$

whereby n = the preferred sample size (if the target population is greater than 10,000)

Z = the standard normal deviate 1.96 at a 95% confidence interval

P = estimated prevalence of breast cancer in the population,

P = prevalence (23.4) 23.4/100 =0.234

e = level of statistical significance set at 0.05.

e = design effect = 1 and

e = standard error. 1.5% = 0.05/100 = 0.05

$n = (1.96)^2$

Therefore;

$$\begin{aligned} n &= (1.96)^2 * 0.234(1-0.234)/(0.05)^2 \\ &= 3.8416 * 0.234 * 0.766/0.0025 \\ &= 0.68858/0.0025 \\ n &= 275 \end{aligned}$$

Since the target population is less than 10,000, the final sample estimate (nf), we calculated using the formula:

$$\text{New sample size} = \text{old sample size}/1 + \text{old sample size}/\text{population size}$$
$$= 275/1 + 275/5000$$
$$= 275/1 + 0.055$$
$$= 275/1.055$$
$$= 260$$

The minimum sample size is 260

2.5. Sampling Strategies and Procedures

This research study employed a descriptive cross-sectional study design with a quantitative method of data collection, using the cluster and the simple random sampling method.

2.6. Inclusion Criteria

All University female students of the selected universities were within the age bracket of 19 - 30 years of age.

2.7. Exclusion Criteria

Female University students below the age of 19 years of age or above 30 years of age, and who were away at the time of carrying out the research were omitted from the study. Finally, female students within the age bracket of 19 - 30 years of age who refused to consent to the study were excluded from the study.

2.8. Data Collection Methods

Using only quantitative methodology, a structured questionnaire was used to obtain data from the individuals.

2.9. Measurement of Variables

2.9.1. Independent Variables

Benefits of Self-Breast Examination (BSE): Examples of benefits include; Early detection of cancer and prevention of cancer.

2.9.2. Dependent Variable

The dependent variable in this study was the Awareness of Breast Self-Examination.

2.10. Data Analysis

The data was analyzed using SPSS version 20 and the univariate and bivariate analyses were done to construct categories or themes by continuous comparison of bits of data with each other.

2.11. Validity of Instruments of Data Collection

The researcher ensured the content validity of the questionnaire by constructing

questions that conformed to the study conceptual framework and also carrying out a pre-testing survey to ascertain preciseness, conciseness, and comprehension of the Questionnaire.

2.12. Ethical Considerations

Approval Letters

Before embarking on the study, the research team sought approval from the Victoria University Uganda research and ethical committee letter to carry out the study. The approval was granted as evidenced by an Approval letter. Guidelines were adopted and emphasized in the questionnaire *i.e.* the purpose of the study was explained to participants utilizing an information sheet. The participants were assured of strict confidentiality of any information they provided. The research team also sought permission from the Department of Public Health at KCCA and was granted permission to conduct the study from different locations of University hostels in Kampala.

Informed consent

Also, the following guidelines were adopted and emphasized in the questionnaire; the purpose of the study was explained to participants utilizing an information sheet. The participants were assured of strict confidentiality of any information they should provide. The participants were treated with dignity and respect. Confidentiality and anonymity were assured to the participant by using codes for identification instead of their names. Only those who consented took part in this study.

Privacy and confidentiality

All participants took part in this study voluntarily. No form of manipulation was applied to the respondents to partake in this study.

2.13. Limitation of the Study

Language barrier: This limitation was overcome with the support of a translator. He translated English into the local/native language for non-English speaking participants to understand.

3. Results

Out of 260 questionnaires distributed, 259 valid responses were retrieved and thus the study had a 100% response rate.

Uni-Variate Analysis

From Table 1, it was found that the majority (166) of the University students were aware of the Breast Self-Examination technique.

Table 2 above indicates the respondents' awareness of the benefits of BSE. This study found that the majority (192) of the respondents believed that ***BSE helps in the prevention of breast cancer.*** Amongst the 259 respondents to the question ***do you think BSE helps in the early detection of breast cancer***—the majority (217) of the University students said Yes.

Table 1. Respondents' knowledge of breast self-examination (BSE) technique.

Variable	Category	Frequency
Knowledge of Breast Self-Examination	Yes	166
	No	93

Table 2. Respondents' awareness of the benefits of breast self-examination (BSE).

Variable	Category	Frequency n = 259
Do you think BSE helps in the prevention of breast cancer?	Yes	192
	No	67
Do you think BSE helps in the early detection of breast cancer?	Yes	217
	No	42

From the figure above, 74.1% of the respondents stated that BSE aids in the prevention of cancer and 83.8% stated that BSE also aids in the early detection of breast cancer (**Figure 1**).

Bivariate Analysis

Table 3 reveals a significant association between the Benefits of Breast Self-Examination and awareness; amongst University students who believed that ***BSE helps in the prevention of breast cancer***, the majority (70.3%) of them was more likely to be aware of Breast Self-examination compared to students who did not think that BSE helps in the prevention of breast cancer. Amongst those who did not think the latter, the majority of them (53.7%) were more likely not to be aware of Breast Self-Examination. Thus, there was a statistically significant association between the Benefit of the prevention of breast cancer and the awareness of BSE (X^2 =12.476; P-Value = 0.000).

Additionally, among the University students who responded *Yes* to the question ***Do you think BSE helps in the early detection of breast cancer?*** This study revealed that the majority (71%) were more likely to be aware of BSE. Consequently, it was found that the majority (71.4%) who did not think BSE helps in the early detection of breast cancer were more likely not to be aware of Breast Self-Examination, deeming the association between Benefits of BSE and awareness of BSE statistically significant (X^2 = 27.484; P-Value = 0.000).

4. Discussion

This study found that the majority of the sampled female University students who believed that BSE can aid in the prevention (70%) and early detection of breast cancer (71%) were more likely to be aware of this technique as compared to those who did not believe it; this association was statistically significant, X^2 = 12.476; 27.484 and a P-Value of 0.000; 0.000, respectively.

These research findings agree with Birhane's study which assessed the practice and associated factors of breast self-examination (BSE) among female University students in Ethiopia. In Birhane *et al.*'s study, 64% of the participants reported having heard about BSE, 30.25% had good knowledge about BSE, and 28.3% had

Table 3. Associations between benefits of BSE and BSE awareness.

Variable	Category	Awareness of BSE n = 259		X^2	P-Value
		Yes	No		
Do you think BSE helps in the prevention of breast cancer?	Yes No	135 (70.3%) 31 (46.3%)	57 (29.7%) 36 (53.7%)	12.476	**0.000***
Do you think BSE helps in the early detection of breast cancer?	Yes No	154 (71%) 12 (28.6%)	63 (22.0%) 30 (71.4%)	27.484	**0.000***

* = significant value.

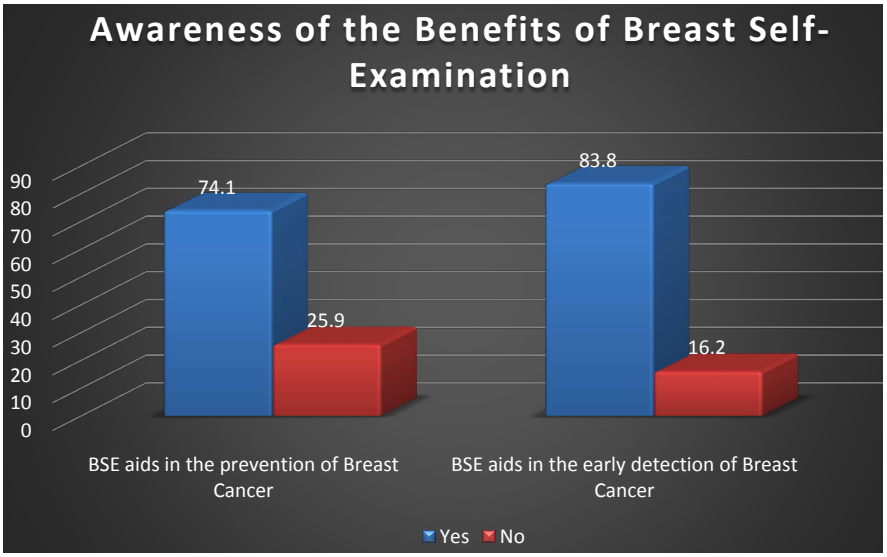

Figure 1. Bar chart showing the percentage distribution of awareness of the benefits of breast self-examination.

performed BSE. All three variables *i.e.*, Lack of knowledge on how to perform BSE, and having a perception that BSE were all significant predictors of practices of BSE (Birhane, 2017) [10].

Additionally, more similar studies have shown amongst women have revealed associations between positive opinions and theories about the benefits of BSE and awareness of BSE practice. An example is a study on Factors associated with breast cancer screening behaviours in Turkey. It revealed that Higher susceptibility to having heard/read about breast cancer and BSE was significantly associated with performing BSE (Secginli S, 2006) [11].

By contrast, a study by Petro-Nustus and Mikhail (2002) [12] investigated factors and beliefs that may be related to the practice of breast self-examination (BSE) undergraduate among a group of Jordanian women. The results of this study showed that even though 67% of the population knew Breast Self-Examination, only 25% of that selected population were actively engaged in regular Breast self-examination, hence this deemed no statistical significance (Petro-Nustus & Mikhail, 2002) [12].

5. Conclusion

From this study, research findings indicate statistically significant associations between the Benefits of Breast Self-Examination (prevention and early detection of breast cancer) and awareness of BSE; in that, the University students who believed in the benefits of BSE were more likely to be aware of BSE as compared to those who did not.

Recommendation

Despite an association between the benefits of BSE and its awareness, it is highly recommended that more emphasis should be placed on health education and health promotion activities for women of younger ages to increase the knowledge of the practice of BSE since studies have shown a higher mortality rate of this specific population. Additionally, women of reproductive age should be sensitized to the importance of good nutritional practices in the prevention of non-communicable diseases such as breast cancer.

Declarations Section

Ethics Approval and Consent to Participate

Before embarking on the study, the research team sought approval from the Victoria University Uganda research and ethical committee letter to carry out the study. The approval was granted as evidenced by an Approval letter. Guidelines were adopted and emphasized in the questionnaire *i.e.* the purpose of the study was explained to participants utilizing an information sheet. The participants were assured of strict confidentiality of any information they provided. The research team also sought permission from the Department of Public Health at KCCA and was granted permission to conduct the study from different locations of University hostels in Kampala.

Conflicts of Interest

The authors declare *NO CONFLICT OF INTEREST* and attest to the fact that this paper has never been published in any journal or book.

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Authors' Contributions

All four (4) authors had equal contributions; starting from the concept, data collection, analysis, writing and typesetting of this article.

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5) All University female students participated in the research study.

References

[1] Hortobagyi, G.N., de la Garza Salazar, J., Pritchard, K., Amadori, D., Haidinger, R., Hudis, C.A., Khaled, H., Liu, M.C., Martin, M., Namer, M., O'Shaughnessy, J.A., Shen, Z.Z. and Albain, K.S. (2005) Abreast Investigators. *Clinical Breast Cancer*, **6**, 391-401. https://doi.org/10.3816/CBC.2005.n.043

[2] Elmore, J.G., Armstrong, K., Lehman, C.D. and Fletcher, S.W. (2005) Screening for Breast Cancer. *JAMA*, **293**, 1245-1256. https://doi.org/10.1001/jama.293.10.1245

[3] Gupta, S.K., Pal, D.K., Garg, R., Tiwari, R., Shrivastava, A.K. and Bansal, M. (2009) Impact of a Health Education Intervention Program Regarding Breast Self-Examination by Women in a Semi-Urban Area of Madhya Pradesh, India. *Asian Pacific Journal of Cancer Prevention*, **10**, 1113-1117.

[4] Fidler, M.M., Gupta, S., Soerjomataram, I., Ferlay, J., Steliarova-Foucher, E. and Bray, F. (2017) Cancer Incidence and Mortality among Young Adults Aged 20-39 Years Worldwide in 2012: A Population-Based Study. *The Lancet Oncology*, **18**, 1579-1589. https://doi.org/10.1016/S1470-2045(17)30677-0

[5] Sandelin, K., Apffelstaedt, J.P., Abdullah, H., Murray, E.M. and Ajuluchuku, E.U., (2002) Breast Surgery International—Breast Cancer in Developing Countries. *Scandinavian Journal of Surgery*, **91**, 222-226. https://doi.org/10.1177/145749690209100302

[6] Galukande, M., Wabinga, H. and Mirembe, F. (2015) Breast Cancer Survival Experiences at a Tertiary Hospital in Sub-Saharan Africa: A Cohort Study. *World Journal of Surgical Oncology*, **13**, Article No. 220. https://doi.org/10.1186/s12957-015-0632-4

[7] Olufemi, O.O., Omowumni, S.R., Ajoke, O.A. and Olufemi, A.E. (2017) Knowledge and Awareness of Breast Cancer and Screening Methods among Female Undergraduate Students in a Semi-Urban College of Culture and Humanities, Nigeria. *International Journal of Caring Sciences*, **10**, 88-99.

[8] Ahmed, A., Zahid, I., Ladiwala, Z.F.R., Sheikh, R. and Memon, A.S. (2018) Breast Self-Examination Awareness and Practices in Young Women in Developing Countries: A Survey of Female Students in Karachi, Pakistan. *Journal of Education and Health Promotion*, **7**, 90-98. https://doi.org/10.4103/jehp.jehp_147_17

[9] Birhane, C., Alemayehu, M., Anawte, B., Gebremariyam, G., Daniel, R., Addis, S., Worke, T., Mohammed, A. and Negash, W. (2017) Practices of Breast Self-Examination and Associated Factors among Female Debre Berhan University Students. *International Journal of Breast Cancer*, **2017**, Article ID: 8026297. https://doi.org/10.1155/2017/8026297

[10] Birhane, K., Alemayehu, M., Anawte, B., Gebremariyam, G., Daniel, R., Addis, S., Worke, T., Mohammed, A. and Negash, W. (2017) Practices of Breast Self-Examination and Associated Factors among Female Debre Berhan University Students. *International Journal of Breast Cancer*, **2017**, Article ID: 8026297. https://doi.org/10.1155/2017/8026297

[11] Secginli, S. and Nahcivan, N.O. (2006) Factors Associated with Breast Cancer

Screening Behaviours in a Sample of Turkish Women: A Questionnaire Survey. I*nternational Journal of Nursing Studies*, **43**, 161-171.
https://doi.org/10.1016/j.ijnurstu.2005.02.004

[12] Petro-Nustus, W. and Mikhail, B.I. (2002) Factors Associated with Breast Self-Examination among Jordanian Women. *Public Health Nursing*, **19**, 263-271.
https://doi.org/10.1046/j.1525-1446.2002.19406.x

Abbreviations

1) BSE-Breast Self-Examination
2) SPSS-Statistical Package for Social Sciences
3) BCS-Breast Cancer Screening
4) KCCA-Kampala Capital City Authority
5) SSA-Sub-Saharan African