Breast self–examination practice and the associated factors among Bule Hora University students, Oromia Regional State, Ethiopia. An institution based cross sectional study

Tamrat Alemu Tegegn, Kaleb Mayisso Rodamo, Keneni Gutama Negeri

Hawassa University College of Medicine and Health Sciences, Hawassa, Ethiopia

Abstract

Regular breast self-examination in women is one of the practicable ways to screen, to detect earlier and to seek prompt medical attention of breast cancer in low-income countries. The study aimed to assess breast self-examination practice and associated factors among female students of Bule Hora University from February- June 2019. A cross-sectional study was conducted using pretested, self-administered and structured data collection tools from regular and undergraduate class female students. Data were entered using Epi info. Version 7.2; and analyzed by SPSS version 20. Only 30 (14.78%) of the students were found to practice breast self-examination regularly. Being urban resident [(AOR= 2.757: 95% CI (1.471, 5.167)], perceived susceptibility to breast cancer [AOR =2.910, 95% CI (1.537, 5.508)] and having family history of the practice [AOR= 2.047: 95% CI (1.040, 4.028)] had shown a significant association with the practice of breast self -examination. Discussion about breast cancer and practicing breast self-examination among the students is very low. The students who came from rural communities did not yet perceive the susceptibility and; therefore, health education pertaining to the subject is recommended.

Introduction

Incidence and the death rate due to of cancer is growing rapidly world-wide.[1] The female breast cancer is the second most frequently diagnostic cause of death and accounts for about 2.1 million newly diagnosed cause for cancer deaths.[2,3] Cancer is an emerging public health problem in Africa with estimates of 715 000 new cases and 542 000 deaths secondary chronic infection of its origin being a cause for a majority of the deaths. In Africa, there was projected that the incidence and mortality due to cancer will be as double to 1.28 million new cases and 970 000 deaths per year by 2030[4,5] with the incidences of breast cancer grown to unaccepted rate even though many cases remain undetected in the continent.[6]

Aging and rising population together with the adoption of lifestyle habits such as smoking, physical inactivity and unhealthy and high-calorie western diets are key risk factors.[4] HIV epidemics and race-being white could be accountable risks for breast cancer.[7,8] Besides to that the female's reluctance and embarrassing nature to meet physicians in person to discuss their intimate body parts all contribute to the rise of cancer burden worldwide.[9]

In Ethiopia, cancer accounts for about 5.8% of total national mortality. As it was projected from population based data from Addis Ababa, the annual incidence and the mortality due to cancer was around 60,960 cases and over 44,000 deaths respectively with about 34% of the deaths were contributed by female breast cancer. For people below the age of 75 years, the probability of being diagnosed with cancer is only 11.3% and the risk of dying from the disease is 9.4%.[10-12] Regular Breast Self-Examination (BSE) in women is one practicable ways of screening breast cancer. This is important especially in low income countries like Ethiopia where it plays a major role in early detection of breast cancer and helps to seek prompt medical attention.[13,14] Since most healthcare facilities do not have advanced laboratory investigations for breast cancer denoting, BSE practice should be promoted to reduce the related morbidities and mortalities.

However, little is known of awareness creation on breast self-examination practice to detect abnormality and treat early before reach the advanced stage in the country in general and female students at higher education institutions of Ethiopia in particular.[15] Even less is known of awareness creation on breast self-examination practice in female students at Bule Hora University (BHU). Therefore, the current study aims to assess BSE practice and associated factors among female students of BHU in southern Ethiopia.

Materials and Methods

Study site

This a cross-sectional study was conducted in BHU among regular under graduate class female students of 2016-2019 class years from February 1-June 30, 2019. BHU is one of third generation universities in Ethiopia, which is located at a distance of 455 km south of Addis Ababa. The university consists of 9 colleges and 53 depart-

Correspondence: Kaleb Mayisso Rodamo, Hawassa University College of Medicine and Health Sciences, P.O Box: 1560, Hawassa, Ethiopia.
Tel.: +251.919532392, Fax: +2510462208755
E-mail: kalebmayisso@gmail.com,

Key words: Female student; cancer screening practice; breast self-examination.

Acknowledgements: Our gratitude goes to Hawassa University College of medicine and health science for giving the opportunity of conducting the research. We are indebted to all the students who took part in the study. We are grateful for Bule Hora University staff for facilitating all necessary activities during data collection. Further, our appreciation goes to the study subjects for their willingly participation in the study.

Contributions: TAT conceived the title and prepared the draft manuscript. KMR and KGN participated in design of the study, statistical analyses and revised of the manuscript. All authors read and approved the final version of the manuscript.

Conflict of interests: The authors have no conflicts of interest to declare

Further information: This work was supported by a budget for a student research of college of medicine and health sciences, Hawassa University.

Availability of data: All data and materials of this study are available and can be accessed with a reasonable request from the corresponding author.

Ethics and consent: Ethical approval was obtained from Institutional review board of Hawassa University College of Medicine and Health Science. Written informed consent was obtained from participants after a detailed explanation of the objective of the study before the individual data collection, and also each of the respondents were assured about the confidentiality of the information they provided as well as their right to withdraw at any time during participation.

Received for publication: 21 July 2021.
Revision received: 25 March 2022.
Accepted for publication: 25 March 2022.

Healthcare in Low-resource Settings 2022; 10:9994
doi:10.4081/hls.2022.9994

ments; and expected to offer undergraduate degree programs in different fields of study. In 2019, the total number of regular students estimated to be 9583, of which female students account for 3233 (33.7%).

Study population

The source population was all BHU regular under graduate from third year and above class female students of all faculties and of 2017 and above years of enrollment. All randomly selected regular, under graduate class female students of third year and above were considered as study subjects.

The sample size was determined by 30.25% proportion of the students who had good knowledge and practices on breast self-examination from the study conducted in Debre Birhane University[16] using single population proportion formula at 95% confidence interval (CI):

$$N=Z(\alpha/2)^2 \times p\ (1-p)/\ d^2 = \ =324$$

where N is the required sample size, Zα/2 (Z Alpha over Two) = 1.96 at 95% CI, p is the proportion of the students who had good knowledge and practices on breast self-examination, q = 1 − p and d is the assumed marginal error (5%). Since the source population was less than 10,000, correction factor was applied to estimate the final sample size required in the study using correction formula:

$$NF= \ = (324/1+ (324/3233))$$

adjusted sample (NF) estimated to be ≈ 270. Where, NF= adjusted sample size, No = calculated sample size and N=source population. In addition, including with 10% non-response rate and a design effect of 1.5 [270+ (270 × 0.1) and 297* 1.5], the final sample size calculated to be 446.

Data collection

To allocate the number of participants from selected departments, a third and above year students' records was assessed and the trend showed 3233 female students. Based on this, sample size distribution was done as follows: for instance, 24 students [(166/3233) ×446] from natural science department, and so on from all twenty four selected departments were expected to be included in the study. Finally, students were selected using systematic random sampling technique from these departments for the study. Socio-demographic and others relevant clinical information of the study subjects were collected using pre tested and self-administered structured data collection tools.

Study variables

While level of BSE practice among the female students was considered as dependent variable, the independent variables included; socio demographic factors like age, place of residence, educational status of parents, family occupation and average monthly income of house-hold.

Data analysis

Data was entered and cleaned using Epi info. Version 7.2 and exported to Statistical Package for Social Science (SPSS) version 20 for analysis.[17] Descriptive statistics was used to see frequency, and percentages of the characteristics. Binary logistic regression analysis was used to calculate Odds Ratios (OR) with 95% Confidence Intervals (CI) to estimate the association between the dependent and independent variables. To identify the relative effects of explanatory variables, variables having a p-value of less than 0.25 during bivariate analysis were transferred into multivariate analysis. Multivariate analysis was also used to control confounding effect of explanatory variables and to determine the Adjusted Odds Ratio (AOR). The result of the final model was expressed in terms of the AOR with the corresponding 95% CI and statistical significance was declared at P-value less than 0.05.

Results

Out of the total 466 sampled study subjects, 454 female students with the age range from 20 to 26 years were participated, yielding 97% response rate. Age between 24 and 26 years was the dominant group account for 51% of a total study participant. About a half, 240 (52.86%) of the respondents were urban residents. Concerning year of University study, 181 (39.86%) of participants were from third year and above while 132 (29%) of them were in their first year of study as detailed in the Table 1 below.

In the study, two hundred and four (44.9%) of the participants ever performed breast self-examination during the past 12 months. Of these, majority 104(22.9%) performed irregularly at any time. Only 30(6.6%) of the participants perform regularly on monthly bases. On the other hand, during BSE 81(17.8%) of them palpate with their three middle finger pads. Consequently, 27(5.9%) of the respondents said they perform BSE after menstruation within 7-10 days. Of those who do not perform BSE, as a reason, 145(31.9%) said that they don't have any problem on their breast (Table 2).

Factors associated with practice of breast self-examination were assessed using bivariate and multivariate logistic regression (Table 3). In bivariate logistic regression analysis, explanatory variables having

Table 1. Socio-demographic Characteristics of the study participants in Bule Hora University in June, 2019 (n=454).

Variables	Category	No.	%
Age in year	20 - 23 Years	222	48.9
	24 - 26 Years	232	51.1
Previous place of residence	Urban	240	52.9
	Rural	214	47.1
Years of study	First year	132	29.1
	Second year	141	31.1
	Third year and above	181	39.9
Department of study	Engineering	60	13.2
	Health Science	44	9.7
	Social science	77	17.0
	Natural Science	70	15.4
	Law	20	4.4
	Agriculture	61	13.4
	Faculty of business education	43	9.5
	Education	36	7.9
	Automotive	43	9.5

a p-value of <0.25, as a candidate for multivariable, were respondents original residence, OR 2.180 at 95% CI (1.232, 3.858), family history of breast self – examination, COR 3.491 at 95% CI (1.984, 6.142) and perceived susceptibility towards breast cancer with COR 3.865 at 95% CI (2.172, 6.876). Considering these variables as candidate for multivariate analysis at P<0.05, and to rule out confounders the analysis was conducted. In multivariate analysis, respondents residing in urban were 2.76 times more likely practice BSE than who reside in rural areas [AOR 2.757 at 95% CI (1.471, 5.167)]. Respondents having family history of BSE practice perform BSE 2 times more likely than who don't have family history of BSE practice [AOR 2.047 at 95% CI (1.040, 4.028)]. In addition, participants having perceived susceptibility of breast cancer were about 3 times more likely perform BSE than who did not have perceived susceptibility [AOR 2.910 at 95% CI (1.537, 5.508). For the details see Table 3.

Discussion

Despite the advent of modern screening methods, more than 90% of cases of cancers of the breast are identified by women themselves which still implies on the importance of breast self – examination.[15] Most healthcare facilities in Ethiopia do not have advanced laboratory investigations for diagnosing breast cancer. Thus, like any resource limited countries, in Ethiopia, practice of breast self-examination should be promoted.[18,19] In this institution based cross sectional study, we tried to identify practice of breast self-examination and factors determining it in BHU. According to response from participants, only, 12.8% are had performed breast self-examination regularly. This finding is in line with the result of the study conducted among undergraduate students in Ambo University, western Ethiopia.[20] However, compared to a study conducted in Buea University of Cameroon in which 3% had performed BSE regularly, our finding is higher.[21] Possible reason for the differences might be the differences in number of study participants and study settings. Contrary to this, the finding in this study is smaller than a study conducted in Jimma University, Ethiopia[15] in which 21% of the study participants had performed BSE regularly. So also, it is smaller than the study conducted on nursing students in

Table 2. Prior practice of t respondents on breast self - examination in Bule Hora University in June, 2019.

Variables	Responses	Frequency	%
Ever practiced breast self -examination during the past 12 months	No	250	55.1
	Yes	204	44.9
How often do you perform breast self-examination	Yearly base	66	32.4
	Any time	104	62.9
	Regularly on monthly base	30	14.7
Skill how to practicing breast self -examination	Palpating with three middle fingers pads	81	39.7
	Palpating with the whole fingers	52	25.5
	Palpating with one or two fingers	42	20.6
	Others ways than fingers	29	14.2
When you perform breast self -examination in relation to your menstrual cycle	Any time	58	28.4
	During menstruation	49	23.0
	The date before start of menstruation	39	18.6
	After menstruation 1-6days	31	15.2
	After menstruation 7-10days	27	13.2
Reason why not performing breast self -examination	Don't have any problem and symptom on their breast	145	58.0
	Don't know how to perform breast self -examination	53	21.2
	Don't think it is important	44	17.6
	It is not comfortable	8	3.2

Table 3. Factors associated with practice of breast self -examination among Bule Hora University female students, 2019.

Variables	BSE Practice		COR (95% CI)	AOR (95% CI)	P-Value
	Yes No. (%)	No No. (%)			
Age in year					
17 - 21 Years	24(10.8)	198(89.2)	1	1	
22 - 26 Years	34(14.7)	198(85.3)	1.417(0.810, 2.476)	1.264(0.695, 2.300)	0.442
Residence					
Rural	21(8.8)	219(91.3)	1	1	
Urban	37(17.3)	177(82.7)	2.180(1.232, 3.858)	2.757(1.471, 5.167)	0.002*
Family history of BSE					
No	28(8.5)	303(91.5)	1	1	
Yes	30(24.4)	93(75.6)	3.491(1.984, 6.142)	2.047(1.040, 4.028)	0.038*
Perceived susceptibility					
No	21(7.2)	272(92.8)	1	1	
Yes	37(23.0)	124(77.0)	3.865(2.172, 6.876)	2.910(1.537, 5.508)	0.001*

*statistically significant P-value < 0.05.

Amino Kano teaching hospital, Kano, Nigeria.[22] Possible reasons for these gaps may be due to the difference in students' educational back ground given that study participants in both Jimma University of Ethiopia and Kano University of Nigeria were Health science students who have better health related information as one would expect.

According to the current study, BSE practice is significantly association with their family knowledge and practice. This is in line with the finding of the studies conducted on Nurses in University Hospitals in Addis Ababa and on Health Extension Workers in West Gojjam Zone, Northwest Ethiopia.[23,24] Our study revealed that perceived susceptibility to breast cancer has significant association with practicing of breast self- examination. This is consistent with the result of the study conducted at Adwa town among women aged 20–70 years attending public health institutions.[21] Compared to students who join the University from rural areas, urban based residents were more likely to perform BSE regularly. This is not unexpected as student urban residents are more accessible for health related information from the very beginning if not during their University stay.[25]

Conclusions

In conclusion, the study revealed that the respondents' BSE practice was low. Not experiencing breast self- examination among mothers of the respondents, not discussing about the breast cancer and the importance of breast self-examination among the students, not perceiving of susceptibility of the disease and coming from rural communities were independently associated with both knowledge and experience towards breast self-examination. Thus, it is recommended that health care providers at all level should advocate breast self- examination regularly, and also display BSE posters in all examination rooms in health centers and hospitals.

Operational definition

Breast self-examination: Physical and visual self-checkup of breast by female students to examine any change or abnormality on their breast through palpation and inspection.

Level of breast self-examination practice: The frequency of performing one's own breast self-examination both physically with palpating and visually with inspecting at a regular time on monthly base after 7-10 days of menstrual cycle.

Practicing: One is performing BSE every month at ideal time (7-10 days) after menstrual cycle.

The ideal time of BSE practice: When BSE is performed on monthly base after 7-10 days of menstrual cycle.[26]

Limitation of the study

Since the study is cross-sectional by its design, causal conclusions cannot be drawn. Since this study has been done among female undergraduate students, the findings cannot be generalized to the other Universities in the country and also for the whole population in Ethiopia.

References

1. Thorat MA, Cuzick J. Preventing invasive breast cancer using endocrine therapy. Breast 2017;34:S47-S54.
2. Bray F, Ferlay J, Soerjomataram I, et al. Global Cancer Statistics 2018: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. CA Cancer J Clin 2018;68:394-424.
3. Cardoso F, Spence D, Mertz S, et al. Global analysis of advanced/metastatic breast cancer: Decade report (2005-2015). Breast 2018;39:131-8.
4. Ekortarl A, Ndom P, Sacks A. A study of patients who appear with far advanced cancer at Yaounde General Hospital, Cameroon, Africa. Psycho-Oncology 2008;16:255-7.
5. Tsoka-Gwegwenia JM, Cumber SN, Nchanji KN. Breast cancer among women in sub-Saharan Africa: prevalence and a situational analysis. Southern Afr J Gynaecol Oncol 2017;9:28-30.
6. Cumber SN, Nchanji KN, Tsoka-Gwegweni JM. Breast cancer among women in sub-Saharan Africa: prevalence and a situational analysis. Southern Afr J Gynaecol Oncol 2017;9:35-37.
7. Reddy P, Ebrahim B, Singh B, et al. Breast cancer and HIV: a South African perspective and a critical review of the literature. SAJS 2017;55:10–15.
8. Omaka-Amari LN, Ilo CI, Nwimo IO, et al. Demographic differences in the knowledge of breast cancer among women in Ebonyi State, Nigeria. IJNMH 2015;1:18–27.
9. Khana R, Mahinderjit Singh M, Damanhoori F, etal. Breast Self-Examination System Using Multifaceted Trustworthiness: Observational Study. JMIR Med Inform 2020;8:e21584.
10. Birhane N, Mamo A, Girma E, etal. Predictors of breast self - examination among female teachers in Ethiopia using health belief model. Archives of public health = Archives belges de sante publique 2015;73:39.
11. Abay M, Tuke G, Zewdie E, etal. Breast self-examination practice and associated factors among women aged 20-70 years attending public health institutions of Adwa town, North Ethiopia. BMC 2018;11:622.
12. Woldeamanuel YW, Girma B, Teklu AM. Cancer in Ethiopia. Lancet Oncol 2013;14:289-90.
13. Aker S, Öz H, Tunçel EK. Practice of Breast Cancer Early Diagnosis Methods among Women Living in Samsun, and Factors Associated with This Practice. J Breast Health 2015;11:115-22.
14. Hailu T, Berhe H, Hailu D, et al. Knowledge of breast cancer and its early detection measures. Clinical Medicine 2014;3:57-64.
15. Desta F, Workicho A, Atomsa A, et al. Knowledge, Practice and Associated Factors of Breast Self Examination Among Female Students of the College of Public Health and Medical Science, Jimma University, Ethiopia. Am J Health Res 2018;6:44-50.
16. Kalayu B, Miskir A, Belayneh A, et al. Practices of Breast Self-Examination and Associated Factors among Female Debre Berhan University Students. Int J Breast Cancer 2017;8026297.
17. Sullivan KM, Soe MM. Sample size for cross-sectional & cohort studies & clinical trials. 2007. Available from: http://www.openepi.com/PDFDocs/SSCohortDoc.pdf
18. Birhane K, Alemayehu M, Anawte B, et al. Practices of Breast Self-Examination and Associated Factors among Female Debre Berhan University Students. Int J Breast Cancer 2017;2017:8026297.
19. Getu MA, Kassaw MW, Tlaye KG, et al. Assessment of breast self-examination practice and its associated factors among female undergraduate students in Addis Ababa University, Addis Ababa, Ethiopia, 2016. Breast Cancer 2019;11:21-8.
20. Natae SF, Health DoP. Assessment of Knowledge, Attitude and Practice of Breast Selfexamination among Ambo University Undergraduate Regular Female Students; 2015. Physiology and Biophysics 2015;32.
21. Nde FP, Assob JC, Kwenti TE, etal. Knowledge, attitude and practice of breast self-examination among female undergraduate students in the University of Buea. BMC 2015;8:43.

22. Okolie UV. Breast self examination among female undergraduates in Enugu, Southeast Nigeria. Int J Nursing Midwifery 2012;4.
23. Azage M, Abeje G, Mekonnen A. Assessment of Factors Associated with Breast Self-Examination among Health Extension Workers in West Gojjam Zone, Northwest Ethiopia. Int J Breast Cancer 2013;814395.
24. Zeru Y, Sena L, Shaweno T. Knowledge, Attitude and Practice; and Associated Factors of Breast Cancer Self-Examination among Urban Health Extension Workers in Addis Ababa, Central Ethiopia. J Midwifery Reproduct Health 2019:1-11.
25. Janni L, McKenzie S, Martin J, et al. Longitudinal patterns of breast cancer screening: mammography, clinical, and breast self-examinations in a rural and urban setting. Womens Health Issues 2014;24:e139-46.
26. Gale Encyclopedia of Medicine. Breast self-examination. 2008. Accessed: October 20 2021. Available from: https://medical-dictionary.thefreedictionary.com/breast+self-examination