

Breast Self-examination: Knowledge, Attitude, and Practice among Female Health Science Students at Adama Science and Technology University, Ethiopia

Mesfin Tafa Segni^{1*}, Dagne Mulu Tadesse¹, Roza Amdemichael² and Hailu Fekadu Demissie¹

¹Department of Public Health, College of Health Science, Arsi University, Assela, Ethiopia

²Department of Midwifery, College of Health Science, Arsi University, Assela, Ethiopia

Abstract

Background: Breast cancer is the leading cause of cancer related deaths among women worldwide. Diagnosis of breast cancer at an earlier stage allows women more treatment choices and greater chance of long term survival. Breast self-examination (BSE) once a month contributes to a woman's heightened awareness of what is normal for her. It is recommended that women over the age of 20 years perform monthly breast self-examination to detect new lumps and other changes in their breast. In view of the fact that mammography is not readily available in resource limited countries like Ethiopia, this study was designed to assess Knowledge, Attitude and Practice of regular Breast self-examination amongst female health science students of Adama science and Technology University in 2014.

Methodology: A cross-sectional study design was used to select 368 study subjects randomly. Self-administered questionnaires were used to collect information. The collected data were entered into Epi-info version 3.5.1. After cleaning the data it was exported to SPSS version 21 for further analysis. Bivariate and multivariate analyses were also performed with logistic regression to measure the association between dependent and independent variables.

Result: A total of 368 respondents participated in the study, of these, only 8.7% of them had good knowledge and 59.2% had positive attitude towards BSE. About two fifth (39.4%) of the respondents had done breast self-examinations, from these only 9.7% of them practiced monthly. Statistically significant association was obtained only with, level of education of the participant, father's educational level and program of enrolment.

Conclusion and recommendation: Knowledge and practice of BSE was low, even though majority of them have positive attitude. Being health was the major mentioned reasons for not doing BSE. The ministry of health is recommended to promote awareness about BSE through emergence of groups in the University, celebrating days like breast cancer day.

Keywords: Breast; Cancer; Surgery; Carcinoma; Chemotherapy

Introduction

Globally cancer is the top leading causes of death. It was estimated that 8.2 million people died of cancer in 2012 and Prevalence estimates for 2012 show that there were 32.6 million people alive who had had a cancer diagnosed in the previous five years. More than half of all cancers (56.8%) and cancer deaths (64.9%) in 2012 occurred in less developed regions of the world [1].

In 2012, 1.7 million women were diagnosed with breast cancer and there were 6.3 million women alive who had been diagnosed with breast cancer in the previous five years in the world. Breast cancer is the most common cause of death and the most frequently diagnosed cancer among women in 140 of 184 countries worldwide. Incidence rate remains highest in more developed regions, but mortality is relatively much higher in less developed countries due to lack of early detection and access to treatment facilities [1].

Among women, breast cancer (BC) is the most common cause of mortality accounting for 16% of cancer deaths in adult women [2]. Data from South Africa's National Cancer Registry (NCR) shows breast cancer as the leading cancer among women [3]. In Ugandan women, breast cancer is third most common cancer following Kaposi's sarcoma and cervical cancer with incidence rate of 22 per 100,000 women [4]. In Nigeria, the incidence of breast cancer has been reported to be 33.6/100,000 [5].

Breast Cancer is the common most often occurring cancer, in Ethiopia. It is estimated that around 10,000 Ethiopian women and men

have breast cancer with thousands of more cases unreported as women living in rural areas often seek treatment from traditional healers before seeking help from the government health system [6].

Early detection and diagnosis can greatly increase chances for successful treatment and thus increasing awareness of the possible warning signs of the disease among the general public is a necessity [7]. The three screening methods recommended for breast cancer include breast self-examination (BSE), clinical breast examination (CBE) and mammography. BSE is a cost-effective method of early detection of cancer of the breast especially in resource poor countries. More than 90% of cases of breast cancer can be detected by women themselves, stressing the importance of breast self-examination (BSE) as the key breast cancer detection mechanism [8].

Breast Self-Examination (BSE) is a process whereby women examine their breasts regularly to detect any abnormal swelling

***Corresponding author:** Mesfin Tafa Segni, Department of Public Health, College of Health Science, Arsi University, Assela, Ethiopia, Tel: +251910867389; E-mail: mesfintafa2011@gmail.com

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or lumps in order to seek prompt medical attention. Breast self-examination, carried out once monthly, between the 7th and 10th day of the menstrual cycle, goes a long way in detecting breast cancer at the early stages of growth when there is low risk of spread, ensuring a better prognosis when treated [9].

Although mammography is the best screening method, but in resource scarce countries like Ethiopia, BSE should be promoted for early detection of breast cancer to prevent related morbidities and mortalities. Most healthcare facilities in Ethiopia do not have advanced laboratory investigations for screening and diagnosing breast cancer. Thus, this research is essential and well-timed as breast cancer has increased by more than 20%, while mortality has increased by 14% since 2008 [1]. Findings from this research provide data about the level of knowledge, attitude and practice of breast self-examination among female university students. The results of this study are of great importance as it may assist health professionals in planning health education for female University students. Also, from this research findings, health screening which include breast self-examination education could be included as one of annual activities in Adama Science and Technology University (ASTU) calendar as well it will be an input for the country's cancer prevention program.

Methods

A Cross-sectional study design was conducted among female students of Adama Science and Technology University, School of Health Science, Assela town in August 2014, which is located 175 km from Addis Ababa, the capital of Ethiopia.

Exclusion criteria

Those who were ill during data collection time and who were not willing to participate in the study were excluded from the study.

Sample size was calculated using single population proportion; by taking the prevalence of breast self-examination 53.6% in previously done study in Ethiopia [10], to determine the sample size and 5% level of significance and 5% margin of error (precision) the sample size became 382, by using finite population correction formula and considering 10% non-response rate the sample size was 244, and design effect of 1.5 final sample size is 366, but the sample was actually collected from 368 subjects.

Multi stage sampling technique was used to select the respondents of the study. First, among the seven schools in ASTU, school of health science was selected purposively. Sample size was proportionally allocated for the selected departments based on number of females in each department and then simple random sampling was employed to select the study subjects.

English version self-administered questionnaires were used to collect information and facilitated by four instructors. The collected data, after checking their completeness entered into SPSS version 21 for analysis. Descriptive statistics was used to see frequency, mean, median, standard deviation and percentages of the characteristics. Binary logistic regression was used to assess relationship between independent variables with outcome variables to control confounding effect and to determine adjusted odds ratio (AOR). The variables included in the multivariate logistic regression were variables with p value ≤ 0.2 on the bivariate analysis. The result of the final model was expressed in terms of Odd Ratio (OR) and 95% confidence intervals (CI) and statistical significance was declared, if the P -value is less than 0.05.

Operational definitions

Assess: To evaluate the breast self-examination, breast cancer and its treatment modalities of female of reproductive age group.

Knowledge: There were 14 multiple choice questions that carried a total of 22 correct responses that measure knowledge. Each correct response was given a score of 1 and a wrong response a score of 0. Accordingly, Bloom's classification cut off points for knowledge Score

1. Good knowledge a score of 80 – 100%
2. Satisfactory knowledge a score of 60 – 79%
3. Poor knowledge a score less than 60% of the correct responses

Attitude toward BSE: The belief and feeling of the respondent (who should BSE for breast cancer, intention to use BSE in the future). The scoring system used with respects to respondents' responses was assessed as follows: strongly agree scored 5, agree 4, neither agree nor disagree 3, disagree 2, strongly disagree 1. The responses were summed up and a total score was obtained for each respondent and the overall mean score was calculated.

Positive attitude: A score above the mean.

Negative attitude: A score below the mean.

Practice: Refers to the actual application BSE in early detection of breast cancer.

Breast self-examination: In this study it refers to the examination of their breast by themselves, to identify any changes in the breast.

Ethical considerations

Informed verbal consent was obtained after explaining the purpose of study. Sufficient information was given about the right to refuse participation or to jump some questions unwilling to answer. To ensure the confidentiality of respondents their names were not written on the questionnaire.

Result

Socio- demographic characteristics of the respondents

A total of 368 students responded the questionnaire (response rate 100%). The mean age of the participants was 22.9 years (SD \pm 4.1). The majority (94.2%) respondents were less than 30 years old. Sixty two percent of respondents were Orthodox in religion and more than 80% of them were single.

Two fifth and 28.8% of respondents' fathers and mothers attended higher education, respectively. About 5% of the respondents have family history of breast cancer and over half 52.4% of the respondents previously knew women with breast cancer (Table 1).

Knowledge of breast self-examination

Only 8.7% of the respondents had good knowledge and the rest 336 (91.3%) have satisfactory to poor knowledge regarding breast cancer. Almost all of the respondents heard about breast cancer. Mass media was the main primary source of information followed by health workers (Table 2).

Painless nodule (53.8%) was the most reported symptoms of breast cancer followed by chest pain (23.1%). Family history 238 (64.7), Consumption of high fat diet 216 (58.7) and early sexual initiation 174 (47.3), were the most reported risk factors for acquiring breast cancer (Table 3).

Variable	Frequency (%)
Age	
<30	347 (94.3)
>=30	21 (5.7)
Program	
Regular	124 (33.7)
Extension	244 (66.3)
Year of study	
1 st Year	154 (41.8)
2 nd Year	91 (24.7)
3 rd Year	49 (13.3)
4 th and above Years	74 (20.1)
Mother's education	
Illiterate	82 (22.3)
Primary	90 (24.5)
Secondary	90 (24.5)
Higher education	106 (28.8)
Father's education	
Illiterate	54 (14.7)
Primary	70 (19)
Secondary	98 (26.6)
Higher education	146 (39.7)
Mother's occupation	
Health related	18 (4.9)
Not health related	350 (95.1)
Fathers occupation	
Health related	33 (9)
Not health related	335 (91)
Family History of Breast Cancer	
Yes	19 (5.2)
No	349 (95.9)
Know people with Breast cancer	
Yes	193 (52.4)
No	175 (47.6)

Table 1: Socio demographic characteristics of the female study participants in Adama University Assela School of health science, 2014.

Variable	Frequency (%)
Knowledge score	
Good	32 (8.7)
Satisfactory to poor	336 (91.3)
Heard of breast cancer	
Yes	365 (99.2)
No	3 (0.8)
Primary source of information on breast cancer (n=349)	
News media	152 (41.7)
Brochures, posters, and magazine	9 (2.6)
Health worker	105 (28.8)
Family friend neighbors colleague	46 (13.2)
Religious leader	2 (0.1)
Teachers	51 (14.6)

Table 2: Knowledge score and knowledge on information of Breast cancer among the study participants in Adama University Assela School of health science, 2014.

Concerning their knowledge on the frequency BSE, 162 (44.1%) of the respondents correctly reported that BSE should be done monthly and 111 (30.2%) them reported annually, every 3 month or occasionally while 94 (25.6) of the respondent didn't know when how often should be done. Nearly two fifth of the respondents reported that BSE should

be performed a week after menses while 111 (30.2%) of the respondents didn't know when to be performed and women of age above 20 years should perform BSE. Two hundred ninety one respondents were aware of that breast cancer could be treatable and about 10% of the didn't know at all or they were not sure whether treatable or not. Surgery 316 (85.9%) was the most mentioned means of treatment followed by chemotherapy 74 (20.1%) (Table 4).

Attitude of breast self-examination

Sixty percent of the respondents had positive attitude toward

Variable	Frequency (%)
Symptoms and signs of Breast Cancer	
Chest Pain	85 (23.1)
Headache	13 (3.5)
Painless nodule	198 (53.8)
Breathlessness	14 (3.8)
Do not know	58 (15.8)
Risk factors for Breast Cancer	
Early menarche	129 (35.1)
Early sexual initiation	174 (47.3)
Urinary tract infection	22 (6.0)
Null parity	107 (29.1)
Multigravida	95 (25.8)
Late delivery	35 (9.5)
Contraceptive use (Hormone treatment)	136 (37.0)
High fat diet consumption	216 (58.7)
Family History	238 (64.7)
Unknown	106 (28.8)

Table 3: Knowledge on sign/symptoms, Risk factors of Breast cancer among the study participants in Adama University Assela School of health science, 2014.

Characteristics	Frequency (%)
How frequent is BSE done?	
Correct Response (monthly)	162 (44.2)
Incorrect Response (Annually, Every 3 years, occasionally)	111 (30.2)
Don't know	94 (25.6)
Appropriate time to do BSE	
Correct Response (A week after menses)	140 (38.0%)
Incorrect response (A day after menses, at time of menses)	117 (31.8)
Don't know	111 (30.2%)
Who should perform BSE	
Women ≥ 20 years	229 (62.2%)
Prostitutes	18 (4.9%)
Elderly women	57 (15.5%)
Blacks	4 (1.1%)
Don't know	60 (16.3%)
Can Breast Cancer cured in its early stages?	
Yes	291 (79.1)
No	40 (10.9)
Don't know	37 (10.1)
Treatment of breast cancer	
Herbal remedies	4 (1.1)
Surgery	316 (85.9)
Chemotherapy	74 (20.1)
Radiotherapy	71 (19.3)
Don't know	13 (3.5)

Table 4: Knowledge toward Self Breast Examinations and Treatment options among female student participants of Adama Science and Technology University, 2014.

BSE. Forty four percent of the respondents agreed on the idea that breast cancer is highly prevalent and leading cause of deaths amongst all malignancies in Ethiopia. Nearly half of the 49.2% respondents agree that any young woman can acquire breast carcinoma and 3.3% of them strongly disagree. Majority 80.9% of the respondents have positive attitude that carcinoma of the breast cannot be transmitted from human to human and less than 15% disagree. About 298 (80.9%) agreed upon self-breast examination in prevention of breast carcinoma, moreover, 292 (79.3) agreed on self-breast examination doesn't causes harm (Table 5).

Practice of breast self-examination

About two fourth (39.4%) of the respondents have done BSE before and 60.6% of them have not ever done BSE at all. Majority (91%) of the respondents did BSE occasionally and 8 (5.5%) monthly. Being health 100 (44.8%) and lack of knowledge 60 (26.9%) were the most reason mention for not practicing BSE (Table 6).

Factors affecting knowledge about breast self-examination

As the year of stay in the University increases the knowledge about cervical cancer increases by 3.21 (AOR=3.21, 95% CI=1.17, 8.79). Knowing people with history of breast cancer increases the odds of good knowledge by 4.68(AOR=4.68, 95% CI=1.86, 11.78). Respondents who had good perception toward cervical cancer screening had good knowledge about risk factors of breast cancer (AOR=6.31, 95% CI= 1.86, 22.11) (Table 7).

Factors affecting practice toward breast self-examination

Women enrolled in extension program were 3 times more likely to practice BSE (AOR=2.91, 95%CI=1.75, 4.86). Those respondents who had positive attitude toward breast cancer were 2.63 times more likely to BSE than who had negative attitude (AOR=2.63, 95%CI= 1.61, 4.30) (Table 8).

Discussion

From this study, almost majority of the respondents have heard about cancer, which is higher than the study in Iraq, where about 69.1% of the respondents heard about breast cancer [11]. Media was most the source of information about breast cancer for first time. A similar

Questions	Options	Frequency (%)
Attitude	Positive	221 (60.1)
	Negative	147 (39.9)
Carcinoma of the breast is highly prevalent and is a leading cause of deaths amongst all malignancies in Ethiopia	Agree	293 (35.6)
	neither agree nor disagree	42 (11.4)
	Disagree	33 (9.0)
Any young woman including you can acquire breast carcinoma	Agree	277 (75.3)
	neither agree nor disagree	42 (11.4)
	Disagree	49 (13.4)
Carcinoma of the breast cannot be transmitted	Agree	298 (80.9)
	neither agree nor disagree	54 (14.7)
	Disagree	54 (14.7)
Screening/self-breast examination helps in prevention of breast carcinoma	Agree	298 (80.9)
	neither agree nor disagree	47 (12.8)
	Disagree	23 (6.3)
Self-breast examination causes no harm	Strongly agree	292 (79.3)
	neither agree nor disagree	49 (13.3)
	Disagree	27 (7.4)

Table 5: Assessment on attitude towards BSE in Adama University Assela School of health science, 2014.

Variables	Frequency (%)
Have you ever done BSE	
No	223 (60.6%)
Yes	145 (39.4%)
Frequency of BSE (n=145)	
Daily	2 (1.4%)
Weekly	3 (2.1%)
Monthly	8 (5.5%)
Occasionally	132 (91.0%)
Reason for not doing BSE.	
I'm healthy	100 (44.8%)
I'm not informed	60 (26.9%)
I haven't just decided	48 (21.5%)
I feel shy	21 (9.4%)
It may be painful	13 (5.8%)
I'm afraid that it may reveal breast cancer	4 (1.8%)

Table 6: Breast Self-Examination among female respondents of ASTU School of health science, 2014.

Characteristics	Knowledge Score		Odds Ratio	
	Good	Poor	COR (95%CI)	AOR (95%CI)
Program enrollment				
Regular	5 (4.0)	119 (96.0)	1	1
Extension	27 (11.1)	217 (88.9)	2.96 (1.11, 7.89)**	2.05 (0.69, 6.08)
Marital status				
Single	18 (6.1)	277 (93.9)	1	1
Married	14 (19.2)	59 (80.8)	3.65 (1.72, 7.75)**	1.86 (0.78, 4.41)
Year of study				
1 st year	6 (4.0)	143 (96.0)	1	1
2 nd year	4 (4.5)	84 (95.5)	1.14 (0.31, 4.14)	0.84 (0.22, 3.25)
3 rd year and above	22 (16.8)	109 (83.2)	4.81 (1.90,12.27)**	3.21 (1.17, 8.79)*
Attitude toward BC				
Negative	6 (4.1)	141 (95.9)	1	1
Positive	26 (11.8)	195 (88.2)	7.25 (2.20, 24.27)*	6.31 (1.86,22.11)**
Know people with BC				
No	7 (4.0)	168 (96.0)	1	1
Yes	25 (13.0)	198 (87.0)	3.57 (1.50, 8.45)**	4.68 (1.86, 11.78)**

*Respondents who had good perception toward cervical cancer screening had good knowledge about risk factors of breast cancer

**Knowing people with history of breast cancer increases the odds of good knowledge

Table 7: Association of socio-demographic characteristics of the respondents with knowledge score toward breast cancer (BC), 2014.

finding was reported in Ethiopia and other different studies like in Iraq 2011, Nigeria, Ghana [10,12-14]. This indicates that media is playing major role in creating awareness about female cancer in most of the world and there is a need of health professionals' involvement creating awareness through health educations.

This study showed that, majority of the respondents had knowledge of breast cancer but few of them (8.7%) have good knowledge level. A study done in Iraq 2011 and 2012, Saudi Arabia 2013, Pakistan in 2010, in Nigeria 2008, Ghana, Ethiopia [11,12,14-17] reported low knowledge score among majority of the respondents. But in a study done in Nigeria in 2008 a better breast cancer knowledge level was obtained. This is expected considering the fact that they are health

Characteristics	Practice BSE		Odds Ratio	
	No	Yes	COR (95%CI)	AOR (95%CI)
Program enrollment				
Regular	95 (76.6)	29 (23.4)	1	1
Extension	128 (52.5)	116 (47.5)	2.97 (1.83, 4.83)**	2.91 (1.75,4.86)**
Year of study				
1 st year	100 (67.1)	49 (32.9)	1	1
2 nd year	52 (59.1)	36 (40.9)	1.41 (0.82, 2.44)	0.99 (0.55,1.78)
3 rd year and above	71 (54.2)	60 (45.8)	1.73 (1.06, 2.80)*	0.98 (0.57,1.70)
Knowledge Score				
Poor	208 (61.9)	128 (38.1)	1	1
Good	15 (46.9)	17 (53.1)	1.84 (0.90, 3.82)	1.15 (0.53, 2.50)
Attitude toward breast cancer				
Negative	109 (74.1)	38 (25.9)	1	1
Positive	114 (51.6)	145 (39.4)	2.69 (1.71, 4, 24) **	2.63 (1.61,4.30)**

* Positive attitude toward breast cancer

** negative attitude toward breast cancer

Table 8: Practice toward BSE among Adama Science and Technology female students, 2014.

science students and must have acquired this knowledge during their education. Previous studies have reported the roles played by formal and non-formal education in health related issues.

Family history 238 (64.7), Consumption of high fat diet 216 (58.7) and early sexual initiation were the most reported risk factors for acquiring breast cancer. The study done in Nigeria also in line with this finding, family history was the most risk factors for Breast cancer [16]. Nearly half (47.3%) of the respondents inaccurately responded that early sexual initiation as a risk factor for breast cancer, whereas it is a risk factor for cervix cancer. This indicates that there is mixing the risk factor for breast cancer and cervical cancer. The other justification could be early sexual initiation is considered as a risk factor for many health problems.

Concerning their knowledge on the frequency BSE, 162 (44.1%) of the respondents correctly reported that BSE should be done monthly. This finding is significantly lower than by half from a study done in Saudi Arabia in 201, where, 89.2% of the participants knew that BSE is recommended to be done monthly [15].

Nearly two fifth of the respondents reported that BSE should be performed a week after menses while 111 (30.2%) of the respondents didn't know when to be performed. Similar findings of Saudi Arabia less than half (46.8%) of the respondents aware that should be performed A week after menses BSE [15] and a study in Ghana, 62% stated some days after menstruation [14].

In this study, about 60% of the respondents had a positive attitude toward BSE. A study done in Saudi Arabia more than two third of the respondents had positive attitude toward BSE [15] While a study conducted in, Iraq 89.7% of the female had positive attitude toward learning the correct procedure of BSE with an intention to instruct others on the technique [11] and Nigeria in 2008 showed that from 100 health workers, [92%] positive attitude [18]. This difference may be due to the level of knowledge between Nigerian health workers and health students in our case and in other way the sample size taken Nigeria was small compared to our study.

In this study only 39.4% of the respondents have practiced BSE. Similarly in a study done in different part of developing countries in Asia and Africa including Ethiopia in different times the practice toward BSE is low [10-11,15,19,20]. But in a study in Nigeria and Ghana the practice of BSE is higher than this finding 80% and 76%

respectively [18,14]. Concerning the frequency of BSE only 5.5% of the respondents did BSE monthly. This finding is lower than the studies done in other parts of the world and in our country, in Saudi study 17% [15], Nigeria 50% [18], Ghana 31% [14] in Mekelle 29.5% [10], West Gojjam Zone 14.4% [21] practiced monthly basis. The variation is attributable due to the study setting, study participants in our case majority of the respondents were young ages and may have no concern about breast cancer, in other way, the study participants were health professionals, there may have adequate knowledge about breast cancer through experience. In addition due low sample size in case of study in Nigeria where sample size was 100.

Being health 100 (44.8%) and lack of knowledge 60 (26.9%) were the most reason mentioned for not practicing BSE. In a study done in Iraq, lack of confidence in their own examination (27%), fear from detecting a lump in the breast (25%) and that they had not been instructed to perform BSE (20%) were reason for no practicing BSE [11]. A study done among Jordanian nurses' and Ghana, from the participants who did not performing BSE, I don't believe that it is beneficial, Not having time "(too busy)" where reasons mostly reported [14,22]. This study contradicts with our result, the reason may be the Jordanian nurses and Ghanaian may have a better access for other means of early detection of breast cancer, like mammography.

Respondents of year three and above were more knowledgeable about breast cancer compared to lower grade level respondents (AOR=3.21, 95% CI=1.17, 8.79). A study done in Nigeria 2005 women with higher level of education is better knowledge than their counter parts [20]. As the stay in the university increases access to information about breast cancer by different means like through formal education in courses and participation in clubs may increase the knowledge.

Program enrollment and Attitude score remain significantly associated with practice of BSE. Women who enrolled in extension program were nearly 3 times more likely to practice BSE (AOR=2.91, 95%CI=1.75, 4.86). The reason could women enrolled in extension program mostly the married ones, no fear of touching their breast probably due to an experience in life. In addition this group of women might be aware about the risk of breast cancer in their previous exposure while engaging in diploma program or while in job through different means.

In our study the knowledge score was not associated with the practice of BSE. In contrast to this studies like, in Iraq in 2012 an

Ethiopia in 2014 the knowledge score of the respondents was associated with practice of BSE [10,11]. The reason could be in our setting, the study was conducted among health professionals, so there might not be such significant difference of knowledge score was not noted about BSE. In addition the educational level of the respondents didn't show association with practice toward BSE. In contradictions in a study done Ghana level of education is factor associated with practice toward BSE [14].

In conclusion, knowledge and practice of breast self-examination was low, even though majority of them have positive attitude. The major reasons for not doing BSE were thinking that they are healthy and not being informed. We would like to recommend ministry of health for further work that has to be done regarding increasing the level of awareness about BSE through possible feasible methods like encouraging the emergence of groups in the university that will increase the peer education rate and providing templates and ceremonies through the media or celebrating day's like breast cancer day and encouraging the students to explain their feelings freely to further increase the level of awareness. Giving more coverage on Medias like TV and radio to create more awareness.

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Competing Interest

The authors have no interest.

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