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Knowledge and Practice of Breast Self Examination as Early Detection Method of Breast Cancer and Associated Factors Among Wolkite Univeresity Female Students, Southern Ethiopia

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Abstract

Background: Breast cancer is the most frequently diagnosed and common cause of cancer death globally. Currently it is highly prevalent among women in Ethiopia. Breast cancer is fatal due to late presentation, limited resources, and lack of awareness of breast cancer early detection methods. Objective: This study is aimed to assess knowledge and practice of breast self-examination as an early detection method of breast malignancy and associated factors among female students at Wolkite University, southern Ethiopia. Methods: An institution-based survey was conducted among 382 randomly selected female students in Wolkite University, Southern Ethiopia. The collected data were summarized and presented in a table and figure. Binary logistic regression (backward stepwise regression) model was fitted with Breast self-examination knowledge and practice and factor variables. Result: In this study the response rate was 100%. About 116(40.3%) female students had good Knowledge on Breast self-examination. While, 50(26.6%) had practiced breast self-examination. Respondents in the age range of 22-25 years (AOR=2.7; 95% CI; 1.21, 5.94), who grew up in rural areas (AOR=.47; 95% CI; .22, .99) and respondents who have got information from school (AOR=.22;95% CI;.10, .48) were predictors of breast self-examination knowledge, while respondents in the age range of 22-25 years (AOR=.02; 95% CI; .01, .22) and ≥ 26 years (AOR=.04; 95% CI; .002, .74), who are protestant in religion (AOR=5.9; 95% CI; 1.52, 23.28), who grew up in the urban area (AOR=3.26; 95% CI; 1.17, 9.05) and who have good knowledge on BSE (AOR=26.33% CI; 8.58, 80.80,) were predictors of breast self-examination practice. Conclusion: Breast self-examination knowledge and practice are vital to detect breast cancer early and take the necessary measure. age, years of study, source of information, and place of grew up are major predictors of BSE knowledge and age, religion, place of grew up and knowledge of breast self-examination were major BSE predictors.
Keywords: Breast cancer; BSE; Early detection; Wolkite University.

1. Introduction

Breast cancer (BC) is a malignant propagation of epithelial cells coating the duct or lobules of the breast. The presenting signs of most BC are a firm bulge, which may be allied with in-drawing of the nipple. Although any part of the breast may be affected. The upper outer quadrant is the part on which BC most frequently been found [1, 2].

Globally, the commonest cancer, among women in BC. In the year 2018, about two million new cases were reported. Even if its incidence is remarkably higher in industrial countries, about 60% of BC mortality occurs in the low-income world. Not only mortality, its striking rise in incidence in sub-Saharan countries including Ethiopia denotes its clinical importance [3]. The incidence of breast cancer in Africa in 2018 ranged from 27.9/100,000 in Central Africa to 48.9/100,000 in Northern Africa, with corresponding mortality of 15.%–18.4%, respectively [4].

According to the community-based survey in Addis Ababa BC and cervical cancers are the foremost, consisting of 22.6% and 10.8% respectively of all cases of malignancy in Addis Ababa [5, 6].BC is one of the manageable cancers if once detected early but in developing countries breast cancer is identified at a more advanced stage(stage III &IV) and this results in a greater fatality rate [1].

BC early identification is identifying a deviation indicative of breast malignancy among asymptomatic women by using various methods (breast self-examination (BSE), clinical breast examination (CBE), and mammography). Among these methods, BSE is cost-effective means that can be performed by self [7]. Previous studies showed that knowing and applying this method fetches a considerable decrease in mortality rates from BC (about 25%- 30%) [8].

Due to resource constraints (experts and advanced diagnostic technologies), in developing countries, the best feasible method of breast cancer early detection is regular BSE [9]. However, its practice is reliant on women's knowledge of BSE [10]. BSE comprises inspection and palpation of the breast by oneself to check for any lump on

the breast, its size, shape, texture, and contour. Its purpose is to enable a woman to identify any abnormal change in her breast early and to seek medical care [11]. As studies showed women detect about 80% of breast cancers, those can't be identified by mammography, through BSE as part of their daily activities (showering and dressing) [12].

In addition to CBE and mammography, BSE is a tool considered important to identify breast cancer early [13]. In addition, it can be employed in enhancing breast cancer awareness among women [14]. BSE is recommended because it is inexpensive, private, painless, easy, and safe, and does not require special equipment [15]. As previous studies showed, BSE potentially allows for the early recognition of breast abnormality through improving breast health awareness [16, 17]. While screening programs with mammography have been effective in western countries, BSE is similarly important in reducing mortality from breast cancer, especially, in low-income settings [18].

In western countries, the most common cancer death among middle-aged women is breast cancer. Likewise, it is mounting in low-income countries, as the bulk of the affected is not identified early [19, 20]. According to the world health organization (WHO) cancer country profile of Ethiopia, despite the fact that several cases were not reported, because most rural women are not accustomed to seeking modern treatment, rather they use traditional medicine as the first option, about one-fourth of cancer deaths among women in 2014, were due to breast cancer [21].

Breast cancer survival rates vary greatly worldwide, ranging from 80% or over in North America, Sweden, and Japan to around 60% in middle-income countries and below 40% in low-income countries. The low survival rates in less developed countries can be explained mainly by the lack of early detection programs, resulting in a high proportion of women presenting with late-stage disease, as well as by the lack of adequate diagnosis and treatment facilities [22]. Seeking medical care at the advanced stage of breast cancer is common in the developing world that is due to the fact that low awareness, complexity in steering health organizations, unimpressive health care systems, and lack of identification programs and strong traditional beliefs [23]

Studies reported that the majority of patients with breast cancer in low-income countries present for the first time at advanced stages (III and IV) when the probability of treatment effectiveness is less or nothing can be done at all [24, 25]. This is possibly due to a lack of early detection of the disease. The diagnosis of breast cancer during the early stage has been connected to a reduction in mortality, morbidity, and treatment cost [26].This point out a need for increasing community awareness of methods for the early identification of the disease.

A study carried out among female secondary school teachers in Ilorin, Nigeria, West Africa found that awareness of BSE was high (95.6%), though its practice was relatively low (54.8%) [27] Studies conducted in other regions of the world have also shown poor attitude toward BSE and poor practice, despite good knowledge [28, 29].

Even though the usual age of breast cancer is after the age of 45 and not common below age 20, currently the age at which happening breast cancer is declining, as well as younger being diagnosed than ever [30, 31]. The survival rate of young breast cancer patients also is lower than that of older due to late presentation. Breast cancer in younger is relatively destructive and the probability of survival is low. Thus, early identification is very imperative [32].

With the global increase in morbidity and mortality from breast cancer, there is a need to explore the awareness and practice of BSE as an early detection tool in resource-limited countries. The objective of this study was to assess the awareness, and practice of BSE and associated factors among female students of wolkite university, Ethiopia, 2020.

2. Methods and Materials
2.1. Study Setting and Design
An institution-based cross-sectional study was carried out at Wolkite University,168, Km away from Addis Ababa, the capital city of Ethiopia. It is one of the higher learning institutions found in Ethiopia and was established in 2004 EC and has 9 colleges, two schools, and 47 departments. According to the statistics obtained from the student service center of the university, it has a total of 5062 female students in the academic year of 2019/2020 [33]. The university has two clinics and one specialized referral hospital all providing reproductive and other health care services mainly for the in-school students and catchment populations. This study focused on young educated females who came from various ethnic, cultural, and geographic areas across the country. As a result, empowering and enhancing awareness of young women will support the Ethiopian government's national strategy for breast cancer screening promotion. The study was conducted from December 1-30, 2020 in the Gregorian calendar.

2.2. Study Population and Eligibility Criteria
The finding of this study is intended for all female students of wolkite University, while those 2nd year and above female students from a randomly selected college and departments were the study population. Those female students who were seriously ill during the data collection were excluded from the study.

2.3. Sample Size Determination
The sample size was determined using both single population proportion estimation formula and sample size calculation for a cross-sectional study to consider both objectives of the study. For the first objective, we assumed a 95% confidence level, level of knowledge, and practice of breast self-examination (75% and 58%) respectively from a previous study conducted in Ethiopia [34] ,5% significant value and 10 % non-response rate, 299 and 382 samples respectively for knowledge and practice were required.

$$n = \frac{(z\alpha/2)2\ p(-p)}{d2} = 374$$

Where n = estimated sample size, Z = confidence limit (1.96), P = prevalence (58 % practice of BSE respectively),d = marginal error (5%),

Since the study population is less than 10,000 finite population correction formula was applied.

nf = n : Where nf = desired sample size; n = the calculated sample size; N= total population

$$\frac{1+(n)}{N}$$

nf =374 = 348; Adding 10% non response the total sample size was calculated to be 382 .

1+(374)/5062

By following the same procedure (Using p= 75% for BSE knowledge) sample size of 299 was calculated.

While the sample size for the second objective was estimated using the sample size for a cross-sectional study to compare the influencing factors of BSE practice under Epi-info version 7 software. With the assumption of 95% confidence level, 80% power, exposure to unexposed sample ratio of 1, odds ratio, and level of knowledge and practice among the unexposed from previous studies. Considering age, place of grew up and knowledge of BSE as factors related to BSE practice, the sample size estimated by BSE knowledge became 232. With a design effect of 1.5 (to account for multistage sampling) and a 10% non-response rate, the final sample became 382. Taking the larger sample size estimated based on the above calculations, a total of 382 female students were required for this study.

2.4. Sampling Procedure

A multi-stage sampling technique was employed to randomly select 382 female students from randomly selected colleges, schools, and departments. First, based on the college they attending (among the 9 colleges 3 were selected randomly: College of Business and Economics, college of natural and computational science, and College of Engineering and Technology). Then, from each College, a pre-specified number of departments were selected randomly: (department of management, department of economics, department of marketing and department of accounting(from the college of business and economics), Department of biology, department of sports science, and department of mathematics(from the college of natural and computational science), department of software engineering, department of garment engineering, department of electrical engineering and department of computer engineering (from the college of engineering and technology). The sample size was stratified using a proportional allocation to each randomly selected school and department, and then further allocated considering the study year by using the probability proportional to size (PPS) allocation technique as N j= ni/n * N where Nj refers to the sample size for strata j and n is the total sample size. The sample frame including the full list of students was obtained from the student service center or department, and first, we identified female students. Then, a simple random sampling/computer-generated/ was used to randomly select the allocated sample of female students from the selected department. By discussing with each selected department head we have arranged the time (50 minutes) after the lecture. Another schedule was organized for those who were absent on the date of data collection.

2.5. Data Collection Tools and Procedure

The tool was adopted from preceding literature [35-38]. Data were collected using a pretested structured self-administered questionnaire containing variables assessing socio-demographic, information source, and knowledge and practice level. In this regard, the questionnaire was translated from English to Amharic (local language) by a translator who knows both languages and then back-translated to English by another translator who knows both languages. Before data collection, a pre-test of the tool was done on the target population of Arekit technical & vocational college female students.

The content of the questionnaire comprised: 6 socio-demographic characteristics items, one source information item, 6 knowledge of breast self-examination items, and 8 practices of breast self-examination items. The questionnaire items include true/ false, yes/no, and multiple-choice questions. Four diploma nurses were recruited for the data collection based on previous experience in data collection and fluency in the local languages.

2.6. Operational Definitions/Measurements

Good knowledge: Knowledge was assessed by 6 knowledge questions each score of 1. Knowledge score was categorized into two groups: Good knowledge categorized for the value greater than or equal to the mean value and poor knowledge for the value less than the mean value [15].

Good Practice of BSE: Respondents who reported undertaking BSE at least monthly from the last two yrs were regarded as practiced BSE and those who didn't undertake BSE monthly were considered as not practiced [28].

2.7. Data Quality Control

The tool was pretested and administered in the local language by trained data collectors. Data collectors and supervisors were trained. Close supervision was done by investigators and supervisors. The completeness and consistency of the collected data were checked by supervisors and investigators and the necessary correction was made on time.

2.8. Data Processing and Analysis

Data were coded, entered, and cleaned Using epi-info version 3.5statistical software, then exported to SPSS version 21 for analysis. Descriptive analyses such as frequency, percent, mean, and standard deviation were reported,

and the results were presented in statistical tables and figures. A bivariable and multivariable binary logistic regression analysis was conducted to assess the factors associated with BSE knowledge and practice. The variables were checked for normality and multicollinearity (using statistically significant correlations and a higher variance inflation factor above 10). Factors with a p-value below 0.25 in bivariate were considered for the final logistic regression model. The model fitness was evaluated using Hosmer and Lemeshow's test (p-value > 0.05 showed a good fit model). Crude and adjusted odds ratios with 95% confidence intervals were reported. Statistical significance was affirmed at a P-value below 0.05

2.9. Ethical Consideration

Permission for the study was obtained from the Institutional Review Board (IRB) of Wolkite University, College of Medicine and Health Science. A formal letter of cooperation was written to all selected colleges. Participants provided written informed consent, after explaining the purpose and procedures of the study in detail, and the study was conducted in accordance with the Declaration of Helsinki.

3. Result
3.1. Socio-demographic Characteristics of Respondents

A total of 382 respondents were incorporated in the study, with a response rate of 100%. Participants' age range was from 19-35. About 231(60.5%) of respondents were aged between 22 to 25 years and the remaining as shown in the table below. Regarding religion, nearly half (47.9%) were Orthodox followers, followed by 77(20.2%) Protestants, and the remaining as explained in the table below. Concerning ethnicity, about one-third (34.8%) were Oromo in ethnicity followed by 92(25.9% Amara and 51(14.4%) Gurage, and the remaining as listed in the table below. Regarding respondents' previous residence (the area they grew up in) about 207(54.2%) were urban residents. Concerning years of study, from the total study participants 175(19.9%), 152(39.8%), 75(19.6%) 79(20.7%) were 2nd, 3rd, 4th, and 5th-year students, whereas, due to the covid-19 pandemic first-year students were not involved (see Table 1).

Table-1. Socio demographic characteristics of Wolkite University female students Wolkite, Ethiopia, December 2020(n= 382)

Variable	Frequency(%)
Age (in yrs)	
19-21	110(28.8)
22-25	231(60.5)
26-30	38(9.9)
>30	3(0.8)
Religion	
Orthodox	183 (47.9)
Protestant	77(20.2)
Muslim	73(19.1)
Catholic	19(5)
Others(Jova, seventh day, Tehadso)	30(7.9)
Ethnicity	
Oromo	133(34.8)
Amhara	99(25.9)
Gurage	55(14.4)
Tigre	5 (1.3)
Others	90(23.6)
Respondents previous Residence(place they grew up)	
Urban	207(54.2)
Rural	175(45.8)
Years of study	
2nd year	76(19.9%),
3rd year	152(39.8%),
4th year	75(19.6%)
5th year	79(20.7%)

3.2. Knowledge of Respondents on Breast Self-Examination

Of the total respondents, 289(75.7%) reported as they heard about BSE as an early detection method of breast cancer. Among these, about one-fourth (26.6%) correctly mentioned the age at which BSE should be started (at age twenty). About 121(41.9%) of the respondents knew the frequency of BSE (once monthly), Nearly one third (29.8%) of the respondents correctly answered the appropriate time to perform BSE in relation to the menstrual cycle (one to seven days after menses) and about 133(46%) answered the right technique to perform breast self-examination. generally, about 116(40.3%) of the respondents score mean and above knowledge score (have Good knowledge). (See Table 2).

3.3. Source of Information About Breast Self-Examination as An Early Detection Method of Breast Cancer

Among 289 respondents who stated as they heard about BSE as a screening method, about 129(44.6%) reported as they have got the information from school, about a quarter (28.1%) respondents as they have got the information from health professionals while about 66(22.8) and 13(4.5) reported as they have got the information from mass media and friends respectively (See Table 2).

Table-2. Knowledge of respondents about breast self examination as early detection method of breast cancer and source of information Wolkite, Ethiopia,December 2020(n=382)

Variables	Category	Frequency	Percentage
Heard about BSE as screening method	Yes	289	75.7
	No	93	24.3
Source of information	School	129	44.6
	Health professional	81	28.1
	Mass media	66	22.8
	Friends	13	4.5
Reasons of breast BSE	For early detection and treatment	170	58.8
	To know how breast feel	69	23.9
	To detect any change in the breast	47	16.3
	Other	3	1
Recommended age to start BSE	After menarche	68	23.5
	At 20years	77	26.6
	At 40years	13	4.5
	After menopause	3	1
	I don't know	128	44.3
Frequency of BSE	Once in a week	50	17.3
	Once in month	121	41.9
	Once in 3 month	23	8
	Once in 6 month	12	4.2
	Other	5	1.7
	I don't know	78	27
Appropriate time to perform BSE	During menses	19	6.6
	1-7 days before menses	53	18.3
	1-7 day after menses	86	29.8
	At any time	46	15.9
	I don't know	85	29.4
Techniques of BSE	Vertical strip technique	73	25.3
	Circular technique	133	46
	Edge technique	10	3.5
	I don't know	73	25.3
Knowledge about BSE	Good (score mean and above knowledge score)	116	40.3
	Poor	276	59.7

3.4. Respondents Practice of BSE as Early Detection Method of Breast Cancer

Among the total 188(49.2%) respondent reported as they performed BSE at least once in their lifetime. About 82(43.6%) started practicing at the age of twenty and only 50(13.1%) practiced monthly. The commonly mentioned reason for not practicing BSE was I don't think it is important 49(25.4%). By considering those who undertake BSE monthly for the last two years, about 50(26.6%) of respondents practiced BSE (See Table 3).

Table-3. Description of timing and reasons of undertaking breast self examination among wolkite university female students. December 2020 (n=382)

Variables		Frequency	Percentage
Did you ever practice breast self examination in your life time?	Yes	188	49.2
	No	184	50.8
What do you checked while performing BSE?	Lump in the breast	109	58
	Change in breast skin	36	19.1
	Lump under arm	43	22.9
When did you start SBE	Before age 20 years	65	34.6
	At age 20 years	82	43.6
	After the age of 22 years	41	21.8
How often you practiced breast self-Examination?	Once in a month	50	26.6
	Once in a week	70	37.2
	Once in 3 month	68	36.2
When did you perform BSE?	1-7 days before menses	32	17.0
	During menses	19	10.1
	1-7 day after menses	103	54.8
	I don't know	34	18.1

3.5. Factors Associated with Knowledge of BSE Among Respondents

A step-wise backward binary logistic regression model was used to identify factors associated with respondents' knowledge of BSE. All variables with a p-value below 0.25 in bivariable logistic regression were considered for the multivariable logistic regression model to address all possible confounders. In bivariable analysis respondents' age, place of growing up, years of study, and source of information were found to be associated with knowledge of BSE.

Respondents who are in the age range of 22-25 years and in the age range of ≥ 26 years were both nearly two times more likely to have good knowledge of BSE (COR=1.61; 95% CI; 1.00, 2.60), (COR=1.72; 95% CI; .76, 3.90) respectively, than respondents of age less than 21 years. In addition, respondents who grew up in rural areas were 59 % less likely to have good knowledge of BSE compared to those who grew up in urban areas (COR=.41; 95% CI .26, .65). And a surprising finding in this study was, that respondents who are in their fifth year of study were less likely to have good knowledge of BSE compared to those who are in their second year of study (COR=.23; 95% CI .12, .47) (Table 4). Respondents who have got information from a health professional and school were less likely to have good knowledge compared to those who have got information from mass media (COR=.58; 95% CI .28,1.23) and (COR=.25; 95% CI .13,.50) respectively(See Table 4).

In multivariable logistic regression age, years of study, and source of information were significant predictors of BSE knowledge (P-value < 0.05). Multicollinearity was checked and variables with VIF above 10 and significant correlation were excluded from the model. In the final model, there was no significant effect modification found from multicollinearity and interaction effect analysis. In addition, the model fitness was evaluated with Hosmer and Lemeshow's goodness of fit test (0.46, showed a good fit for the model).

Respondents in the age range of 22-25 years (AOR=2.7; 95% CI; 1.21, 5.94) were nearly 3 times more likely to have good knowledge compared to respondents who are below 21 years of age. On the other hand, respondents who grew up in the rural area (AOR=.47; 95% CI; .22, .99) were less likely to have good knowledge compared to those who grew up in urban areas. Likewise, respondents in the 5th year of study (AOR=.015; 95% CI; .004, .060) were less likely to have good knowledge compared to those who are in the 2nd year of study. In addition, respondents who have got information from school (AOR=.22;95% CI;.10, .48) were less likely to have good knowledge of BSE compared to those who get information from mass media(see Table 4).

Table-4. Factors associated with breast self-examination knowledge as early detection method of breast cancer among wolkite university female students, southern Ethiopia,2020 (n= 382)

Category	Good knowledge of BSE		COR(95%C.I)	AOR(95% C.I)	P-value
	Yes (%)	No (%)			
Age					
≤21 yrs	42(36.2	68(25.6)	1.00	1.00	
22 -25 yrs	64(55.2)	167(62.7)	1.6(1.00 -2.60)*	2.6(1.21-5.94)*	≤ 0.015
≥26 years	10(8.6)	31(11.6)	1.7(.76-3.90)*	.57(.05-5.58)	≤ 0.632
Place of grew up					
Urban	80(68.9)	127(47.7)	1.00	1.00	
Rural	36(31.1)	139(52.3)	.41(.26-.65)*	.47(.22- .99)*	≤ 0.050
Years of study					
2nd year	18(15.5)	58(21.8)	1.00	1.00	
3rd year	40(34.5)	112(42.1)	.86(.48-1.64)	.51(.22-1.17)	≤ 0.115
4th year	13(11.2)	62(23.3)	1.48(.66-3.28)	.40(.12-1.26)	≤ 0.120
5th year	45((38.8)	34(12.8)	.23(.12-.47)*	.15(.01-.10)*	≤ 0.001
Source of Information					
Mass media	15(13)	51(29.3)	1.00	1.00	
Health professional	27(23.5)	54(31)	.58(.28-1.21)*	.60(.22-1.60)	≤ 0.314
School	69(60)	60(34.5)	.25(.13-.50)*	.22(.10- .48)*	≤0.001
Friends	4(3.5)	9(5.2)	.66(.17-2.45)	6.97(.55-87.30)	≤.132

Note: *Statistically significant.

Abbreviations: AOR: adjusted odds ratio, COR: crude odds ratio; CI: confidence interval. BSE: Breast self-examination.

3.6. Factors Associated with Practice of BSE Among Respondents

The impact of a set of predictors on BSE practice was analyzed using binary logistic regression. Accordingly, in bivariate analysis, the major factors influencing respondents' BSE practice were age, ethnicity, religion, residence, years of study, and BSE knowledge (at p<0.05). All variables with a p-value below 0.25 in bivariable logistic regression were considered for the multivariable logistic regression model to address all possible confounders. In the final model of multivariable logistic regression age, religion, residence, and knowledge of BSE were found to be significant predictors of BSE practice (P-value < 0.05). Respondents in the age range of 22-25 years (AOR=.02; 95% CI; .002, .221) and 26-30 years (AOR=.04; 95% CI; .002, .74) were less likely to practice BSE compared to participants who are below 21years of age. In addition, respondents who are protestant in religion (AOR=5.9; 95% CI; 1.52, 23.28) were nearly 6 times more likely to practice BSE compared to orthodox. Respondents who grew up in urban areas (AOR=3.26; 95% CI; 1.17, 9.05) were 3 times more likely to practice BSE compared to those who grew up in the rural area. Likewise, a respondent who has good knowledge of BSE (AOR=26.33% CI; 8.58, 80.80,) were 26 times more likely to practice BSE compared to those who have poor knowledge (Table 5).

Table-5. Factors associated with breast self-examination practice as early detection method of breast cancer among wolkite university female students, southern Ethiopia,2020 (n= 382)

Variable	Practiced BSE		COR(95%C.I)	AOR(95% C.I)	p-value
	Yes (%)	No (%)			
Age					
≤21 years	1(2)	109(32.9)	1.00	1.00	
22-25Years	46(92)	185(55.7)	.04(.01-.27)	.02(.01-.22)	≤0.001
≥26 years	3((6)	38(11.4)	.11(.11-1.06)	.04(.02-.73)	≤ 0.030
Place of grew up					
Urban	37(74)	170(51)	2.71(1.39-5.28)	3.26(1.12-9.14)*	≤0.023
Rural	13(26)	162(49)	1.00	100	
Religion					
Orthodox	41(82)	142(42.8)	1.00		
Muslim	6(12)	67(20.2)	3.22(1.31-7.97)	1.35(.36-4.96)	≤0.665
Protestant	3(6)	74(22.3)	7.12(2.13-23.77)	5.9(1.53-23.28)*	≤0.010
Catholic	0	19(5.7)	4666666…		
Others	0	30(9)	488888		
Ethnicity					
Oromo	7(14)	126(38)	1.00		
Amhara	13(26)	86(26)	.37(.14-.96)*	-	
Gurage	8(16)	47(14)	.33(.11-.95)*	-	
Others	22(44)	73(22)	.17(.07-.42)*	-	
Years of study					
2nd year	3(6)	73(22)	1.00		
3rd year	9(18)	143(43.1)	.65(.17-2.48)		
4th year	15(30)	60(18.1)	.16(.04-.59)	-	
5th year	23(46)	56(16.9)	.10(.03-.35)		
Good knowledge					
Yes	41(82)	75(22.8)	15.6(7.25-33.57)	26.3(8.58-80.80)*	≤0.001
No	9(18)	257(77.2)	1.00	100	

Note: *Statistically significant.

Abbreviations: AOR: adjusted odds ratio, COR: crude odds ratio; CI: confidence interval. BSE: Breast self-examination.

4. Discussion

This study measured the level of knowledge and practices of BSE and their predictors among wolkite university female students. A substantial proportion of respondents (46.3%; 95% CI: 41.4%, 50.3%) have good knowledge on BSE. It was lower than other study reports from Cameron 73.5% [17], Sudan 88% [39], Kenya 94.4% [40], Ghana 90.9%, 95% [41, 42] ,Uganda 81.5%,76.5% [43, 44] and Ethiopia 57.8%, 55.2% [21, 45]. While, it was higher than reports from studies conducted in Nigeria 24.4% [46] and Ethiopia 8.7%, 23%, [11, 47] respectively. These differences in the level of knowledge might be due to differences in the study area and some of the studies were conducted among health professionals and medical students, where the problem is expected to be more understood.

In this survey, about 50(26.6%) of the respondent practiced BSE. Which is lower than survey reports from Nigeria 31.4%, 55% [46, 48]. While it was higher than study reports from Nigeria at 12%, 11.7% [49, 50], and Ethiopia at 22.9 % [45]. The difference might be due to differences in the study area and time in addition, some of the studies have been conducted among health professionals and medical students, where the problem is expected to be more understood. While some of the studies were undertaken among women in the community.

In this study we identified as the age of respondents increased the likelihood to have good knowledge and practicing BSE increased. This is in line with previous study conducted in Addis Ababa (β = 1.4; CI=1.1, 1.8; p <0.01) [45]. In addition, this study showed that mass media as a source of information was a significant predictor of BSE knowledge, respondents who have got information from school (AOR=.22;95% CI;.10,.48) were less likely to have good knowledge of BSE compared to those who get information from mass media.

We also identified Good knowledge of BSE (AOR=26.33% CI; 8.58, 80.80,) as an independent predictor of BSE practice. Which is in line with a study report from Bahirdar city Ethiopia [AOR=5.01, 95%CI (2.84-8.82) [50], and Gondar university Ethiopia (AOR = 12:02; 95% CI: 5.97, 24.20) [51]. In addition, our study findings revealed that urban residency (place of grew up) (AOR=3.26; 95% CI; 1.17, 9.05) is a significant predictor of BSE practice. Which is in line with study finding from Gonder University (AOR = 2:50; 95% CI: 1.27, 4.94) [51].This similarity might be due to both of these studies being conducted among university students).

The strength of this study includes the best of the investigators' knowledge this study is among the few studies done at the higher education level which illustrates a clear picture of how much effort is left to be done to awaken the whole society at all levels of education or geographical area since students of higher educational institutions were collected from every part of the country. The study used primary data to assess knowledge and practice of BSE. To lessen popularity bias as much as possible self-administered questionnaires were used. The limitation includes, It was good if the study was harmonized with a qualitative method to obtain in-depth information. Since the study design was cross-sectional the study failed to show cause-effect relationships.

5. Conclusion

This study has shown that Knowledge and practice of BSE among WKU female students were low. Among the study participant, only small proportions are actually practicing regularly as per the standard. The most common reasons identified in this study for not practice of breast cancer early identification methods were knowledge gaps. Most of the students are unaware of the benefits, appropriate timing & techniques of doing SBE. Attention given to methods of early detection for breast cancer by mass Media & health professionals is low.

6. Recommendation

Federal and Regional Health Offices Level

A standard screening guide line needs to be prepared and implemented in all health facilities.

There should be regular training programs in order to keep the professionals updated about breast cancer screening method.

Health Professionals Level

Trained health professionals should give health education to their clients and , the public on breast cancer and self-breast examination by using mass media and other the existing strategies.

Ministry of Education

Ministry of education has to consider including this issue in the curriculum from primary school to higher, it may help to adhere to such practice.

Researchers

Researchers be supposed to conduct further studies at different levels.

Mass Medias

Mass Medias should give focus on giving understandable Health information regarding breast self examination as early detection of breast cancer.

Generally group effort is needed between different sectors in order to make breast cancer screening culture so as to trim down morbidity and mortality related to breast cancer among women.

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Author Contributions

All authors participated in conception, design, data analysis, drafting and revising the manuscript, have agreed on the journal to which the manuscript was submitted, approved the final version to be published, and agree to be accountable for all aspects of the work.

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Data Availability

All the required data are available with the document

Competing Interests

The authors declare that they have no financial and non financial competing interests.

Patient and Public Involvement

The research question for this study was developed based on the identified gap in relation to the subject matter, the university community (registrar focal,college dean, and department heads were participated by providing background information, the study participants were invited to be involved in the study voluntarily to respond on the questionnaire and they have been informed as the finding of this study will be disseminated to all stakeholders through publication, seminars, and local meetings.

Ethical Consideration

Permission for the study was obtained from the Institutional Review Board (IRB) of Wolkite University, College of Medicine and Health Science. A formal letter of cooperation was written to all selected colleges. Participants provided written informed consent, after explaining the purpose and procedures of the study in detail, and the study was conducted in accordance with the Declaration of Helsinki.

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