Breast Self-examination Practice and its Associated Factors among Undergraduate Female Students at University of Gondar, Northwest Ethiopia

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Abstract

Breast self-examination practice is a screening method used in an attempt to detect early breast cancer when it's more likely to be treated successfully. The method involves the woman herself looking at and feeling each breast for possible lumps, distortions or swelling. Breast cancer is a global health concern and a leading cause of morbidity and mortality among women. Therefore, the main objective of this study was to assess breast self-examination practice and its associated factors among female students at the University of Gondar, Northwest Ethiopia. Institutional based cross-sectional study was carried out from April to May 2014. The study participants were recruited using a simple random sampling technique. Data was entered using Epi Data 3.02 statistical software and analyzed using SPSS version 20. Odds ratio with 95 % confidence intervals was used to assess the presence and strength of association. Out of 806 female students recruited, 803 participated in the study. The prevalence of breast self-examination practice was 45.8% with 95% CI, (42%, 50%). Using multivariate analysis, students 4th year and above were significantly associated with [AOR] = 2.34, 95% CI 1.33 -4.09) perceive barriers with (AOR= .66, 95% CI .488 -.897), perceived self-efficacy (AOR= 3.53, 95% CI, 2.56 -4.89) and heard of breast self-examination practice (AOR= 0.16, 95% CI, .07, 0.368). According to this study finding breast self-examination practice is low and it needs additional improvement respective of different associated factors including both first year and above undergraduate students of Gondar University to detect early breast cancer and avoid morbidity and mortality related to breast self -examination practice.

Keywords: Breast self-examination, female students, breast cancer, Gondar, health belief model.

Introduction

Breast self-examination practice is a screening technique of the early detection of breast cancer when it's more likely to be treated successfully. It has been identified as a major public health problem worldwide (Ardahan *et al.,* 2015). Breast cancer is the leading cause of death among women globally about 411,000 deaths every year (Parkin, 2005). Know a day's Breast cancer is the most common disease in women, comprising 23% of all female cancers around the world (Saurabh *et al.*, 2013). Breast cancer is estimated that 45% of the 1.35 million new cases diagnosed each year (Curado and Shin, 2007). Lack of early detection of breast cancer resulted in increased proportion of women presenting with late stage disease (Obaji *et al.,* 2013; Baysal, 2012). The emergence of breast disease and the subsequent development of cancer tend to be more aggressive in young women compared with breast cancer progression in the older population and the mortality rate of young women was 72.4% (Akhtari Zavare and Ismail, 2013).

A study conducted in Turkey revealed that there was a significant relationship between age and school grade on breast self-examination practice (Özgü and Çetinkaya, 2008; Erbil, 2012). The study conducted in Yemen female students had some information about breast cancer but they don`t practice breast self-examination regularly (BA, 2010). The early diagnosis of breast cancer is of extreme significance in improving the survival rates and quality of life, especially in low-income countries (Ozkan *et al.*, 2011; Ersin, 2011). Breast self-examination is practiced in countries like Iran (25%), Egypt (6.1%), and Cameroon (35%) (Hajian and Mirzaei, 2011; Boulos, 2014). In Ethiopia, breast cancer is fatal, because of limited resources, low awareness of breast cancer screening practice and strong traditional beliefs that can delay biomedical care (Al-Sharbatti *et al.*, 2013) and in this country breast cancer screening is the bottom of the priority list that is why there is no such infrastructure, facilities and knowledge gaps to fight against breast cancer (Seife *et al.,* 2012).

Therefore, the present study had been designed to assess the practice of BSE and its associated factors of breast self-examination among university female students in the University of Gondar.

Materials and methods

Study design and period: The institutional based cross-sectional study was conducted among female undergraduate students at the University of Gondar from April to May 2014.

Study setting: The University of Gondar is one of the oldest and most well-established higher education institutions in the country. The sources populations were all regular undergraduate female students at the University of Gondar enrolled for the year 2013/2014.

Sample size and sampling techniques: The sample size was calculated using a single population proportion formula. As the degree of precision is pre-specified and since there is no study in this area and then take the assumption of the proportion of students who had awareness of breast self-examination practice is 50%, Z is a standard of normal distribution value at 95% confidence level of $Z\alpha/2= 1.96$ and 5% of absolute precision. By considering the design effect of two and five percent non-response rate the final sample size becomes 806. The sample was obtained from the accessible population within the University of Gondar using stratified simple random sampling methods. The lists of individual classes used as a sampling frame. The required number of female undergraduate students were proportionally allocated and distributed to each year of study.

Data collection tools: Research data were collected by self-administered structured questionnaires. Questionnaire has three parts, the 1st part had socio-demographic characteristics, 2nd part had self-reporting health belief model with five Likert scale and 3rd part had practice questionnaires. The questionnaires were adopted from the previous study (McCready and Jenkinson, 2005). Health belief model constructs including perceived susceptibility, perceived seriousness, perceived benefits, perceived barriers, self-efficacy and cues to action of breast self-examination have measured the status of breast self-examination practice among the University of Gondar undergraduate female students. All Likert scale questionnaires offered five response choices ranging from "strongly disagree (scores 1 point)" to "strongly agree (scores 5 points)". Practices related to breast self-examination, also assessed by self-report on the frequency of BSE practice such as never practice, irregular practice, regular practice (monthly practice) and others (KELSEY, 2011).

Data quality assurance: The questionnaire was prepared originally in English and translated into local language and back to English to keep the consistency of the questionnaires. It was pretested on 43% of undergraduate female students at Bihar Dar University which is a similar setup to identify potential problem areas. Based on the pretest result, the questionnaire was additionally adjusted contextually and administered to the whole sample of female students. Training of data collectors, supervisors and pre-testing of the questionnaire was made to ensure the quality of data. The principal investigator was made spot-checking and reviewing the completed questionnaires on a daily basis to ensure completeness and consistency of the information.

Data processing and analysis: Data was entered using EPI data 3.02 statistical software and then exported to SPSS version 20 for further analysis. Descriptive statistics were done by using statistical parameters: percentages, means, and standard deviations. Bivariate analysis was used to check which variables have an association with the dependent variable. Variables found to have an association with the dependent variables then entered into multiple logistic regressions for controlling the possible effect of confounders and finally the variables having significant association was identified on the basis of OR, with 95%CI and p-value to fit into the final regression model.

Ethical considerations: The study was approved by the Institute Review Board (IRB) of the University of Gondar. Written Informed consent was obtained from the respondents who were selected to participate. Privacy and confidentiality of information given by each respondent were keeping properly and the name of the participants was not recorded.

Results

Socio-demographic characteristics of the study participants Out of 806, study participants which accounts for 99.50% of response rate. The mean ages of the respondents were $20.94 \pm$ SD, 1.9 years. Half of the study participants were (51.4%) ≥20 years. The overall majority of 762 (94.9%), of the study participants, were unmarried. Majority of the respondents were Orthodox Christians 629 (78.3%). Around two third of the participants were 490 (61%) Amara by Ethnicity, three-fourths of the 284 (35.4) were first-year students and 158(19.7%) of study participants were medical student (Table 1).

Prevalence of BSE Practice among the study participants in the University of Gondar, Northwest Ethiopia: Three hundred eight (45.8 %) with 95% of confidence interval between (42%, 50%), respondents had performed breast self-examination practice regularly or irregularly in the last 12 months of which only 82(22.3%) performed regular breast self-examination practice at least once a month.

Table 1. Socio-demographic characteristics of UG female students in the University of Gondar, Northwest Ethiopia, 2014 (n=803).

Variables	Frequency	Percent
Age		
< 20	390	48.6
≥ 20	413	51.4
Marital status		
Single	762	94.9
Married	41	5.1
Religion	629	78.3
Orthodox Christian	69	8.6
Muslim	92	11.5
Protestant	13	1.6
Ethnicity		
Amhara	490	61.0
Tigre	100	12.5
Oromo	105	13.1
Sidama	30	3.7
Wolayta	50	6.2
Others	28	3.5
Year of study		
1st year students	284	35.4
2nd year students	246	30.6
3rd year students	189	23.5
4th year and above	84	10.5

Table 2. Breast self-examination practice with respect to their field of study among female UG regular students in the UOG, April 2014 (n=803).

Variables	Performing BSE regularly and irregularly		
	Yes	No	Total
Health science female students	168 (56.8%)	128 (43.2%)	296
Non-health female science students	200 (39.4)	307(60.6)	507
Total	368	435	803

Health science students had a higher proportion of breast self-examination practice as compared to non-health science students (Table 2).

Opinions regarding the correct interval to perform BSE practice among female undergraduate students at the University of Gondar (n=806): Lease than a half of respondents had 386 (45.8%) performed breast self-examination practice of which lease than one third of 100 (27.4%) the respondents had been provided the correct interval of monthly breast self-examination practice, 15(4.1%) of the respondents performed daily, 105(28.5%) performed every 3 months , while 73(19.8%) conduct every 6 months and 74(20.1%) of the respondents performed breast self-examination once a year.

Health belief model and practice of breast self-examination: According to health belief model scale, participants were asked to indicate the degree to which they agreed or disagreed with statements related to perceiving (susceptibility, severity, benefits, barriers, and self-efficacy) breast cancer screening.

Perceived susceptibility: Four hundred forty-two (55%) of study participants perceived themselves susceptible to be breast cancer, Perceived seriousness. Four hundred seventy-two (59%) of participants perceived breast cancer is a serious disease, Perceived benefits of BS. Five hundred two (69%) of study participants that agreed to perceived benefits of BSE practice is mandatory to screening for breast cancer, Perceived barriers to BSE. Four hundred twenty nine (53%) of participants were perceived about barriers of BSE with the mean score of 17.3 as compared to study participants were not perceived barriers of BSE. This domain had the negative association with in relation to BSE with [AOR]=.662, 95%CI, (.488, .897), Perceived self-efficacy. Four hundred fifty eight (57%) of study participants respond greater than the mean score of 30 were perceived themselves to confidently perform BSE practice for the early detection BC as compared to the study participants respond lease than mean score of 30. This domain had positively associated in relation to the practice of BSE with [AOR]=3.706, 95% CI, (2.712, 5.064) and Cues to action.

Tabe 3. Descriptive Statistics (Participants' Average Responses, Mean, and Standard Deviation) for the HBM Subscales
in the University of Gondar, April 2014 (n = 803).

Variables	Breast self-examination regular and irregular practice				
	Yes	No	Mean	SD	p value
Perceived susceptibility	442(55%)	361(45%)	0 .55	0 .498	0 .437
Perceived seriousness	472(59%)	331(41%)	0 .59	0.493	0.066
Perceived benefits	552(69%)	251(31%)	0 .69	0.464	0.180
Perceived barriers	429(53%)	374(47%)	0 .53	0.499	0.008
Perceived self-efficacy	458(57%)	345(43%)	0.57	0.495	0.001

Table 4. Bivariate and Multivariate analysis of Logistic regression shows the significant association among respondents
with the performance of BSE (n=803).

Variables	Performing BSE		COR (95%CI)	AOR (95% CI)	p value
	Yes	No			
Age					
<20	197	216	1	1	
≥20	171	219	1.168(.885 , 1.542)	1.055 (.769, 1.45)	.789
Year of study					
1st-year students	124	160	1	1	.759
2nd-year students	110	136	1.05(.748 , 1.48)	1.06(.74 , 1.53)	.184
3rd-year students	73	116	.895(.61 , 1.32)	.76(.51, 1.16)	.003
4th-year students	61	23	3.44(2.03 , 5.82)	2.34(1.33, 4.09)*	
Perceived susceptibility					
Yes	229	213	1.236 (.935 , 1.635)	1.13(.830 , 1.538)	.437
No	206	155	1	1	
Perceived seriousness					
Yes	162	169	.808 (.609 , 1.07)	.745 (.544 , 1.02)	.066
No	206	266	1	1	
Perceived benefits					
Yes	99	152	1.459(1.078 ,1.976)	1.254(.901, 1.746)	.180
No	269	283	1	1	
Perceived barrier					
Yes	194	180	.633 (.479 , .838)	.662 (.488 , .897)*	.008
No	174	255	1	1	
Self-efficacy					
Yes	93	252	4.07(3.01 , 5.51)	3.53(2.56 ,4.89)*	.001
No	275	183	1	1	
Heard of BSE					
Yes	361	385	.149(.067,.334)	.16(.07 ,.368)*	.001
No	7	50	1	1	

Source of information about breast cancer and breast self-examination: Around seven hundred forty six (93%) of the participants were reported having information about Breast cancer. Around three hundred eight 46% (45.8%) of study participants were heard about breast cancer and BSE from the health professional. Two hundred ninety three (36%) of respondents were read books and 513 (64%) of the respondents heard about breast cancer from mass media (TV radio).

Two hundred fifty four (32%) the respondents get information from formal education and other sources of information being an informal source like seeing patient and informal talks accounted 41/803(5.2%) (Table 3).

Factors associated with the variables of breast self-examination practice among the regular undergraduate female students at the University of Gondar, Northwest Ethiopia (n=803): Multivariate analysis was employed to test the association between each explanatory and dependent variable.

The greater odds ratio show that 4th year female students were 2.34 times more likely to perform breast self-examination practice than others and the significant association shows that (95% CI; 1.33, 4.09). The study participants were 34% more likely to Perceived barriers to perform Breast self-examination practice than others with 95% CI, (.488, .897) and its greater odds ratio (.66) of perceived barrier had negative associated in relation to breast self examination practice. Perceived self-efficacy [AOR] 3.53 indicates the positive association between breast self examination practice and more likely to perform breast self-examination practice with 95%CI (2.56, 4.89). Cues to action (heard of BSE) [AOR] .16 were statistical significance. The study participants 84% were lease likely heard about Breast self-examination than others with 95% CI (.07, .368) (Table 4).

Discussion

Breast cancer is the most common malignancy among women in both developed and developing countries. In this study, findings show that the prevalence of breast self-examination practice for the last 12 months was 45.8% (95% CI; 42%, 50%), which is higher than a study done in Iran (31.7%) (Karimollah, 2012) and Malaysia (36.7%) (Akhtari and Ismail, 2013). However, the prevalence of this study finding is in line with the study conducted in Iran (47%) (Hajian and Mirzaei, 2011) And much is lower than in Turkish (55.8%) (Özgü and Çetinkaya, 2008), the difference could be due to lower levels of educational status and lack of knowledge about the benefits and methods how to conduct breast self-examination practice. According to health belief model, subscales evaluated the high scores on all scales except perceived barriers indicated the positive attitude to perform breast self-examination practice for the screening of breast cancer, while for barriers a higher score indicates that negative attitude to perform breast self-examination. The domain of health belief model subscales such as perceive barriers [AOR] = .66, 95% CI= (0.488, 0.897), perceived self-efficacy [AOR] = 3.53, 95%CI= (2.56, 4.89), were associated the dearest self-examination practice respectively. The cues to action (heard of breast self-examination and breast cancer information) [AOR] = .16, 95%CI= (0.07, .368), were associated with the breast self-examination practice which is consistent to the study done in Turkey and Iran (Hajian and Mirzaei, 2011). Those having the total of the high score in self-efficacy and the lower score in perceived barrier are more likely to perform breast self-examination. This implies that the issues address like perceived barrier and self-efficacy are more important as compared to others health belief model subscales to screen breast cancer. However, the health belief model suggests that perceived susceptibility and seriousness were more predictors than perceiving barriers and self-efficacy (Noroozi et al., 2012).

When the differences between the explanatory variables were fitted into the logistic regression model to predict breast self-examination, year of study (4th years students) has [AOR]=2.34, 95% CI; 1.33, 4.09) significantly associated with breast self-examination. A study participant of 4th year and above medical students was 2.34 times more likely to perform breast self-examination practice than as compared to other students. The difference between the study participants could be the 4th year and above medical students had an awareness of breast cancer and breast self-examination practice. Study participants of perceived Barrier 66% times less likely to perform breast self-examination practice. The greater odds ratio of perceived barrier indicates the negative attitude of participants towards breast self-examination practice. The possible explanation of the study participants may not have enough privacy and might be the cultural influence. The study participant responds high scores of self-efficacy 3.53 times more likely to perform breast self-examination practice than others not performing to Breast self-examination practice. This study is consistent with the study conducted in Iran; Malaysia and Turkey breast self-examination practices (Malak et al., 2010; Erbil, 2012; Noroozi et al., 2012). Those who did not have information about breast self-examination were 84% times less likely to practice breast self-examination as compared to having information to perform breast self-examination practice for the screening of breast cancer. The difference could be lack of mass media, medical journal and may be due to lack of inaccessibility of health services. In this research finding, there were some differences among the predictors of health belief model constructs and the difference could be probably due to cultural influences. Therefore, there may be the difference in the prediction of breast self-examination practice for the purpose of breast cancer screening in the different situations like geography, culture, study time and educational status of study participants. Though there were reservations regarding the use of breast self-examination for breast cancer screening, it is a cost-effective and feasible tool in resource-constrained nations including Ethiopia (Seife, 2012).

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