ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCE

SCHOOL OF ALLIED HEALTH SCIENCE

DEPARTMENT OF NURSING AND MIDWIFERY

ASSESSMENT OF KNOWLEDGE AND PRACTICE OF BREAST SELF EXAMINATION AMONG FEMALE UNDERGRADUATE STUDENTS IN ADDIS ABABA UNIVERSITY, COLLEGE OF BUSSINESS AND ECONOMICS, ETHIOPIA

BY: MIKIYAS AMARE GETU (BSc N)

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ADDIS ABABA, ETHIOPIA

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BY: MIKIYAS AMARE GETU (BSc N)

ADVISOR: MESFIN ABEBE (BSC, MSC/RH, ASST. PROFESSOR, PhD ASSOCIATE)

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This thesis by Mikiyas Amare is accepted in its present form by the board of examiners as satisfying thesis requirement for the degree of Master of Science in Adult Health Nursing.

Internal examiner:

_____	_____	_____	___/___/___
Full name	Rank	Signature	Date

Research Advisor:

_____	_____	_____	_____
Full name	Rank	Signature	Date

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Acronyms

AAU Addis Ababa University

AOR Adjusted Odds Ratio

BSE Breast Self-Examination

CBE Clinical Breast Examination

CI Confidence Interval

COR Crude Odds Ratio

ETB Ethiopian Birr

GLOBOCAN Global Burden of Cancer

HEW Health Extension Worker

IARC International Agency for Research of Cancer

IRB Institution Review Board

ROC Reproductive Organ Cancer

SPSS Statistical Package for Social Science

WHO World Health Organization

US United State

Abstract

Background: Breast self-examination (BSE) is a simple, very low cost, non-invasive screening method used to detect breast cancer early which involves the woman herself looking at and feeling for any change in their breast as early as possible. Breast self-examination should be done for all women above the age of 20 years.

Objective: To assess the knowledge and practice of breast self-examination among female undergraduate students in Addis Ababa University, College of Business and Economics, Ethiopia.

Method: Institutional based crosssectional study was conducted to assess the knowledge and practice of breast self-examination among female undergraduate students in Addis Ababa University, College of Business and Economics. Departments were selected from College of Business and Economics by using lottery method. Then a simple random sampling technique was used to select a total of 407 female students from each department. Data was collected by using self-administered, structured and pre tested questionnaire from February 1-30, 2016. Quantitative method was employed to achieve the research objective. The data was entered into Epidata and analyzed by Statistical Package for Social Science (SPSS) window software. Binary logistic regression and multiple logistic regressions were done to confirm association between variables.

Result A total of 407 respondents were enrolled in the study giving a respondent rate of 100%. 203(49.9%) of respondents had a good knowledge of BSE. Only 87(21.4%) of the study participants ever practiced breast self examination. The three main reasons for not doing BSE were didn't know how to perform BSE 95(29.7%), had no breast problem 81(25.3%), and carelessness 67(20.9%). Previous place of residence, attitude of BSE and knowing someone suffer from breast cancer found to be significantly associated with knowledge of BSE. Breast self-examination practice had showed significant association with family history of breast cancer, knowledge and attitude of BSE.

Conclusion This study revealed half of study subjects have good knowledge of BSE however, majority of study subjects didn't ever practice BSE. Thus warrant to the concerned bodies for creation of awareness about breast self-examination and training students how to practice BSE.

Key words knowledge, practice, Breast self-examination, female students

1. Introduction

1.1. Background of the study

Cancer is a major public health problem in many parts of the world. Breast cancer is one type of cancer which is malignant tumor that starts in the cells of the breast. It occurs mostly in women, but men can also be affected (1).

An estimated 231,840 new cases and 40,290 deaths of breast cancer are expected to occur among women in the US during 2015 (2). In 2013, an estimated 232,340 new cases and 39,620 death from breast cancer is expected to occur in woman (3).

According to Global Burden of Cancer (GLOBOCAN) 2012, an estimated 14.1 million new cancer cases and 8.2 million cancer-related deaths occurred in 2012, compared with new cancer cases and cancer related deaths in 2008 which is 12.7 million and 7.6 million, respectively. Among the most commonly diagnosed cancers worldwide breast cancer accounts 10.9% and 11.9% of all cancer cases next to lung cancer in 2008 and 2012 respectively (4,5).

In 2011, there were nearly 8 million cancer-related deaths. All cancers, taken together, are now a leading cause of death worldwide, responsible for 14% of the total of 55 million deaths from all causes (6).

The prevalence of breast cancer among women in Southern Africa showed (9,000 cases, 4,500 deaths) and Northern Africa (28,000 cases, 14,600 deaths) in 2008. Opportunities for reducing suffering and death from cancer in Africa exist across all stages of the cancer control spectrum, from prevention, to early detection, treatment, and palliative care (7).

Breast self-examination (BSE) is a simple, very low cost, non-invasive screening method used to detect early breast cancer which involves the woman herself looking at and feeling for any change in their breast as early as possible, that yield a better survival rate. Breast self-examination should be done for all women above the age of 20 years (8).

A study done on BSE practice and its impact on breast cancer diagnosis in Alexandria, Egypt, showed that BSE was practiced in 10.4% of cases. There was significant association between failure to practice BSE and diagnostic delay. This emphasized the need for breast self-examination awareness campaigns as a key measure for ensuring earlier diagnosis and hence better prognoses for breast cancer patients in Egypt. Recent studies implicate BSE is also reliable screening method when it is used with Clinical Breast Examination (CBE) and imaging studies (9).

According to GLOBOCAN 2012, international Agency for Research Cancer (IARC) estimated cancer, incidence, mortality and prevalence report in Ethiopia, breast cancer incidence was 18.2%, mortality 14.1% and 5year prevalence 25% (7). Breast cancer was reported to be the second out of the ten top cancers registered in Black Lion specialized hospital Radio Therapy Center (5).

1.2. Statement of the problem

Breast cancer is one of the most commonly diagnosed cancers worldwide which account (1.7 million, 11.9%) in 2012 and there were 6.3 million women alive who had been diagnosed with breast cancer in the previous five years. Since the 2008 the mortality rate of breast cancer is increased by 14%. Breast cancer is also the most common cause of cancer death among women (522,000 deaths in 2012) and the most frequently diagnosed cancer among women in 140 of 184 countries worldwide. It is also the leading cause of cancer death in less developed countries of the world. Even though the incidence of breast cancer is higher in developed countries but the mortality is higher in less developed countries due to lack of early detection and management service as well as limited awareness of early signs and symptoms of cancer among the public and health care providers (4,7).

Unlike early detection in western world, women in Ethiopia usually present late screening for breast cancer and are expected to have a very limited life span. The Oncologic service in Ethiopia is limited to only one Radiotherapy Center at Black Lion Specialized Hospital (10).

In Ethiopia, It is estimated that around 10,000 Ethiopian women have breast cancer with thousands of more cases unreported because the women living in rural areas preferred a treatment from traditional healers. In Ethiopia, Breast cancer become fatal due to late presentation, limited resources, low awareness of breast cancer and its detection, symptoms, prevention and strong traditional beliefs that can delay biomedical care (11).Therefore, many women miss early detection and treatment opportunities due to lack of information, knowledge, and practice of early detection breast cancer.

In Ethiopia, communicable and chronic diseases have been given a major concern and all the efforts and recourses are engaged into it. Government, non-government organizations and international partners all focused to these diseases. The detection and treatment of reproductive organ cancers (ROCs), particularly breast cancer is low. Despite its prevalence ROC are not managed as a major public health problem at any levels of health care delivery system. Nationwide, there is no organized ROC prevention, education, screening or curative care program. Little is known about the scale of the problem, which makes it all the more difficult to

formulate policies and/or develop practical strategies for dealing with it. It may be one of the reasons for absence of adequate facilities to fight against breast cancer in this country(11,12)

Even though women knew about the various breast cancer screening methods, findings from female Medical Students in Haramaya University, Ethiopia , indicated that the practice of BSE while perceived as being important is not frequently practiced by the students(13).

Prevention remains the cornerstone of the fight against breast cancer. In order to prevent or reduce the mortality, morbidity of breast cancer diagnosis of breast cancer during the early stage of the disease play big role and it helps in reducing the cost of management (14).

The screening methods for early detection of this fatal disease are: mammography, clinical breast examination and breast self-examination. Although some early detection methods, may remain inaccessible to women in developing countries due to limited diagnostic and curative facilities. Mammography cannot be routinely applied in countries with limited health service resources(15),since it is expensive it need technology and trained professional. CBE also need professional skills and health facility visit to be conducted (14).BSE is still recommend as a general approach to increasing breast health awareness and allows for early detection of any abnormalities. BSE continues to be recommended by health care practitioners because it is free, simple, need low technology and teaching is possible (16). BSE also recommended in low resource countries like Ethiopia where resources are inadequate (mammography is not available) for early breast cancer detection (13).

Moreover limited studies are conducted about BSE knowledge and practice among student's calls for exploration of knowledge and practice of BSE among female undergraduate student.

1.3. Significance of the study

The study is important in providing information towards knowledge and practice of BSE among female undergraduate students in Addis Ababa University, College of Business and Economics. Better documenting students' knowledge and practice of BSE would be useful to governmental and nongovernmental organization in the design of interventions aimed at effective prevention of breast cancer through increased awareness and/or improved screening and it may also encourage other researchers and policy makers to carry out a more extensive research in this particular area being as base line data.

As this study is focused on students, it reinforces cancer prevention at an early age, provides teaching opportunities for shaping health behaviors into adulthood and also encourages dialogues of students with their parents and other family members. Young females are both at the greatest risk of mortality from aggressive breast disease and have the greatest chance of benefit from early detection interventions like breast self- examination.

This study will have significance for Nurses who are in the best position to educate and motivate women on breast self-examination in health care institutions. Nurses are the forerunners in the education of patients; therefore there is a need to explore students' level of knowledge and practice on breast self- examination which can indirectly influence nurses and planners to modify, emphasis, strengthening and select best and more effective health education program and breast awareness campaigns pertaining to BSE. Finally it is hope that, the problem of late presentation can be curbed and the survival of breast cancer patients would be improved.

This study is also considered vital because BSE can be a simple means through which early detection of a breast disease could be made. So assessing the knowledge and practice of breast self-examination will be helpful over scarce diagnostic service.

2. Literature Review

2.1. Magnitude of breast cancer

Breast cancer is the most frequently diagnosed cancer in women worldwide with an estimated 1.4 million new cases in 2008. About half of these cases occurred in developing countries. Breast cancer ranks as the most prevalent form of the disease in almost all countries of the world. Female breast cancer incidence rates varied internationally by more than 13-fold in 2008, ranging from 8.0 cases per 100,000 in Mongolia and Bhutan to 109.4 per 100,000 in Belgium. This reflects low breast cancer screening and incomplete reporting in developing countries. Breast cancer is the leading cause of cancer death among women worldwide (17,18).

The Estimated New Cancer Cases and Deaths of female breast cancer were 226,870(29%) and 39,510(14%) respectively in the United States in 2012 (19). An estimated 231,840 new cases of breast cancer are expected to be diagnosed among women in the US during 2015.Excluding cancers of the skin; breast cancer is the most frequently diagnosed cancer in women (2).

While cervical cancer in Eastern, Middle and western Africa and breast cancer in Southern and Northern Africa were the most commonly diagnosed cancer among women in 2008, these two cancers occurred with similar frequency in Middle and Western Africa . In several sub-Saharan African countries breast cancer is the most commonly diagnosed cancer in women (7).

2.2. General situation about breast self-examination

Early detection program allow for a more favorable prognosis for patients, offer increased and less toxic treatment options, and enable the provision of services cost-effectively. It is important to note that a high proportion of cancers detected at the early stages in developed countries continue to be diagnosed at more advanced and often fatal stages in developing countries, thus increasing the associated burden of disease. With the anticipated increasing cost of cancer therapy, early detection will become cost saving (20).

Breast self-examination is a simple, very low cost, noninvasive adjuvant screening method for the detection of early breast cancer (BC) in women. It helps women to detect any changes like a lump in their breasts early and make them familiar with the appearance and feel their breasts.

Breast self-examination is very important for a woman to learn the topography of her breast, and to identify changes in the breast. Although there is controversy surrounding the efficacy of BSE alone in countries where CBE and mammography are readily available, BSE remains a cost-effective ,easiest and precise method to detect breast cancer in resource-constrained countries. A woman who performs regular BSE may be more motivated to seek medical attention, including CBE and mammography (20).

2.3. Knowledge of breast self-examination

A descriptive cross sectional study was conducted among nursing students in Arab American university had shown that majority of the respondents have poor knowledge of breast self-examination 43.3%, while 41.2% were with fair knowledge. The majority of poor knowledge level was among first year students then second year respectively (28.9% and 10.3%) while the good knowledge was among fourth year then third year respectively (8.2% and 4.1%). One fifth of the students with poor knowledge were living in urban and rural areas (21.6%). Nearly half of them live in urban area and 85.6% of respondents have negative family history of breast cancer. Around two thirds were received information about breast self-examination from mass media (21).

A research conducted in Iran about knowledge on screening program, 31%, 21%, and 9% heard about BSE, clinical examination, mammography respectively and 39% of respondents knew nothing about any of screening methods. Their major source of information was Television 34% followed by friends 20% and physicians 19%. Their knowledge regarding frequency of BSE is 17% of participants respond monthly BSE and 20% agrees occasional BSE (14).

A crossectional study conducted in a Jordan on a sample size of 519 women from two major universities in Jordan in which 36% of the sample was university employees and 64% were graduate and undergraduate students. Majority of the sample (82%) reported that they had heard about breast cancer and BSE. The main source of information about breast cancer and breast self examination was television and/or radio programs (42%). Health professionals (doctors/nurses) were mentioned as a source of information on breast tumors and BSE, 11% and 12%, respectively (22).

A cross sectional survey conducted among female university students in Oman found that 134 (85.35%) participants were well informed that BSE is used as a screening method for breast cancer, however, only 77% aware of the correct step in performing BSE. Only 114 (72.61%) participants correctly identified that BSE should be performed monthly on a regular basis, though only 96 (61.1%) respondents knew the correct timing for performing BSE which is a week after menses (23).

According to a study done among female university students in Ajman, United Arab Emirates showed approximately half of the students 46.2% of participants had never heard about BSE. Majority of respondents 86.5%, of participants had low/below average knowledge scores regarding early detection of breast cancer. The vast majority of the participants did not aware of the recommended frequency of BSE (98%) or its timing in relation to their menstrual cycle (94%). Participants were asked how often they practiced BSE and they respond only 89(22.7%) participants admitted to having ever conducted BSE and only 13 (3.3%) of the students practiced monthly BSEs. The median knowledge scores of participants who conducted BSEs were significantly higher comparing with those who did not practice BSE (24).

A study conducted in Malaysia had shown that knowledge mean score was 60.4% and only 38.4% of participants had good knowledge towards BSE. The highest mean score belongs to the knowledge on 'Hands should be raised up alternately above the head when doing the BSE in front of the mirror' has a mean score of 1.60 followed by 'BSE should be done in front of the mirror' with a mean score of 1.53. The knowledge on the 'BSE include 'Undress until the waist when doing the BSE', 'Need to observe for unusual change in shape and size of breast' and 'Use finger pulps to examine any lump or thickening of the skin' with the mean score more than 1.2. 85.5% of respondents answered correctly about the frequency of breast self-breast examination (once per month). On the other hand, more than two thirds (70.5%) do not know the correct time to perform the examination (25).

Another crossectional study conducted in Malaysia among undergraduate female student showed participants (74.3%) respond mammography as screening method, while 36.3% of students knew about clinical breast examination. Majority of respondents (84%) knew the name of different position for doing a BSE and fifty-five percentages (55.7%) of respondents know about the appropriate age to initiate BSE (26). In study conducted among private high learning institution

in Malaysia showed majority of participants 95.5% are aware of BSE. In spite of being aware about BSE, only 19.5% has sufficient knowledge on BSE. Newspaper was identified as the main source of information about BSE by 38.2% of the participants, whereas TV/Radio was mentioned as the second source of information by 31.9% of them 57.5% of respondents reported BSE should be started at age greater than nineteen years old and 47.5%, 22.5%, and 19,5% of respondents agreed BSE is done yearly, weekly and monthly respectively . 69.2% of study participants agreed BSE is done in front of mirror and 21.4 % reported BSE done in bath room (27).

Finding from a study conducted among female University students in Ghana had shown 95% of participants had knowledge about breast cancer and BSE. Their sources of information were 48% mentioned the media, 16% stated the health center as their source of information. Participants responded about the method of breast cancer detection as 19% stated mammography as a method, 15% stated clinical examination of the breast, and 60% stated breast self-examination. 80% of respondents perform BSE. Furthermore, respondents were asked on the methods of performing breast self-examination and 38% indicated standing and looking for discharges in front of the mirror, 9% indicated feeling for changes in their breast while showering. Those who did not perform BSE, were further asked on their reasons for not performing BSE and 30% said they do not have time, 11% said they didn't feel it was necessary, while 59% did not have a specific reason for not performing BSE (28).

Age and the year of study of the respondents had a significant association with the level of knowledge of breast cancer. The median knowledge score of breast cancer among the respondents was 42.8% and 28.9% had a good knowledge of breast cancer and 46.4% had poor knowledge. Among the participants on the study only 20% knew the appropriate time to do a BSE which is immediately after menstruation and only 2.5% were able to mention the three correct steps involved in carrying out BSE (look, feel and express nipple for discharge). Only 4% of the respondents had good overall knowledge of BSE (29).

A Crossectional study done among female medical students in Haramaya University, had showed that almost all female medical students who participates in the study had previous heard about BSE which accounts 95.23% and 87.3% of the students have knowledge about BSE and majority of them got information about BSE through lecture, (26.98%) television and (8.73%)

radio. Of all respondents 85.7% participants agreed that early detection improves survival. Almost 93.6% of students agreed that BSE can be an important tool for early detection (13).

Finding from a study conducted on knowledge of breast cancer and screening methods among nurses in Addis Ababa, Ethiopia had shown that among respondents asked to list the early detection measures for breast cancer;74.8%, 44.4% and 38.5% mentioned BSE, breast examination by a health professional (CBE),and mammography respectively as an early detection measures (30).

For the question how often should breast self-examination be performed, 51.5% of the study subjects reported BSE should be performed monthly after menses, and 71.9% respondents identified the age to perform BSE to be at year of 20. About 65.9% of respondents were aware that doing regular breast cancer screening has a great deal in curing breast cancer while 7.4% indicated it has little or no difference (30).

2.4. Breast self-examination practice

Assessment of Jordanian nurses' knowledge and practice of breast self-examination identified 85% of participants said that they had practiced BSE during their life time. Of these, only 21% reported that they had performed BSE on monthly basis during the last year(31). Another study conducted in Jordanian woman on factors associated with breast self-examination had shown only 26% of them indicated they themselves practiced BSE in the previous 12 months, and only 7% performed BSE on a regular monthly basis. Others reported performing BSE every 2–3 months (9%), once every 6 months (5%) and once a year (6%). A total of 73% of the participants indicated that they had never performed BSE (22).

A quantitative study done on knowledge and practice of Breast Self-Examination in Islamabad medical and dental collage depicted the ideal age to start BSE have been described to be after 20 years by 28% doctors, 39% nurses, and 22% by medical students. Majority of participants 91% lives in urban and 9% in rural (32).

Study conducted in United Arab Emirates reported 89(22.7%) participants ever conducted BSE and only 13 (3.3%) of the students practiced monthly BSEs. The median knowledge scores of participants who conducted BSEs were significantly higher comparing with those who did not practice BSE (24).

Practicing breast self-examination among women attending primary health care in Kuwait showed practicing women is older than non-practicing women. Also family history of BC were a factor that causes BSE practice (33).

A cross-sectional study carried out among female nurses in Egypt, showed that 56.4% of nurses performed BSE in their life time but only 18.8% of respondents practiced BSE on a monthly basis and 68.0% of those who practiced BSE were married. 79.3% nurses reported that they did not practice BSE because they perceived they did not have a breast problem, and 68.9% of them were not convinced that BSE is important. 53.4% of the nurses reported that they did not know how to practice BSE. Only 17.2% reported that they did not practice BSE because they are lazy (34).

Among 66.16% of nurses working in Ayub teaching hospital, and who had performed BSE, 34.9% of them did it once in life while 65.1% did on monthly basis. The remaining 33.84% never performed BSE. 52% of those who never performed BSE, didn't perform it of fear of finding something bad, 25% said that they don't have time for it (35).

Finding from a study done among female cleaners in Nigeria revealed, majority (69%) of the women claimed to have practiced BSE. Out of these, 17.1% monthly, 5.3% once in every 2 month, 29% rarely, 37% every day, and 10% no specific time. As regards what time these women usually practiced their BSE, 19% of them observed it a week after menstrual period, 12% observed it during menstruation and 8% before menstruation (36).

Another study conducted in Northwestern Nigeria about knowledge and practice of BSE among 221 female students fifty seven percent of them had ever practiced BSE, 37.3% correctly describes it and only 32.1% of them currently practice it. The reasons they mentioned for not practicing breast self-examination were forgetfulness, lack of time and belief that there is no problem with their breast. Only 19.0% of the respondent practice BSE every month. One hundred and ninety five of the respondents (88.2%) didn't know the age of starting BSE as only 11.8% were aware it (37).

Study conducted in conducted among nursing female university students in Ghana had shown 76% respondents perform BSE. Respondents were further asked how often they performed BSE only 31% stated monthly, 29% said yearly, and 21% stated they performed BSE at random. Respondents were asked on the appropriate time for performing BSE and 11% stated that the appropriate time to perform SBE is before menstruation, 4% said during menstruation, while 62% stated some days after menstruation, and 23% stated that there is no particular time to perform BSE (28).

Another study conducted among female school teachers in rural community in Nigeria had shown that BSE is poorly practiced in the study population as it is revealed by 62% of respondents who didn't practice BSE. Among respondents who practiced BSE, majority of participants 42% performed BSE before menstruation, 20% after menstruation and 30% perform BSE at any time. Only 12% of respondents practiced BSE monthly (38).

A study conducted in Haramaya University, Ethiopia had shown that majority of the students (77%) had never performed BSE, even though they had good knowledge of BSE. Their reasons for this were as follows: have no signs or symptoms (28.8%); forgetfulness (17%); fear of detecting some abnormality (16.4%); lack of privacy (15.4%). 41.37% of the study respondents started to perform BSE at the age of 20 years. Out of the 23% of students who had done BSE, 16 (55.1%) didn't exactly remember how often they have done it; 8(27.5%) practiced it yearly, one responder (3.44%) has done BSE less than 3 times in last 12 months, 4 (13.79%) more than 3 times in the last 12 months (13).

Finding from the study conducted in west Gojjam, Ethiopia on factors affecting breast self-examination among female health extension workers(HEWs) had shown that the methods of screening for breast cancer reported by health extension workers were clinical breast examination (22.3%), breast self examination (14.4%), and mammogram (3%). Among all HEWs, only 14.4% practiced BSE regularly (every month) and 147 (37.3%) HEWs reported that they practiced BSE during their life time. The three main reasons for not doing BSE were had no breast problem (53.2%), lack of knowledge how to perform BSE (30.6%), and not knowing the importance of BSE (21.4%). One hundred thirty (32.9%) HEWs had discussions with families on the importance of BSE and 24.3% of participants had got information on BSE from health professionals. (39).

Regarding to attitude of BSE, a study conducted in Malaysia indicated, the mean for total attitude score pertaining to BSE was 37.1 (total mean percent: 77.3%) and the highest was regarding to 'I'm not afraid to think about the breast cancer' (mean percent: 82.8%). The mean percent of 'poor preference to seek traditional healers' was 75.8%. All the items assessing the attitude showed the mean score above 2.0 (40).

2.5. Factors associated to knowledge and practice of breast self-examination

There is a significant relation between age and knowledge of breast self-examination. It was found that younger participants had significantly lower knowledge scores in comparison to older participants.(24,38) There was no significant difference between knowledge scores and nationalities which may indicate the possibility that cultural and ethnic factors have no significant effect on breast cancer awareness (24).

According to a study done among female university student in United Arab Emirates depicted participants with a family history of breast cancer had significantly higher knowledge scores on breast cancer risk factors and screening methods (24). According to a study conducted among students in private higher learning institution showed that socio-demographic data, relevant menstrual, family, and social histories in relation to the knowledge about BSE. Having a family history of malignancy other than breast cancer seems to be the only significant variable (27).

According to a study conducted on knowledge of breast cancer and screening method among nurses in Addis Ababa had shown that marital status had a significant association with the knowledge of breast cancer and screening methods. Unmarried respondents were more knowledgeable than married ones. Nurses with family history of breast cancer were more likely to be knowledgeable than nurses with no family history of breast cancer. Other socio demographic factors like age, history of breast disease were not found to be significantly associated with knowledge of breast cancer and screening methods (30).

A research conducted in Iran and Jordan had shown BSE practice was significantly related to age, education, knowledge of breast cancer and its screening programs. It was evident that BSE was practiced frequently by older women and those with more than a high school education .In addition, those who have knowledge on breast cancer perform BSE frequently (14,22).

Personal history of breast tumors and other demographic variables didn't show significant association with BSE practice (22).

Study conducted among saudi female students had shown marital status, knowing of someone with breast cancer was associated with practice of BSE (41).
In a study conducted in Malaysia had shown breast self-examination practice significantly associated with knowledge of BSE(25). Another study done in Northwest Nigeria identified practice of BSE was higher among participants with family history of breast cancer (37). While study done in Malaysia on undergraduate female university had shown family history of breast cancer had not significant association with BSE practice (26).

Significant association has been observed in study conducted in conducted among nursing female university students in Ghana between the educational level of the student and the ability to perform BSE. The ability to perform BSE improved as the educational level improved (28).

A study conducted in Northwestern Nigeria about knowledge and practice of BSE revealed that regular performance of BSE was significantly associated with duration of stay in the University; students who have spent more years in the university were more likely to practice BSE (37).

2.6. Conceptual framework

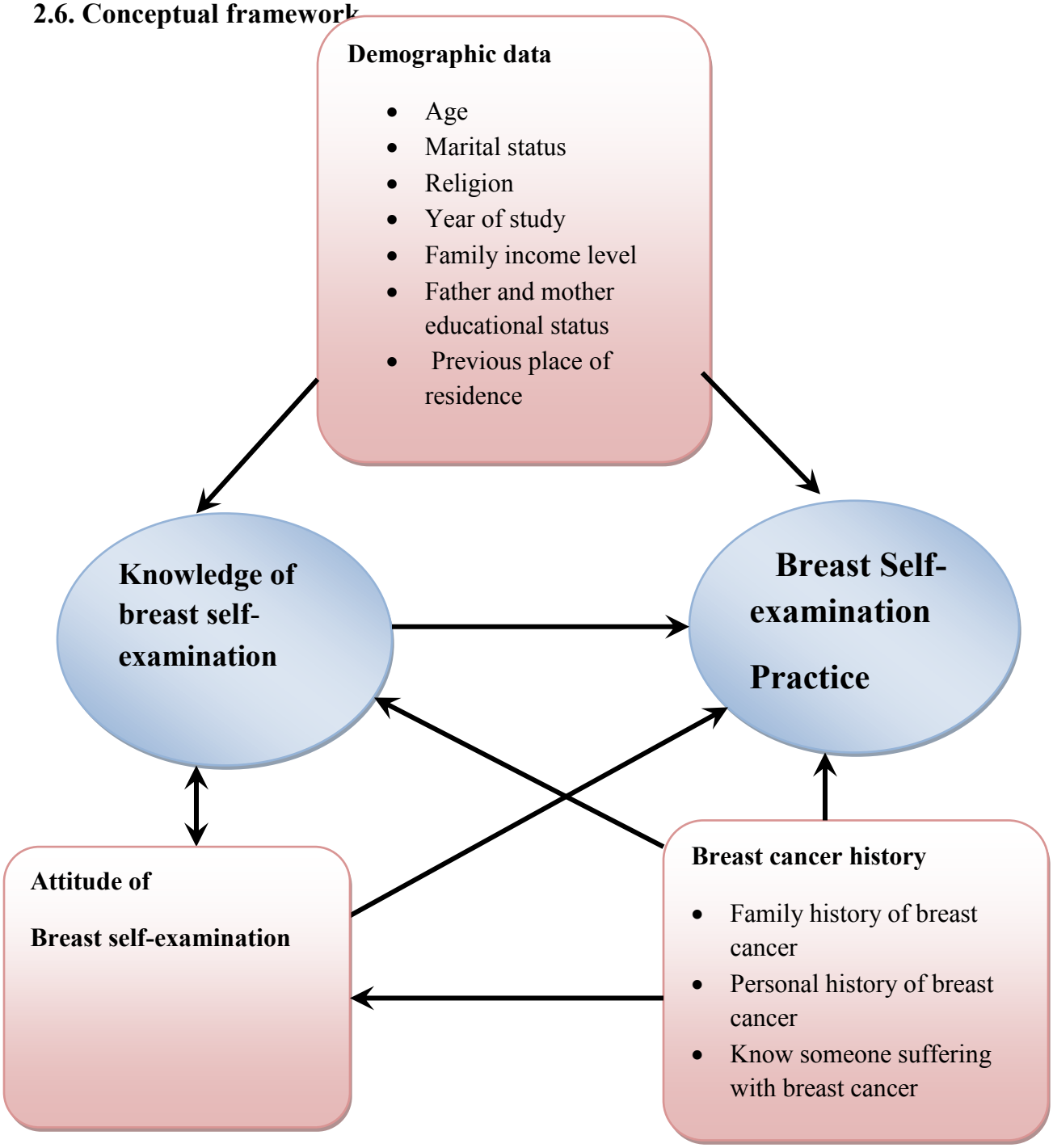


Figure 1 Conceptual framework on knowledge and practice of breast self-examination among female undergraduate students in Addis Ababa University, College of Business and Economics, Addis Ababa, Ethiopia

(which is developed from various literatures by the principal investigator)(25,39,42,43)

3. Objective of the study

3.1 General objective

To assess the level of knowledge and practice of Breast self-examination among female undergraduate students in Addis Ababa University ,College of Business and Economics, Ethiopia, 2016.

3.2 Specific objectives

- To assess the level of knowledge of breast self-examination among respondents.
- To examine Breast self-examination practice among respondents.
- To determine factors associated with knowledge of Breast self-examination
- To identify factors associated with Breast self-examination practice

4. Methodology

4.1 Study area and period

The study was carried out in Addis Ababa University, College of Business and Economics. Addis Ababa University was established in 1950. The University had fifteen campuses. Thirteen of these were situated in Addis Ababa, and one was located in Bishoftu about 45 kilometers away from Addis Ababa and the other was in Fitche about 115KM north of Addis Ababa. It also maintains branches in many cities throughout Ethiopia. In 2013/2014, there were 33,940 enrolled undergraduate students, 13,000 graduate students and 1733 PhD students, making a total student of 48,673 (44).

Collage of Business and Economics is under Addis Ababa University and the College runs various undergraduate and post-graduate programs and is committed to the promotion of teaching and learning. The college consists of the former Faculty of Business and Economics and School of Commerce. In April 2012, as a result of the revised governance system of the university, the college was restructured and named as the College of Business and Economics, consisting of four departments and one school. The School of Commerce which in turn had seven departments. In 2015/2016 there were 3221 students enrolled in the college. Among these there were 350 female students from faculty of Business and Economics and 590 from school of commerce a total of 940 female undergraduate students.

The study was conducted from February 1-30, 2016

4.2. Study design

Institutional based cross sectional study was conducted.

4.3. Population and sampling

4.3.1. Source of population

All female undergraduate students attending their education in Addis Ababa University, College of Business and Economics.

4.3.2. Study population

All female undergraduate students attending their education in selected departments in Addis Ababa University, College of Business and Economics.

4.3.3. Inclusion and Exclusion Criteria

Inclusion criteria

- Female regular undergraduate students attending their education during the study period
- Age 20 years and above

Exclusion criteria

- Students who were absent in the classroom for different reasons during the data collection period
- Students who were seriously ill and unable to communicate

4.3.4. Sample size calculation

The actual sample size for the study was determined using the formula for single population proportion by assuming 5% marginal error and 95% confidence interval (∂ (alpha)=0.05) and the prevalence was taken from a research conducted on Knowledge of breast cancer and its early detection measures among female students, in Mekelle University, Ethiopia (45).

According to this study, the prevalence of knowledge and practice of breast self-examination was 59.5 % and 37.2 %.On the other hand the prevalence of personal and family history of breast cancer, which was important factor that can affect knowledge and practice of BSE was 3.03 % and 6.3% respectively. The prevalence of knowledge towards BSE provided the maximum sample size when it was compared to the other variables

$$n=\frac{\left(Z\frac{\alpha}{2}\right)^2 p(1-p)}{d^2}=\frac{Z^2 p(1-p)}{d^2}$$

$$=\frac{(1.96)^2 X\,0.595(1-0.595)}{(0.05)^2}$$

$$=\underline{370}$$

Where: P= the prevalence of BSE practice among students

d = Margin of error

Z α/2= Z-value for 95% confidence level which is 1.96

n = the required sample size

Considering 10% non-response rate, the total sample size will be 370+37= 407

4.3.5. Sampling procedure

A total of six departments; two departments from faculty of business and economics and four departments from school of commerce were selected by using lottery method. Then to obtain a representative sample from each department as well as from each year by population proportion based on the total number of students in each department and simple random sampling method was used to select study participants from a list of students obtained from AAU College of Business and Economics registrar office. This list was used as sample frame. The sample size in each department is proportional to the total number of female students.

Proportionate allocation:

$$n_j = \frac{n.N_j}{N}$$

Where

nj =sample size in j^{th} department

Nj = Total number of students in j department

n = n1+n2+n3+…nk Estimated final sample size

N = N1 + N2 + N3 +…Nk Total number of female students in each department

Schematic presentation of the sampling procedure

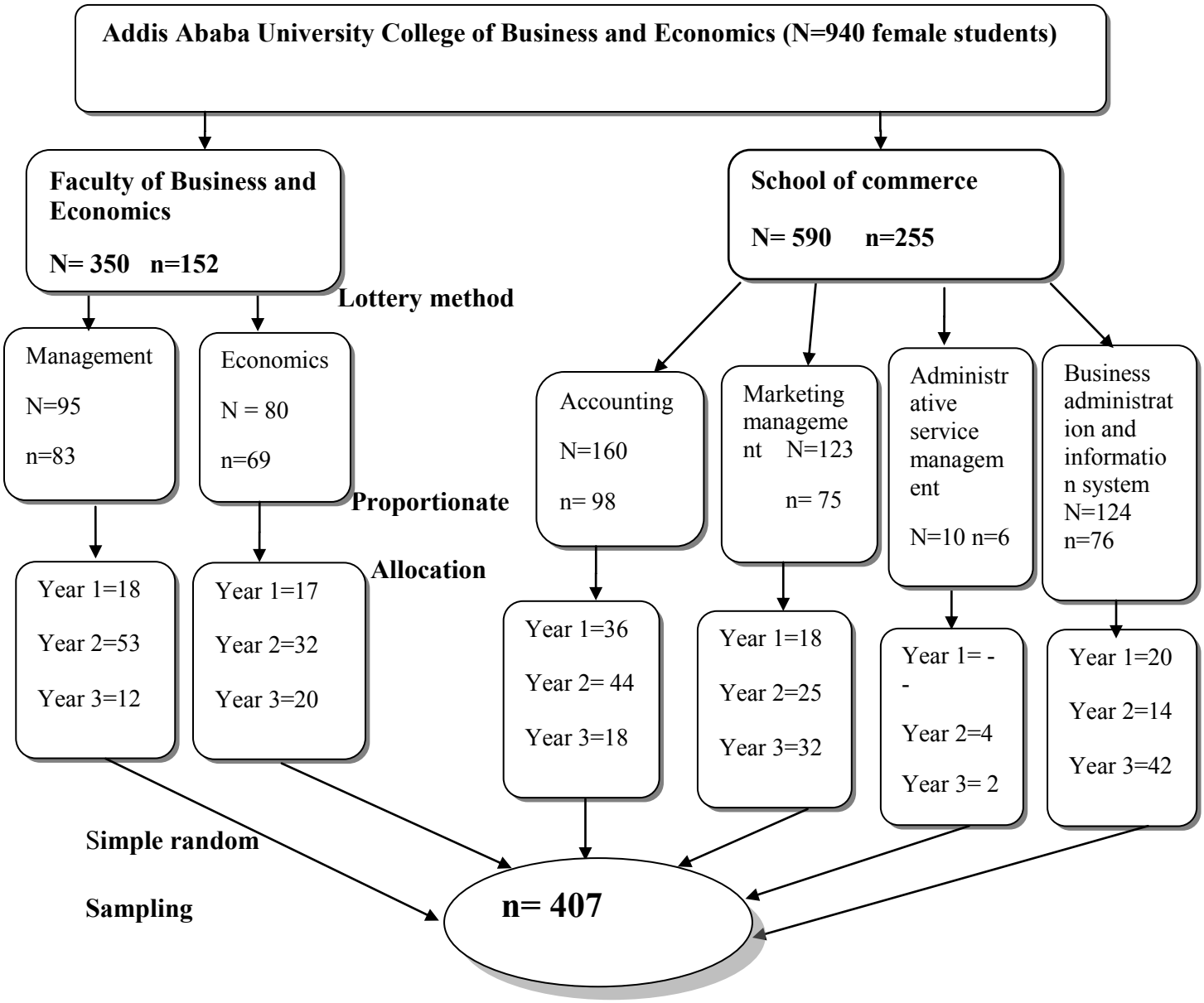


Figure 2 Schematic representation of sampling procedure for the study on assessment of knowledge and practice of breast self-examination among female undergraduate students in Addis Ababa University, College of Business and Economics, Addis Ababa, Ethiopia, 2016

4.4 Variable

4.4.1 Dependent variables

- Knowledge of BSE
- Practice of BSE

4.4.2 Independent variable

- Socio demographic characteristics such as Age , Marital status, Ethnicity, Educational level (year of study), Family income level, previous place of residence, mother and father educational status
- Personal history of breast cancer
- Family history of breast cancer
- Attitude towards BSE

4.5 Operational definitions

BSE practice BSE ever practiced monthly

Regular BSE practice a woman who performs BSE once in a month consistently.

Previous place of residence a place where the student dwelled before joining the university.

Good knowledge participants who scored the mean and above value from the provided 14 closed ended questions about the BSE.

Poor knowledge participants who scored below the mean value of the provided 14 closed ended questions about the BSE.

Good Attitude participants who scored point equal to and greater than the mean of attitude questions**.**

Poor Attitude participants who scored pointless than the mean of attitude questions.

4.6. Data collection instrument

A structured questionnaire was used for assessing female student knowledge and practice of breast self-examination. The questionnaire was prepared in English, translated into Amharic and then retranslated back in to English to check for consistency. The questionnaire contained five parts, comprising of socio demographic characteristics, Family history of breast cancer, Knowledge, practice and attitude about BSE.

Knowledge of breast self-examination was assessed by requesting the respondents to answer fourteen questions. Each correct response was scored [1] and incorrect response was scored [0]. The mean value was used to categorize students as having good knowledge or poor knowledge about BSE. Accordingly, the sum value less than the mean was categorized as poor knowledge and the value greater than or equal to the mean was categorized as good knowledge. The possible score ranges from 0 to 14.

For attitude items, there were 4 negative attitude items and 4 positive attitude items. 5 Likerts' scale (strongly agree/agree/neutral/disagree/strongly disagree) was used. For a positive attitude item, scores of '5', '4', '3', '2' and '1' for 'strongly agree', 'agree', 'neutral', 'disagree' and 'strongly disagree', respectively. This scoring was reversed for the negative attitude items. The possible score for positive attitude item was range from 8 to 40. While for negative attitude items the possible score was range from 8 to 40.

4.7. Data collection

Data was collected from February 1-30, 2016. The data collectors were recruited from AAU, undergraduate Nursing students; Supervisors was instructors who were working in Addis Ababa University, Nursing department.

4.8. Quality control (Data quality assurance)

Training for data collectors and supervisors was given by the principal investigator to make them familiar with the data collection tool. Principal investigator and supervisors assist and coordinate the data collectors as well as the students during data collection. Filled questionnaires were checked daily for its completeness and errors were corrected and final reviewed questionnaire was returned to the principal investigator.

Pilot study conducted by considering 5% of the total sample size on female undergraduate institute of technology students in Addis Ababa University prior to the actual data collection to ensure quality, clarity, understandability and completeness of the data. Based on the result necessary modification was made on the questionnaires.

4.9 Data processing & analysis

After data collection, the collected data was cleaned, coded and entered. Data entry and validation was done using EPI data 3.1 statistical software and then exported to SPSS windows version 21. Different frequency tables, graphs and descriptive summaries were used to describe the study variables. Binary logistic regression was performed to assess the strength of association between each independent variable and the outcome variables. Then those variables that show significant association with the outcome variable and P-value of < 0.2 was included in multiple logistic regressions. Finally only those independent variables that maintain association with outcome variables in multiple regressions were used to construct the final models. Odds ratio with its p- value of 0.05 and 95% confidence interval was used or reported in each logistic regression analysis.

4.10. Ethical Consideration

The study was conducted after getting ethical clearance from Institutional Review Board committee (IRB) of the Addis Ababa University. Permission was obtained from Addis Ababa University, College of Business and Economics. Informed verbal consent was obtained from the study and other concerned bodies to obtain their cooperation. Detailed explanation about the objective (purpose) and benefit of the study described to the study population and their full cooperation, verbal and written consent was taken. Confidentiality and privacy was ensured for collected information from the study participants. A formal letter was written by the department of Nursing to the concerned office. A copy of the final paper of the study was given to Addis Ababa University, College of Business and Economics.

4.11 Dissemination of the result

The finding of the study was submitted in a form of a thesis to AAU, Allied Health Science, Department of Nursing and Midwifery. The result will be publicly defended following submission. Copies will be provided to relevant stakeholders. Efforts will be made to present the results in scientific conferences and journals.

5. Results

5.1 Sociodemographic characteristics

A total of 407 Addis Ababa University College of Business and Economics students were enrolled in the study giving a respondent rate of 100%. Majority of the respondents 347(85.3%), were in the age range of 20 to 22 and 60(14.7%) were in the age group of 23 years and above. Regarding marital status majority 387(95.1%) of respondents were single. Majority of the study subjects 182 (44.7%) were from Amhara ethnic group followed by 96 (23.6%) of Oromo ethnic group. 259(63.6%) of the total study subjects were followers of Orthodox Christianity religion followed by Protestant 92 (22.6%). Out of the total study participants 342(84.0%) were from urban. Regarding field of study, 98(24.1%) were accounting students and 80(20.3%) were management students. Majority 170 (41.8%) of the study subjects were from second academic year while the least 109 (26.8%) were from first academic year. Most 250(61.4%) of respondents family average monthly income were above 3501 ETB. (Table 1)

Table 1 Sociodemographic characteristics of female undergraduate students in Addis Ababa University, College of Business and Economics Addis Ababa, Ethiopia, 2016

Variables	Frequency (407)	Percentage (%)
Age		
20-22	347	85.3
23 and Above	60	14.7
Marital status		
Single	387	95.1
Married	16	3.9
Divorced/Separated	4	1
Religion		
Orthodox	259	63.6
Muslim	44	10.8
Protestant	92	22.6
Catholic	12	2.9
Ethnicity		
Amhara	182	44.7
Oromo	96	23.6
Tigre	61	15.0
Gurage	61	15.0
Others*	7	1.7
Previous place of residence		
Urban	342	84.0
Rural	65	16.0
Department		
Business Administration and information system	76	18.7
Accounting	98	24.1
Economics	69	17.0
Marketing management	75	18.4
Management	83	20.4
Administrative service management	6	1.5
Year of study		
1st year	109	26.8
2nd year	170	41.8
3rd year	128	31.4
Family average monthly income(ETB)		
<445	12	2.9
446-1200	27	6.6
1201-2500	79	19.4
2501-3500	39	9.6
>3501	250	61.4

Others* Silte,Sidama, Hadiya

5.2 History of breast cancer

Majority of respondents 366(89.9%) have reported they didn't have family history of breast cancer. Among respondents who had family history of breast cancer, 21(51.2%) of them their aunt, and 12(29.3%) grandmother were affected by breast cancer. Only 13(3.2%) of respondents had personal history of breast cancer and 99(24.3%) knew someone suffered from breast cancer. (Table 2)

Table 2 History of breast cancer among female undergraduate students in Addis Ababa University, College of Business and Economics Addis Ababa, Ethiopia, 2016

Variables	**Frequency**	**Percent (%)**
Family history of breast cancer		
Yes	41	10.1
No	366	89.9
Family member who had history of breast cancer (n=41)		
Mother	7	17.1
Sister	1	2.4
Grand mother	12	29.3
Aunt	21	51.2
Personal history of breast cancer		
Yes	13	3.2
No	394	96.8
Knows someone suffering from breast cancer		
Yes	99	24.3
No	308	75.7

5.3 Knowledge of study participants about Breast self-examination

Out of the total study participants, 203(49.9%) scored mean and above which is good knowledge. (Figure 3)

Two hundred eighty three (69.5%) of respondents mentioned early detection of breast cancer improves chance of survival. An assessment of the participants knowledge of screening methods revealed that, 220(54.1%) participants knew Breast cancer screening methods, from those 89(21.9%) knew types of breast cancer screening methods. Among participants who knew types of screening methods, 68(56.2%) of respondents knew Breast Self Examination, 28(23.1%) knew Clinical Breast Examination, and 25(20.7%) knew mammography.

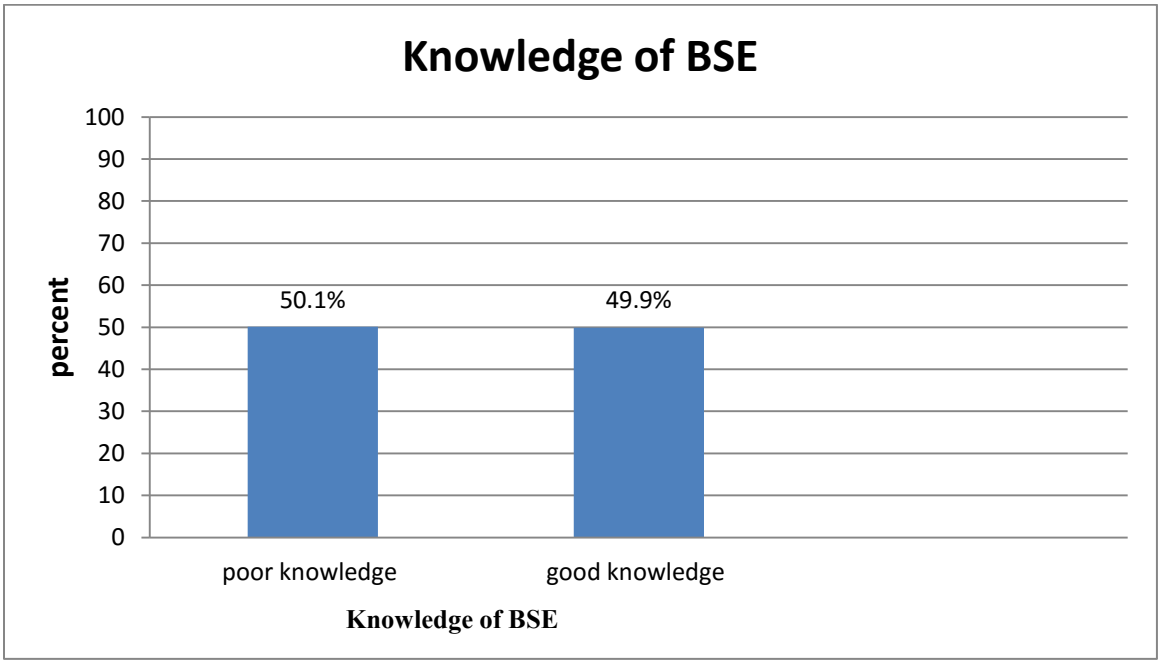


Figure 3 Over all knowledge assessment of breast self-examination among female undergraduate students in Addis Ababa University, College of Business and Economics, Addis Ababa, Ethiopia, 2016

Two hundred seven (50.9%) of the respondents had heard about breast self examination previously. Their predominant source of information was Mass media (Television/radio, Magazines/newspapers) which account 142 (64.3%). One hundred thirty one (32.2%) of respondents correctly respond the appropriate age to begin BSE which at age 19 and above.

Participants replied for the question how often should perform BSE, 226(55.5%) didn't know how often should perform BSE, and 101(24.8%) said every month. For the question when to perform BSE, majority of respondents (64.1%) didn't know the time to perform Breast self-examination and 60(14.7%) said after menstruation which the right time to perform BSE. 214(52.6%) agrees BSE helps to observe unusual change in the size and shape of breast and to know how breast normally feels and looks and 152(37.3%) said BSE should be done in front of the mirror. (Table 3)

Table 3 Knowledge of Breast self-examination among female undergraduate students in Addis Ababa University, College of Business and Economics Addis Ababa, Ethiopia, 2016

Variables	**Frequency**	**Percent (%)**
Heard about BSE		
Yes	207	50.9
No	200	49.1
Source of information for BSE * n=207		
Health personnel	34	15.4
Friends/ colleagues	40	18.1
Mass media(Television/radio, magazines/ Newspapers)	142	64.3
Others (internet, medical books and families/relatives)	5	2.3
Recommended age to start BSE		
<19 years	53	13.0
>19 years	131	32.2
I don't know	223	54.8
Frequency of BSE practice		
Weekly	44	10.8
Monthly	101	24.8
Yearly	36	8.8
I don't know	226	55.5
Appropriate time to perform BSE		
Before menstruation	29	7.1
After menstruation	60	14.7
Any time during the month	57	14.0
I don't know	261	64.1

*Total number isn't equal to '**n**' due to multiple responses

5.4 Practice of study participants towards Breast self-examination

This study showed that only 87(21.4%) of the study participants ever practiced breast self examination, from those 45(51.7%) perform BSE every month, 13(14.9%) perform once in a year and 12(13.8%) perform once in a week. Their main reason to perform BSE was, 29(31.9%) of them recommended by health professional, 27(29.7%) of the respondents for early detection and treatment, and 16(17.6%) of them fear of breast cancer from family history. Seventy (80.5%) of them started practicing BSE at the age less than 25 years.

Of those practicing BSE only 9(10.5%) of the study participants perform BSE at the right time which is 2 to 3 days after menstruation. (Figure 4 & table 4)

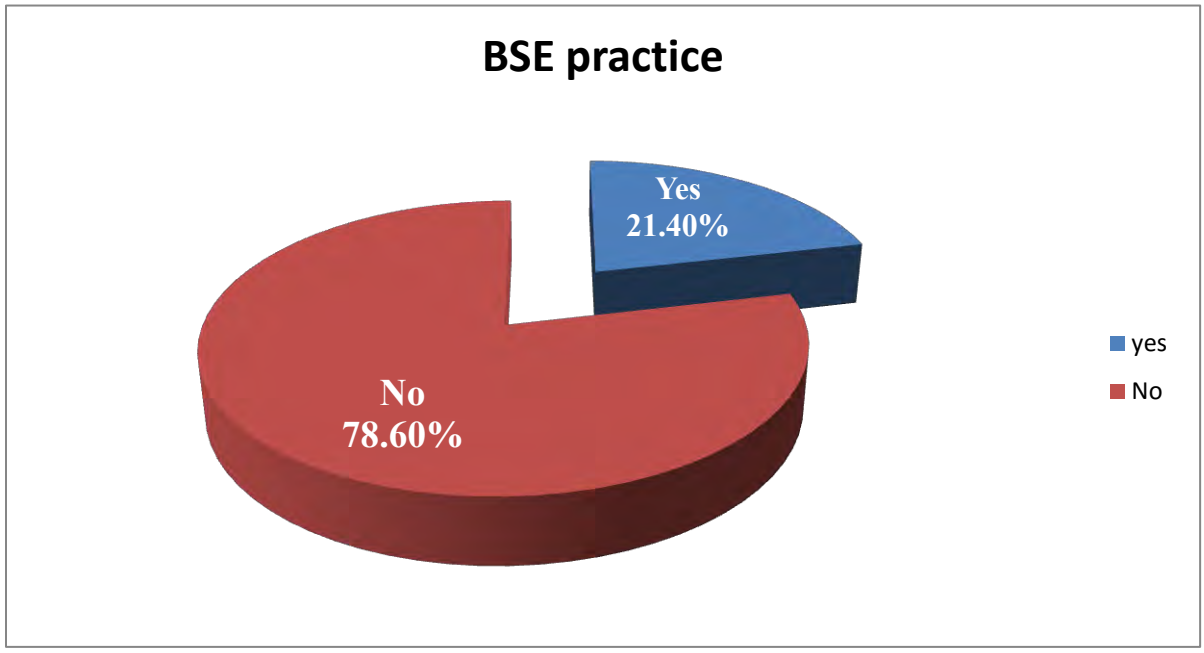


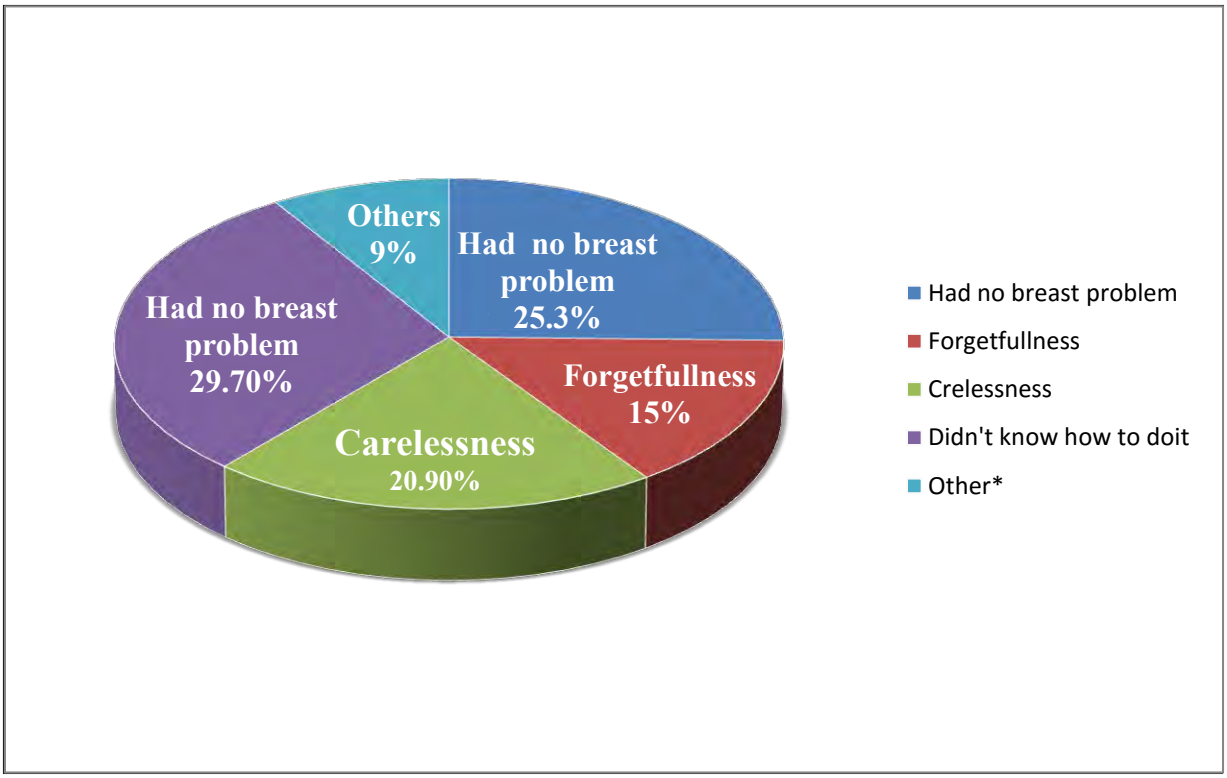
Figure 4 Breast self examination practice among female undergraduate students in Addis Ababa University, College of Business and Economics, Addis Ababa, Ethiopia, 2016

Table 4 Assessment of Breast self-examination practice among female undergraduate students in Addis Ababa University, College of Business and Economics, Addis Ababa, Ethiopia, 2016.

Variables	Frequency	Percent (%)
Ever performed BSE		
Yes	87	21.4
No	320	78.6
Frequency of performing BSE		
Once in a week	12	13.8
Once in a month	45	51.7
Once in a 3 month	7	8.0
Once in a 6 year	10	11.5
Once in a year	13	14.9
Reason to perform BSE * n=87		
Had previous breast problem	6	6.6
Fear of breast cancer from family history	16	17.6
Recommended by Health professional	29	31.9
For early detection and treatment	27	29.7
Fear of developing breast cancer	13	14.3
Age when you start practicing BSE		
Less than 25 years of age	70	80.5
Between 25 and 30 years of age	10	11.5
Between 31 and 35 years of age	2	2.3
Above 35 years of age	5	5.7
The time you perform BSE		
2 to 3 days after session of menstruation	9	10.5
When it comes to mind	53	60.9
A regular days of each month	7	8.0
Few days before menses	5	5.7
Any time during the month	13	14.9

*Total number isn't equal to ''**n**'' due to multiple response

The majority of the participant 320(78.6%) who didn't perform BSE, were further asked on their reasons for not performing BSE and 95(29.7%) said they didn't know how to perform BSE, 81(25.3%) said they don't have breast problem, and 67(20.9%) of them said carelessness and 48(15%) of them said forgetfulness. (Figure 5)



Others *Stands for (No benefit from practicing it, it's not comfortable, lack of privacy, fear of detecting abnormalities)

Figure 5 Reason for not practicing BSE among female undergraduate students in Addis Ababa University, College of Business and Economics, Addis Ababa, Ethiopia, 2016.

5.5 Attitude of study participants towards Breast self-examination

The mean for total attitude score pertaining to BSE was 28.21. About half of the study participants 206(50.6%), had a good attitude towards breast self examination. (Figure 6)

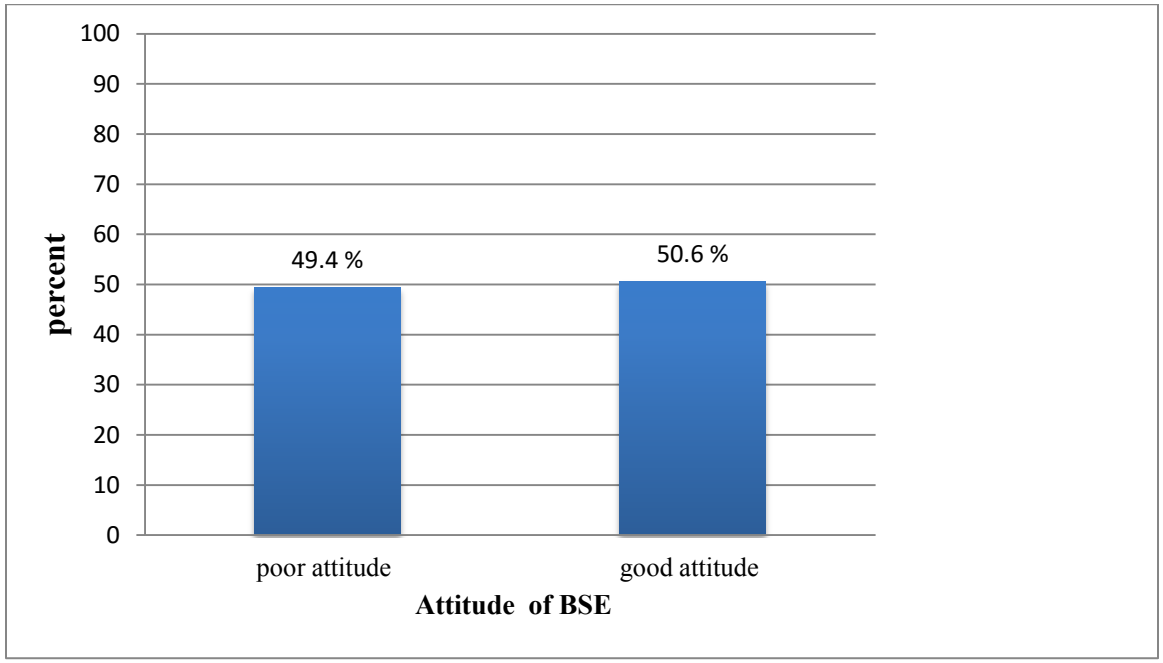


Figure 6 Over all attitude assessment of breast self- examination among female undergraduate students in Addis Ababa University, College of Business and Economics, Addis Ababa, Ethiopia, 2016

Among the study participants, 73(17.9%) of respondents agree for the statement doing BSE makes me feel so funny, 256(63%) of respondents were interested to do BSE. More than half of respondents 220(54%) agree for the statement, discuss with their friends about BSE. 98(24%) of respondents always search information about breast self examination. Majority of respondents 318(78.2%), disagree on the statement doing BSE is wasting time, 272(66.8%) of respondents mentioned BSE won't be embarrassing for them, 138(33.9%) of respondents avoid to do BSE because worry to get breast cancer and 65(16%) feel uncomfortable to do BSE. (Table 5)

Table 5 Frequency distribution of attitude towards BSE among female undergraduate students in Addis Ababa University, College of Business and Economics, Addis Ababa, Ethiopia, 2016

Statement	Strongly disagree N (%)	Disagree N (%)	Neutral N (%)	Agree N (%)	Strongly agree N (%)
Doing BSE makes me feel so funny	50(12.3)	98(24.1)	165(40.5)	73(17.9)	21(5.2)
Interested to do BSE	7(1.7)	25(6.1)	119(29.2)	189(46.4)	67(16.5)
Discuss with my friends about BSE	12(2.9)	50(12.3)	125(30.7)	167(41.0)	53(13.0)
I always search information about BSE	47(11.5)	94(23.1)	168(41.3)	74(18.2)	24(5.9)
Doing BSE is wasting time	4(1.0)	24(5.9)	61(15.0)	159(39.1)	159(39.1)
BSE will be embarrassing to me	12(2.9)	25(6.1)	98(24.1)	142(34.9)	130(31.9)
Avoid to do BSE because worry to get breast cancer	15(3.7)	52(12.8)	80(19.7)	138(33.9)	122(30.0)
Feel uncomfortable to do BSE	15(3.7)	50(12.3)	101(24.8)	127(31.2)	114(38.0)

5.6 Factor affecting BSE knowledge and practice

5.6.1 Factors associated with knowledge of BSE

Bivariate analysis has been used to identify the effect of independent variables on dependent variable (knowledge of BSE). But it was confounded by multiple variables. In order to control the possible confounding variables the association was presented by multivariate logistic regression

After controlling the possible confounding variables; previous place of residence, attitude of BSE, and knowing someone suffer from breast cancer found to be significantly associated with knowledge of BSE.

Those respondents whose previous place of residence was urban were found to have 2.16 times more likely to have good knowledge than those whose previous place of residence was rural. [AOR=2.162, 95% CI (1.193-3.916), p=0.011] There was also strong association between attitudes of BSE with knowledge of BSE. Respondents who had good attitude towards BSE were 3.11 times more likely to have good knowledge than who had poor attitude. [AOR=3.107, 95%CI (2.044-4.722), p=0.000] Those who knew someone suffered from breast cancer have 2.949 times more likely to have good knowledge than those who didn't know. [AOR=2.949, 95%CI (1.774-4.904), p=0.000] (Table 9)

Other socio-demographic factors like age, father and mother educational status, marital status, department, year of study, family average monthly income were not found to be significantly associated with knowledge of Breast self examination.

Table 6 Factors associated with knowledge of Breast self Examination among female undergraduate students in Addis Ababa University, College of Business and Economics, Addis Ababa, Ethiopia, 2016

Variables	Knowledge of BSE		COR (95%CI)	P-value	AOR (95%CI)	P-value
	Poor knowledge N (%)	Good knowledge N (%)				
Previous place of residence						
Urban	75(21.9)	267(78.1)	**2.197(1.260-3.831)***	**0.006***	**2.162(1.193-3.916)***	**0.011***
Rural	12(18.5)	53(81.5)	**1.00**		**1.00**	
Family average monthly income						
<445	7(58.3)	5(41.7)	0.580(0.179-1.876)		0.740(0.203-2.697)	0.648
446-1200	17(63.0)	10(37.0)	0.477(0.210-1.084)		0.745(0.298-1.861)	0.528
1201-2500	40(50.6)	39(49.4)	0.791(0.477-1.313)		0.961(0.544-1.697)	0.891
2501-3500	28(71.8)	11(28.2)	**0.319(0.152-0.669)***	**0.002***	0.567(0.249-1.289)	0.176
>3501	112(44.8)	138(55.2)	**1.00**		1.00	
Attitude of BSE						
Poor attitude	130(64.7)	71(35.3)	**1.00**		**1.00**	
Good attitude	74(35.9)	132(64.1)	**3.266(2.177-4.901)***	**0.000***	**3.107(2.044-4.722)***	**0.000***
Father Educational status						
Illiterate	15(65.2)	8(34.8)	0.469(0.193-1.138)	0.094	0.595(0.230-1.538)	0.284
Read and write	24(53.3)	21(46.7)	0.770(0.411-1.440)	0.413	1.269(0.619-2.602)	0.516
Elementary school	19(70.4)	8(29.6)	**0.370(0.157-0.871)***	**0.023***	0.519(0.209-1.293)	0.159
Secondary school and above	146(46.8)	166(53.2)	**1.00**		1.00	
Knows someone suffering from breast cancer						
Yes	30(30.3)	69(69.7)	**2.987(1.840-4.847)***	**0.000***	**2.949(1.774-4.904)***	**0.000***
No	174(56.5)	134(43.5)	**1.00**		**1.00**	

*Statistically significant

5.6.2 Factors associated with BSE practice

To see the effect of independent variables on dependent variable (practice of BSE), bivariate and multivariate logistic regression analysis was carried out. The analysis was done by including socio-demographic characteristics, history of breast cancer, knowledge of BSE, and attitude of BSE. A result obtained from bivariate and multivariate logistic regression showed family history of breast cancer, knowledge and attitude of BSE, has significant association with practice of BSE. Study participants with family history of breast cancer practice BSE 2.332 times more than participants without family history of breast cancer. [AOR=2.332 95% CI (1.009-5.389), p=0.048]

Respondents who had good attitude towards BSE were 4.67 times more likely to practice BSE than those who have poor attitude [AOR=4.675(2.411-9.067) p=0.000]

Regarding knowledge of BSE, those who had good knowledge towards BSE were 12.42 times more likely to practice BSE than those who had poor knowledge. [AOR=12.422 95%CI (5.478-28.167), p=0.000].

Other socio demographic variables age, marital status, previous place of residence, department, family average monthly income and father & mother educational status were not found to be significantly associated with BSE practice.

Table 7 Factors associated with Breast self Examination practice among female undergraduate students in Addis Ababa University ,College of Business and Economics, Addis Ababa, Ethiopia, 2016

Variables	BSE practice		COR(95% CI)	p-value	AOR (95%CI)	P-value
	Yes N (%)	No N (%)				
Family history of breast cancer						
Yes	15(36.6)	26(63.4)	**2.356(1.187-4.677)***	**0.014***	**2.332(1.009-5.389)***	**0.048***
No	72(19.7)	294(80.3)	**1.00**		**1.00**	
Personal history of breast cancer						
Yes	6(46.2)	7(53.8)	**3.312(1.083-10.126)***	**0.036***	3.691(0.736-18.513)	0.112
No	81(20.6)	313(79.4)	1.00		1.00	
Attitude towards BSE						
Poor attitude	17(8.5)	184(91.5)	**1.00**		**1.00**	
Good attitude	70(34.0)	136(66.0)	**5.571(3.137-9.895)***	**0.000***	**4.675(2.411-9.067)***	**0.000***
Knowledge towards BSE						
Poor knowledge	9(4.4)	195(95.6)	**1.00**		**1.00**	
Good knowledge	78(38.4)	125(61.6)	**13.520(6.544-27.932)***	**0.000***	**12.422(5.478-28.167)***	**0.000***
Knows someone suffering from breast cancer						
Yes	35(35.4)	64(64.6)	**2.692(1.619-4.477)***	**0.000***	1.682(0.901-3.137)	0.102
No	52(16.9)	256(83.1)	**1.00**		1.00	

*Statistically significant

6. Discussion

6.1 Knowledge of BSE

The study tried to assess knowledge and practice of BSE among female undergraduate students in Addis Ababa University, College of Business and Economics. Two hundred three (49.9%) of respondents had good knowledge towards BSE. On the contrary to this study , crossectional study done among female medical students in Haramaya University, had showed a significant difference with the present study majority of female medical students (87.3%)who participated in the study had good knowledge about BSE (13). This gap could be due to study population were medical students who were expected to have better awareness regarding BSE and they could get knowledge about BSE through lecture.

Another study conducted among female university students in Ghana also contradict to this study finding that was 95% of participants had good knowledge about BSE (28). This might be due to the study populations were female nursing students who had better knowledge and exposure to breast cancer and its detection measures. In contrast to this study, much higher percentage (86.5%) of female university students in United Arab Emirates had low knowledge score regarding to BSE (24). The rational might be participant's false perception towards breast cancer; they perceived breast cancer isn't curable disease even if it is early detected and managed.

The finding of the study among woman study subjects in Malaysia showed 38.4% subjects had good knowledge of BSE(25) which was lower compared with the present study. This could be explained by majority of study participants in the present study were living in urban area where information could easily accessed and they were on education which allowed them to read and know about BSE. Another study done in Oman had shown, large percentage of students (85.35%) had a good knowledge of BSE (23) which is higher compared to this study. The discrepancy might be resulted from half of study participants were postgraduate students who were expected to have more knowledge and experience than undergraduate students.

According to this study, 207(50.9%) of the respondents had heard about breast self examination previously. In line with this study almost an approximate number of participants 53.8% heard about BSE (24). On the contrary to this study , 95.23% of participants had previously heard about BSE (13). This difference might be due to study population were medical students who had better opportunity to hear about BSE from lectures, books, and journals.

In contrast to this study, a high percentage (95.5%) reported they had heard about BSE however, much lower percentage (19.5%) of participants had sufficient knowledge on BSE in a study conducted in private higher learning institution in Malaysia (27).

In this study, the predominant source of information about BSE was Mass media (Television/radio, Magazines / newspapers) which account 142 (64.3%).

In congruent with this study the predominant source of information about Breast self examination were Mass media in a study conducted in Jordan(42%), Malaysia(70.1%), and Ghana(48%) (22,27,28). On contrary to this study lecture was the main source of information about BSE for Haramaya University medical students (13). This can be explained by medical students can get information about BSE through lecturing.

According to this study, knowledge on breast cancer screening method showed, about 68(56.2%) knew Breast Self Examination, 28(23.1%) knew Clinical Breast Examination and 25(20.7%) knew mammography. While 74.8% of respondents mentioned Breast Self Examination as an early detection measures in study conducted in Addis Ababa (30). This relatively higher percentage of respondents on BSE was due to study populations were Nurses who had better knowledge on breast cancer early detection measures.

In the present study, participants replied for the question how often should perform BSE, 101(24.8%) said every month and for the question when to perform BSE, 60(14.7%) of respondents said after menstruation. On contrary to this study, finding from a study conducted on knowledge of breast cancer and screening methods among nurses in Addis Ababa, Ethiopia had shown that among respondents asked to describe the frequency of performing BSE, 51.5% of the study subjects reported BSE should be performed monthly after menstruation (30).This gap might be due to the difference in nature of the population the studies conducted on nurses who do have information and experience about BSE through various courses and training taken and contact with breast cancer patients and Breast cancer association that make them aware of screening methods. Another study conducted in Oman reported, 72.61% of respondents explained BSE should be performed monthly and 61.1 % of respondents agreed BSE performed after menstruation (23). The discrepancy might be resulted from half of study participants were postgraduate students who are expected to have better knowledge than undergraduate students.

The finding of this study had shown that, 214(52.6%) agreed BSE helps to observe unusual change in the size and shape of breast and to know how breast normally feels and looks and 131(32.2%) of respondents said BSE performed at age above 19 years.

Another two studies done in Malaysia described more than half percentage of students knew the appropriate age to initiate BSE which is higher percentage compared to the present study (26,27) This gap might be due to there was no well organized breast cancer education that had the potential to increase knowledge on the students about the disease and BSE, as the public health concern and the healthcare system has been almost exclusively focusing on communicable diseases so far and non- communicable diseases were ignored for years, particularly in resource poor countries like Ethiopia. While another study conducted in Addis Ababa showed 71.9% respondents identified the age to perform BSE to be at year of 20 (30). This gap might be due to the difference in nature of the population the studies conducted on nurses who had better knowledge and experience about BSE.

In this study 69.5% of students explained early detection of breast cancer improves chance of survival while higher percentage(85.7%) of study participants in Haramaya University agreed on this statement and 93.6% of students agreed that BSE can be an important tool for early detection of breast cancer (13). This gap might be students in Haramaya University were health science students who have better knowledge on breast self-examination than non-health science students.

6.2 Breast Self examination practice

In this study, BSE practice was reported by 21.4% of study subjects which is lower compared with study done among female health care professionals in Addis Ababa(75.1%) , Nursing female university students in Jordanian Nurse(85%), Ghana(76%), Egyptian nurses(56.4%),and Health extension workers in Gojam, Ethiopia(37.3%)(22,28,34,39).

This discrepancy is due to the study participants in this study are non health science students, never got the opportunity of training on breast cancer screening methods and absence of any educational campaign regarding to breast cancer early detection and unlike study participants in this study nurses and other health care professionals have better awareness how to perform BSE.

From those ever practiced BSE, 51.7% performed BSE on monthly basis in this study which is inconsistent with other studies done in Ghana (31%), and Nigeria (17.1%) (28,36). The difference might be due to difference in educational status, and accessibility to information.

In this study, majority of students (89.5%) didn't perform BSE at the right time which was 2 to 3 days after menstruation. Two studies in Nigeria were congruent with this finding (36,38). In contrast to the above studies 62% of students in Ghana perform BSE in appropriate time which was some days after menstruation (28). The gap is due to study participants in Ghana were Nursing students who had better experience and knowledge on BSE

In this study the main reasons for not doing BSE were; lack of knowledge how to perform BSE, had no breast problem, carelessness, and forgetfulness. Similarly in the study conducted in Gojam, Ethiopia, the three main reasons for not doing BSE were had no breast problem , and not knowing BSE technique (39).

Female students in north western Nigeria mentioned forgetfulness, and belief that there is no problem with their breast were their reasons for not practicing breast self-examination (37). while students in Haramaya university explained their reasons as ; have no signs or symptoms, forgetfulness, fear of detecting some abnormality, lack of privacy (13). The reason lack of knowledge how to perform BSE have been mentioned by this study and another study conducted in Gojam but not in a study conducted among students in Haramaya University and in Ahmadu bello University in Northwestern Nigeria, this might be due to having better knowledge on BSE techniques.

6.3 Factors associated to BSE knowledge and practice

This study assessed the relationship between BSE knowledge and practice with several associated factors. Previous place of residence, attitude of BSE, and knowing someone suffer from breast cancer found to be significantly associated with knowledge of BSE. In congruent to this study, knowing someone suffer from breast cancer was significantly associated with knowledge of BSE (41). This is explained by increased interest to know about BSE because of its severity.

Other socio demographic factors like age, father and mother educational status, marital status, department, year of study, and family average monthly income were not found to be significantly associated with knowledge of breast self examination. Similarly there was no significant association between knowledge of BSE and ethnicity (24). In congruent with this study age and personal history of breast cancer ,were not found to be significantly associated with knowledge of breast self examination (30).

In contrary to this study, marital status had significant association with the knowledge of breast cancer and screening methods. Unmarried respondents were more knowledgeable than married ones in study conducted among nurses in Addis Ababa (30,41). This discrepancy might be due to majority of respondents in this study had single marital status.

In the present study family history of breast cancer didn't have an association with knowledge of BSE. while another study showed Nurses with family history of breast cancer were more likely to be knowledgeable than nurses with no family history of breast cancer in a study conducted among nurses working in Addis Ababa (30). The discrepancy might be due to Nurses had better knowledge on risk factors of breast cancer, like family history of breast cancer. So if there is family history of breast cancer they will search more information about BSE in addition to their previous knowledge and experience.

On contrary to this study there was significant association between age and knowledge of BSE. It was found that younger participants had significantly lower knowledge scores in comparison to older participants(24,38).The discrepancy might be majority of respondents in this study were within the age group of 20 to 21. So there was no age variation that could show an association with knowledge of BSE.

In this study significant relation had been found between practice of Breast self examination and some of variables: family history of breast cancer, knowledge and attitude of BSE had showed significant association with practice of BSE. Study participants with family history of breast cancer perform BSE 2.33 times more than participants without family history of breast cancer. [AOR=2.332 95%CI (1.009-5.389)] which was consistent with a study done in Northwest Nigeria(37)and Kuwait(33). In contrast to this study, Family history of breast cancer had not significant association with BSE practice in a study conducted in Malaysia (26).

Regarding knowledge of BSE, those who had a good knowledge towards BSE were more likely to practice BSE than those who had poor knowledge. [AOR=12.42 95%CI(5.478-28.167)] In line with this finding, studies conducted in Iran, Jordan, and Malaysia reported significant association between knowledge and practice of BSE. (14,22,25). On the other hand personal history of breast cancer didn't show significant association with BSE practice similar to this study (22).

In this study, respondents who had good attitude towards BSE perform BSE 4.675 times more than respondents with poor attitude. [AOR=4.675 95%CI(2.411-9.067)]. This study was almost in line with evidence in Iran and Malaysia(14,25).This could be explained by attitude can affect the practice.

Other socio demographic variables age, marital status, previous place of residence, department, year of study, family average monthly income and father and mother educational status were not found to be significantly associated with BSE practice. On contrary to this study in north western Nigeria explained regular performance of BSE was significantly associated with duration of stay in the University; students who had spent more years in the university were more likely to practice BSE (37). And another study conducted among nursing female university students in Ghana had also shown the association between the educational level of the student and the ability to perform BSE. The ability to perform BSE improved as the educational level is higher (28). The discrepancy might be the participants in this study were non health science students so their longer stay in university or educational level couldn't bring improvement on their BSE practice because breast cancer related issues were not included in their lesson, absence of educational material which had adequate information about breast cancer screening method and absence of programs for awareness creation about breast cancer.

7. Strength and limitation

7.1 Strength of the study

- Adequate sample size representing all the departments was taken by using appropriate sampling techniques.
- 100 % response rate

7.2 Limitation of the study

- Due to few similar studies conducted in the country, it made comparison difficult
- The use of cross sectional design has limited the degree of cause and effect associations among variables of interest.

8. Conclusion

The result of this study demonstrated that;

- Half of participants 204(50.1%) had poor knowledge of BSE, below one forth of participants 87(21.4%) practiced BSE and 206 (50.6%) of respondents have a good attitude towards BSE.
- Previous place of residence, attitude of BSE, and knowing someone suffer from breast cancer found to be significantly associated with knowledge of BSE , However; age, father and mother educational status, marital status, department, year of study, and family average monthly income were not found to be significantly associated with knowledge of breast self examination.
- Breast self examination practice showed significant association with family history of breast cancer, knowledge and attitude of BSE.
- Age, marital status, previous place of residence, department, and year of study, family average monthly income and father and mother educational status were not found to be significantly associated with BSE practice.

9. Recommendations

For Ethiopian cancer Association and Ministry of Health

- Breast cancer early detection measures training packages should be prepared to health care professionals who could play a key role in educating the public

For Addis Ababa University, College of Business and Economics

- Effective health education campaigns should be prepared to elucidate awareness and practice of BSE to students
- Establishment of trained breast self examination awareness peer groups at the campus
- Supply educational materials which have adequate information on Breast Self Examination such as Magazines, handbills, poster and leaflets should be freely made available
- Facilitate online social media as a means of disseminating information on breast self examination.

For Ministry of Information Communication

- The media should let a wide range of air time to provide comprehensive information about Breast Self Examination through different Medias like television, radio and magazines.
- Fix a free telephone line in which people can get information about BSE without payment.

Finally, further research should be conducted to cover an expanse population; this will allow for generalization and what intervention could be best used to improve the uptake and practice of BSE.

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11. Annexes

Annex I: Information Sheet Form

ADDIS ABABA UNIVERSITY, COLLEGE OF HEALTH SCINENCE, SCHOOL OF ALLIED HEALTH SCIENCE, DEPARTMENT OF NURSING AND MIDWIFERY

This Self-administered Questionnaire is designed to assess knowledge and practice of Breast self- examination among female undergraduate students in Addis Ababa University, College of Business and Economics. All the respondents are kindly requested to fill all the questions below. Your Response is important to the result of the research.

Benefit and risk

No harm is imposed to you except the time you commit for interview but some of the question may look too personal but it is helpful for the study. Your participation in this research may not give you direct benefit but your participation is likely to help us in identifying the real knowledge and practice of breast self-examination among students and will have the benefit of choosing appropriate and cost effective prevention and treatment strategies in tackling the problem.

You will not be provided any incentives to take part in this research. If you have something that is not clear about the study please contact the principal investigator.

1. Mikiyas Amare Getu - Principal investigator

Tel: +25193105648 or Email address: makmiky86@gmail.com.

Annex II. Informed Consent

Dear students!

Good day! My name is Mikiyas Amare, from Addis Ababa University, College of Health Science; School of Allied Health Science, Department of Nursing and Midwifery .I am here to collect data for the research purpose which is conducted to complete a thesis for Master's Degree of Adult Health Nursing .The purpose of this study is to assess knowledge and practice of Breast self-examination among female undergraduate students in Addis Ababa University , College of Business and Economics.

You are selected to be one of the participants in the study. I would like to ask you to fill this questionnaire that takes 15 to 20 minute of your time. The questionnaire Participation in this study is voluntary, you have the right to refuse or with draw from the study at any time for any reason without penalty. However, your honest answers to these questions are important since it provide relevant information to design interventions that aims to improve the knowledge and practice of Breast self- examination among students.

The information you provide is confidential and it will be used only for study purpose and it will not be disclosed to anyone. A code number will be used to identify the participant therefore, writing your name is not needed.

Are you willing to participate in this study? 1. Yes ☐ 2. No ☐

Put "X" mark in the box you chosen.

Participant's signature_____ Date_____

Data collector's signature_____ Date _____

Thank you

Annex III: Data Collection Instrument Questionnaire (English Version)

Questionnaire #___

Date of interview___

Part I Socio-Demographic characteristics

Read each questions and circle your response and some questions have possibility of multiple responses. For short answers write on the space provided.

Sr.	Questions	Response	Skip pattern
Q101	Age	_____years	
Q102	Marital status	1. Single 2. Married 3. Divorced 4. Widowed 5. Separated 6. Cohabited	
Q103	Religion	1. Orthodox 2. Muslim 3. Protestant 4. Catholic 5. Other specify _____	
Q104	Ethnicity	1. Amhara 2. Oromo 3. Tigre 4. Gurage 5. Other specify_____	
Q105	Previous place of residence	1. Urban 2. Rural	
Q106	Department	1. Business administration and information system 2. Accounting 3. Economics 4. Marketing management	

		5. Management 6. Administration service management	
Q107	Year of study	1. 1st year 2. 2nd year 3. 3rd year	
Q108	Family average monthly income	_____ Ethiopian Birr	
Q109	Father education status	1. Illiterate 2. Read and write 3. Elementary school 4. Secondary school and above	
Q110	Mother educational status	1. Illiterate 2. Read and write 3. Elementary school 4. Secondary school and above	

Part II History of breast cancer

Sr.	Questions	Response	Skip pattern
Q201	Do you have any family history of Breast cancer (mother, sister, aunt)?	1. Yes 2. No	
Q202	If yes, who is affected?	1. Mother 3. Grand mother 2. Sister 4. Aunt	
Q203	Do you have personal history of breast cancer	1. Yes 2. No	
Q204	Do you know someone suffering from breast cancer	1. Yes 2. No	

Part III Knowledge of Breast self- examination

Sr. No	Questions	Response	Skip pattern
Q301	Early detection of breast cancer improves chance of survival.	1. True 2. False 3. I don't know	
Q302	Breast cancer is curable if detected at earlier stage of the disease?	1. True 2. False 3. I don't know	
Q303	There are screening methods which can detect the presence of breast cancer.	1. True 2. False 3. I don't know	
Q304	Do you know the types of breast cancer screening methods?	1. Yes , I do 2. No , I don't know	**If no, Q306**
Q305	If yes to Q404, which screening methods do you know? (Multiple answers is possible)	**1. Breast self- examination** (Examination of breast performed by individuals to help detect any abnormality by themselves) **2. Clinical breast examination** (physical examination of the breasts done by health professionals) **3. Mammography** (a process of using X-rays to examine thehuman breasts.)	
Q306	Have you ever heard about Breast Self- examination?	1. Yes 2. No	**If no, Q308**
Q307	From where did you heard about Breast self- examination?(multiple answer is possible)	1. Health personnel 2. Friends/ colleagues 3. Mass media (Television / radio, Magazines/newspapers) 4. Others specify……	
Q308	Recommended age to start BSE	1. <19 years 2. > 19 years	

		3. I don't Know	
Q309	How often should be Breast self-examination performed?	1. Weekly 2. Monthly 3.Yearly 4. I don't know	
Q310	Time to perform Breast self-examination	1. Before menses 2. After menses 3. Anytime during the month 4. I don't know	
Q311	BSE helps to observe for unusual change in shape and size of breast and to know how breast normally feels and looks	1. True 2. False 3. I don't know	
Q312	BSE should be done in front of the mirror	1. True 2. False 3. I don't know	
Q313	Undress until the waist when doing the BSE	1. True 2. False 3. I don't know	
Q314	Hands should be raised up alternately above the head when doing the BSE in front of the mirror	1. True 2. False 3. I don't know	
Q315	Use finger pulps to examine any lump or thickening of the skin	1. True 2. False 3. I don't know	
Q316	BSE can be done in vertical strip and circular technique	1. True 2. False 3. I don't know	

Part IV Practice of Breast self- examination

Sr.	Questions	Response	Skip pattern
Q401	Have you ever performed Breast self-examination?	1. Yes 2. No	**If no, go to Q 406**
Q402	How often you practice Breast self-examination?	1. Once in a week 2. Once in a month 3. Once in 3month 4. Once in 6month 5. Once in a year 6. Other specify…….	
Q403	Why do/did you perform breast Self- examination?	1. Had previous breast problem 2. Fear of breast cancer from family history 3.Recommended by Health professional 4. For early detection and treatment 5. Fear of developing breast cancer 6. Other, specify_____	
Q404	Age that you started practicing breast self-examination?	1. Less than 25 years of age 2. Between 25 and 30 years of age 3. Between 31 and 35 years of age 4. Above 35 years of age	
Q405	When do you perform Breast self-examination?	1. 2 to 3 days after session of menstruation 2.When it comes to mind 3. A regular days of each month 4. few days before menses 5. any time during the month	
Q406	If you don't practice breast self-examination what are the reasons?	1. I don't have a breast problem 2. Would not gain benefit from practicing it 3. Forgetfulness 4. Lack of privacy 5. It's not comfortable 6. Fear of detecting abnormalities 7. Carelessness 8. Did not know how to do it	

Part V Attitude of Breast Self-examination

Sr. no	Questions	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Q501	Doing BSE makes me feel so funny					
Q502	Interested to do breast-self examination					
Q503	Discuss with my friends about BSE					
Q504	I always search information about BSE					
Q505	Doing BSE is wasting time					
Q506	BSE will be embarrassing to me					
Q507	Avoid to do BSE because worry to get breast cancer					
Q508	Feel uncomfortable to do BSE					

Annex IV. Declaration

I, the undersigned, declare that this thesis is my original work, has not been presented in this or any other University and that all the source materials used for this thesis have been duly acknowledged.

Name: Mikiyas Amare

Signature: _____.

Place of submission: Department of Nursing and Midwifery, College of Medicine and Health Sciences, Addis Ababa University.

Date of Submission: _____.

The thesis has been submitted for examination with my approval as a university advisor.

Name: Mesfin Abebe (BSc, MSc/RH, Asst. professor, PhD Associate)

Signature: _____

Date: _____