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Early detection practice of breast cancer and associated factors among Women in Bahir Dar city, North West Ethiopia

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ABSTRACT

Background: world health organization recommends breast self -examination for raising awareness of women about breast cancer. Monthly breast self-examination which is Secondary preventive activity is an efficient way to limit the increasing occurrence of breast cancer. Breast cancer is the most common cancer among women in Sub-Saharan Africa and globally. There is limited evidence related to breast cancer screening practice among women in Ethiopia. *Method*: A community based cross sectional study was conducted from March 12 to March 30, 2020 at randomly selected kebeles of Bahir Dar city. A total of 617 women were interviewed using semi-structured questionnaire. The data were checked, cleaned, and entered into EPIDATA version 3.1 and exported to SpSS version23 statistical software for analysis. Both descriptive statistics-such as simple frequencies, and Analytic statistics such as bivariate and multivariable binary logistic regression analysis were done. P-value and 95% CI for the AOR were used to find out the associations between independent variables and early detection practice. Hosmer and lemshow goodness of fit model was used to check the model fitness. *Results*: A total of 617 women were participated in the study with 100% response rate. From the total respondents, only 200⌈ (32.4%), 95%CI (28.5, 36.1) of them had practiced breast self-examination, Good knowledge [AOR=5.01, 95%CI (2.84-8.82], good perception ⌈3.96, 95%CI (2.39- 6.55)],source of information ⌈4.09, 95%CI (2.24- 7.48)⌋, marital status ⌈3.55,95%CI (1.84-6.68)] occupational status⌈ 6.25,95%CI(2.464 -15.74)⌋ and family history of breast cancer were found to be statistically significant predictors of breast cancer self-examination. *Conclusion*: breast self-examination practice was low in the study area.Knowledge of women on breast cancer practice, perception of women towards breast cancer; women's source of information, family history of breast cancer; marital status and occupation were significantly associated with breast self-examination.

Keywords: practice, breast cancer, early detection, associated factors.

1. BACKGROUND

Cancer that originates in the female breast is known as breast cancer (1-3). *Breast cancer* is a disease in which cells in the breast grow out of control (4, 45). Breast cancer is the most common female malignancy linked with high levels of morbidity and mortality in the developing countries due to inefficient early detection practice (5). There are different ways of staging breast cancer (4, 6, 7). Women who practice breast examination regularly present with smaller tumor and earlier stages of the disease. Signs and symptoms of breast cancer are redness of the breast skin, changes in the size of the breast or nipple, a breast lump, pain in the breast, nipple rash, bleeding or discharge from the nipple, pulling of the nipple, and changes in the position of the nipple (6, 7). Breast cancer is usually asymptomatic in the early stages during which early detection practice is needed at which it is curable (7, 8, 46, 47). Early detection and early intervention is the only effective way of reducing mortality of breast cancer (9). Breast self-examination, clinical breast examination and mammography are recommended for the diagnosis of breast cancer at an early stage (10).

Breast self-examination is an examination performed by a woman of her breast to check for lumps or other changes. Breast self-examination is an option for women from 20 years of age and above in areas where access to clinical breast examination and mammography is rare (11). Clinical Breast examination is an examination of breast performed by a health care provider to check for lumps or other changes (12). Early detection of breast cancer through breast self-examination, clinical breast examination, and mammography, has been shown to decrease cancer mortality rates due to breast cancer by 25–30% (13).

Breast cancer incidence increases by 1–2% annually worldwide (14, 15). Breast cancer survival rates vary greatly worldwide, ranging from 80% or over in North America, Sweden and Japan to around 60% in middle-income countries and below 40% in low-income countries (14). Approximately 58% of deaths have been reported to occur in the developing countries (16). Generally, breast cancer incidence rate is higher in developed countries compared to less developed countries but mortality due to breast cancer was higher in low and middle income countries than high income countries (7, 17, 18). This may reflect lack of early detection practice in developing countries (15, 18). Breast cancer is the second most often occurring cancer among women in Ethiopia and it is estimated that around 10,000 Ethiopian women have breast cancer annually with thousands of more cases unreported as women living in rural areas (19, 20). *Breast self*-examination practice remains low in many countries and only 12% of the study participants in Kiewit and in Nigeria showed that breast self-examination was only 18.1% (21). Although there was limited evidence related to breast cancer screening practice among women in Ethiopia, it is estimated that only minority of women (25 to 30%) perform breast self-examination each month (19, 20).

Early detection delays of 3-6 months are associated with advanced stage of breast cancer, lower survive and death (22). The impacts of women who die from breast cancer is resulting in social and economic effects for both their families and their communities (23). The direct impacts of breast cancer, include payments and resources used for treatment, as well as the costs of care and rehabilitation related to the illness and indirect costs include the loss of economic output due to days missed from work (morbidity costs) and premature death (mortality costs). Recent research has shown that cancer has the most devastating economic impact of any cause of death in the world (8).

However, the high prevalence, morbidity and mortality rates of breast cancer is due to poor offering and utilization of early detection practice at early stage of breast cancer in many developing countries including Ethiopia (10, 11, 24, 25). Women in Ethiopia usually comes to the health institution late and are expected to have a very limited lifespan due to lack of early detection practice which is in contrast with the Western world, where women present early and have a good chance of survival (8, 26). WHO recommended preventive techniques to reduce breast cancer mortality and morbidity include early detection through breast self-examination , clinical breast examination and mammography (3, 19, 28). Ethiopia has put in place a strategic goal to reduce cancer incidence and mortality by 15% by 2020. Even though Government, nongovernment organizations and international partners all planned to cope with this disease, less attention is given on implementation of early detection practice of breast cancer. As a result, cancer is on the bottom of their priority list (10). Despite the growing number of breast cancer cases, high mortality and high prevalence of risk factors in Ethiopia, still there is gap in early detection practice (17, 25). Data from the primary health care facilities are also scarce to see the problem for better intervention (27). Therefore the aim of this study was to assess early detection practice of breast cancer and associated factors among women age ≥15 years in Bahir Dar city.

2. METHODS

Study Design

A community based cross-sectional study was conducted to assess early detection practice of breast cancer and associated factors among women aged ≥15 years in Bahir Dar city.

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Study Area and Period

The study was conducted in Bahir Dar city from March 12 /2020 to March 30/2020.Bahir Dar is located 578 km from Addis Ababa it is the capital city of Amhara National Regional State in north-west Ethiopia .the city has a total population of 345,084 and more than half (175,993) of them were females. Number of women in reproductive age ≥ 15 years was estimated to be 81365. The city has 7 hospitals (public=3, private=4), 10 health center and11 health post. Administratively the city is divided into 40 kebeles. Horticulture, agro industrial processing, urban agriculture, manufacturing and diverse service industries are the major economic sectors of the city.The presence of Lake Tana and Blue Nile River in the nearby makes the city leading tourist destinations in Ethiopia. the main ethnic and religious groups are the Amhara and Orthodox Christians, but it has a vibrant mix of other cultures, too, including the Agaw, Oromo and Tigre people.

Study Population

All women aged ≥15 years who were residents in the selected kebeles in Bahir Dar city at household level during the study period were the study population .all women of age ≥15 years who were residing in Bahir Dar city for ≥ 6 months were included in this study.

Sample Size Determination

The sample size was determined using Epi-Info version 7.2 and by taking the key significantly associated variables from previous study (42).The assumptions made for the sample size calculation were;95% Confidence Interval,5% marginal error ,80% power, the final sample size was estimated to be 617participants assuming10% non-response rate.

Sampling Procedure

There were 40 kebeles in Bahir Dar city administration. From these 10 kebeles (Meshenti, Woramit, Zenzelima, Sebatamit, Bisrat, 01 kebele, AdisAlem, Shimbt, Abinet and Selam) were selected by simple random sampling technique. Individual households in the selected kebeles were selected using a systematic random sampling technique and one woman aged >15 year in selected household was interviewed. For households with more than one woman aged >15 years in one household, only one woman was selected using lottery method.

Variables of the Study

Dependent Variable

Early breast cancer detection practice (yes/no)

Independent Variables

Socio-Demographic Variables

Age, Marital status, Religion, Educational status, Occupation, Monthly income

Health and health related variables

Family history of breast cancer, Personal history of breast cancer, Menarche, Menopause, Oral contraceptive use, Exposure to radiation, Parity, Infertility

Knowledge and knowledge related factors

Knowledge about breast cancer and early detection practice, Perception for early detection practice, Source of information for early detection practice.

Life Style Factors

Smoking, Alcohol drinking, Obesity

Operational Definition

- Those women who practiced breast self-examination at least monthly starting from the last two years is categorized having breast self-examination (20, 30).
- Those women who didn't practice breast self-examination at all or at least once within a month starting from the last two years were categorized as not having breast self-examination.

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- Good Knowledge about breast cancer detection practice: women who answered ≥ 60% of knowledge questions (30). Poor knowledge: women who answered < 60% of knowledge questions (30).
- Good perception: A mean score of ≥ 2.4 (21). Poor perception: A mean score of <2.4 (21).

Data Collection Tools and Procedure

Data were collected using structured interviewer administered questionnaire. The questionnaires was developed for this study and prepared in English then were translated to local language (Amharic). Two data collectors and one supervisor were participated in the data collection process. Training was given to the data collectors for two days prior to actual data collection. Overall supervision was made by the principal investigator. Pretest was done on 25 women in Hamusit town which was not included in the actual study to screen out potential Confusions and to make early modification of the questioner before the actual data collection.

Data Processing and Analysis

The returned questionnaires were checked for completeness, cleaned and entered in to EPI- data version 3.1 and then exported to SPSS version 20.0 for further analysis. Frequencies and cross tabulations were used to summarize descriptive statistics of the data and tables and graphs was used for data presentation. Bivariate analysis was done to select candidate variables with p-value<0.25 was then entered in to multivariate logistic regression for controlling the possible effect of confounders and finally variables which have p-value<0.05 was taken as a statistically significant association with breast cancer early detection practice AOR and 95% was used to asses strength of association and model assumption was assessed using Hosmer and lemshow goodness of fit test.

Ethical Considerations

Ethical clearance was obtained from the Ethical review board of Bahir Dar University. Communication with different Bahir Dar city and kebele administrators was made through formal letter obtained from Bahir Dar University; Permission letter was taken from each kebele administrators .informed consent was taken from each participant. Participants were also informed that they could withdraw from the study at any time if they were not comfortable. In order to keep confidentiality, the data collection procedure didn't include respondent's name.

3. RESULTS

Socio Demographic Characteristics of Participants

A total of 617 females were participated with 100% response rate. The participants mean age was 32.53 with standard deviation of ±11.59. The respondents were predominantly between the age of 15-29 years. 357(57.9%) of the respondents were married .regarding to educational status, 330 (53.50%) females had no formal education (Table 1).

Table 1 Socio Demographic Characteristics of Women Aged ≥15 Years in Bahir Dar City, Northwest Ethiopia, 2020

Variable		Frequency	Percentage (%)
Age category			
	15-29	288	46.7%
	30-39	185	30%
	40-49	75	12.2%
	50-59	44	7.1%
	≥60	25	4.1%
Marital status			
	Unmarried	157	25.4%
	Married	357	57.9%
	Divorced	64	10.4%
	Widowed	39	6.3%
Educational status			
	No formal education	330	53.5%
	Elementary education	93	15.1%
	Secondary education	145	23.5%

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	Higher education	49	7.3%
Employment status:			
	Employed	118	19.1%
	Private work	209	33.9%
	House wife	228	37.0%
	Students	62	10.0%
Monthly income (in birr)			
	<445	8	1.3%
	446 -1200	67	10.9%
	1201 – 2500	123	19.9%
	2501 – 3500	132	21.4%
	>3500	287	46.5%
Religion	Orthodox	459	74.4%
	Muslim	114	18.4%
	Catholic	1	0.2%
	Protestant	43	6.9%

Family History and Life Style Factors

From the total respondents, only 76(12.3%) of the respondents had family history of breast cancer of which 31(5%) of the respondents reported that their mothers had history of breast cancer. only 41(6.6%) had personal history of breast cancer. 603(97.7%) reported that they didn't drink alcohol and all the respondents 617(100%) reported that they didn't totally smoke cigarette (Table 2).

Knowledge and perception of Participants about Early Detection Practice of Breast Cancer

From the total respondents 451(73.1%) reported surgery as a treatment method of breast cancer, 183(29.7%) radiation as a treatment method and 126(20.4%) of the respondents reported chemotherapy as a treatment method. 210 (34.0%) participants had no information about breast cancer examination while 407(66.5%) ever heard about breast cancer examination.

Generally only 161(26.04%) of the respondents scored ≥ 60% knowledge questions and categorized as having good knowledge and 436(70.7%) of the respondents scored < 60% of knowledge questions and categorized as having poor knowledge. 280 (45.4%) of the participants had good perception (mean score ≥2.4) towards breast cancer and breast cancer screening while 337 (54.6%) of the participants had poor perception (mean score < 2.4) towards breast cancer and breast cancer screening. From the total respondents, only 200 (32.4%) had practice of breast self-examination while the others had not practiced for different reasons majorly 372(89.2) due to lack of awareness (Table 2). generally the proportion of women who had breast self-examination was found to be 32.4% (95% CI: 28.5, 36.1).

Table 2: Reasons for Not Doing Breast Cancer Early Detection Practice among Women Aged ≥15 Years in Bahir Dar City Northwest Ethiopia, May 2020.

Reasons not doing breast cancer early detection practice	Yes/No	frequency	%
Lack of awareness a reason not doing breast cancer examination?			
	No	45	10.8%
	Yes	372	89.2%
Fear of cancer disease a reason not doing breast cancer examination?			
	NO	352	84.4%
	Yes	65	15.6%
Fear of stigmatization a reason not doing breast cancer examination?			
	No	399	95.6%
	Yes	18	4.4%

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No initiation by health professionals a reason not doing breast cancer examination?	NO	222	53.3%
	Yes	195	46.7%
Holy water a reason not doing breast cancer examination?			
	No	308	73.8%
	Yes	109	26.2%
Use of traditional medicine a reason not doing breast cancer examination?			
	No	384	92.1%
	Yes	33	7.9%
Respondents' negligence			
	No	327	78.4%.
	Yes	90	21.6%

Factors associated with early detection practice of breast cancer

Both simple and multivariable binary logistic regression binary logistic regression analysis was done to identify factors influencing early detection practice of breast cancer among women aged ≥15 in Bahir Dar city. On bi variable binary logistic regression analysis, educational status, occupational status, family history of breast cancer, personal history of breast cancer, knowledge, perception towards breast cancer early detection practice, age category, marital status and source of information to early detection practice of breast cancer were significantly associated early detection practice of breast cancer and selected as candidates for multivariable binary logistic regression analysis. Variables with p<0.25 were taken to multivariable binary logistic regression analysis. Family history of breast cancer, source of information to early detection of breast cancer, knowledge of breast cancer early detection practice, perception towards breast cancer early detection practice, marital status and occupational status were significantly associated with early detection practice of breast cancer through breast self-examination in the multivariable analysis. Women with family history of breast cancer were about 9 times more likely to practice breast self-examination compared to women without family history of breast cancer [AOR=9.70 (4.09-23.01)]. Women who heard about breast self-examination were about 4 times more likely to practice breast self-examination compared to those women who didn't hear about breast self-examination ⌈AOR=4.09, 95%CI (2.24-7.48)]. Those women who had good knowledge towards BSE were 5 times more likely to practice than women who had poor knowledge [AOR=5.01, 95%CI (2.84-8.82]., those women who had good perception towards breast early detection practice were about 4 times more likely to practice breast self-examination compared to women who had poor perception ⌈AOR= 3.96,95%CI((2.39- 6.55)⌋.

Women who were married were about 3.5 times more likely to have breast self-examination compared to women who were not married ⌈AOR=3.55,95%CI(1.84-6.68). women who were employed practiced breast self-examination about 6 times more likely compared to women not employed ⌈AOR= 6.26,95%CI(2.46 -15.74)⌋(Table3).

Table 3: Bi-variable and multivariable binary logistic regression analysis of variables associated with breast self-examination among women aged ≥15 in Bahir Dar city, Northwest Ethiopia, 2020.

Variable	Breast self-examination		COR, 95% CI	AOR, 95%CI	P-value
	yes	no			
Family history of breast cancer					
No	139	402	1	1	
Yes	61	15	11.76(6.47-21.36)	9.70 (4.09-23.01)	<0.001
Marital status:					

Not married	33 124	1	1	
Married	154 203	2.85(1.84-4.41)	3.55 (1.84-6.68)	.<0.001
Divorced	10 54	.69(.320-1.51)	.53(.19-1.48)	
Widowed	3 36	.31(.091-1.081)	.56(.11-2.68)	
Information about breast cancer?				
No	21 189	1	1	
Yes	179 228	7.06(4.3 2-11.55)	4.09(2.24-7.48)	.<0.001
Knowledge				
Poor knowledge	95 361	1	1	
Good knowledge	105 56	7.12(4.79-10.57	5.01(2.84-8.82)	<0.001
Perception				
Poor perception	52 285	1	1	
Good perception	148 132	6.14(4.21,8.96)	3.96(2.39- 6.55)	<0.001
				<0.001
Occupational status				
Employed	88 30	8.43(4.17-17.04)	6.26(2.46-15.88)	<0.001
Private work	55 154	1.02(.53-1.96)	.815(.34-1.92)	
House wife	41 187	.630(.32-1.22)	.28(.11-.74)	<0.001
Student	16 46	1	1	<0.001
				.229
Educational status				
No formal education	93 237	1	1	
Elementary school	30 63	1.21(.73-1.99)	1.74(.86-3.51)	.121
High school	43 102	1.07(.69-1.65)	1.10(.59-2.05)	.745
Higher education	34 15	5.77(3.01-11.10)	2.26(.82-6.19)	.111
				.769
Age category				
15-29	72 216	1	1	
30-39	57 128	1.33(.88-2.014)	.99(.53-1.86)	
40-49	44 31	4.25(2.50-7.24)	1.10(.67-4.88)	.239
50-59	19 25	2.28(1.18-4.38)	.82(.215-3.15)	.777
≥60	8 17	1.41(.58-3.40)	.96(1.82-5.10)	.966

4. DISCUSSION

The proportion of women who had breast self-examination was found to be 32.4% (95% CI: 28.5, 36.1) which is lower compared to the study done in Bahir Dar University students, Debretabor and Hawassa (20,41,42) which was 46.7%, and 71.2% respectively. This discrepancy might be due to the fact that study participants in these study area were health science students who have better awareness on breast self-examination than the other community members. on the other hand This finding was higher compared to similar study done in Kersa district, eastern Ethiopia in which only 3.6% of the participants had breast self-examination (17). The possible explanation for this difference might be due to better information access in Bahir Dar city as most (94.5%) of the respondents in kersa district were rural residents and illiterates

The main reasons reported for not practicing breast self-examination were lack of awareness (86.8%), lack of initiation by health professionals (45.8%), going to holy water (25.1%), fear of stigmatization (3.3%), use of traditional medicine (6.9%) and respondents' negligence (20%). Similarly, a study carried out in Jimma, Ethiopia indicated that the major reasons for not practicing breast Self-examination mentioned by the participants were negligence 37.4% followed by do not know how to do it 26.2%(30).

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In this study women who had good knowledge were only 26 % and women who have good knowledge had practiced breast self-examination about 4 times more likely compared to those women who had poor level of knowledge. This study is similar with study done in Northern Ethiopia (26). This similarity might be due to both studies are community based. women with good perception towards breast cancer were 4 times more likely to have breast self-examination compared to women with poor perception which is consistent with A study done in Western Ethiopia (23) this might be due to the fact that perception will affect actions or human behavior. Family history of breast cancer was significantly associated with breast self-examination. Women with family history of breast cancer were 9 times more likely to have breast self-examination compared to women without family history of breast cancer. Similar study done in Addis Ababa showed that women with family history of breast cancer had increased breast self-examination.

Women who married were 3.5 more likely to have breast self-examination compared to those women who were not married. this finding is similar with studies from other parts of Ethiopia (Hawasa, Addis Ababa), and Brazil (41, 44). The possible explanation behind is that women in these city had husbands with better educational level and will inform them about the risk of breast cancer. but in contrast with study in Northern Ethiopia which showed that marital status did not affect breast self-examination (26). This might be due poor awareness of husbands as the study is done in rural residents where husbands are farmers with no information about breast cancer.

In this Study, occupational status of women was significantly associated with breast self-examination. Women who were employed were about 6 times more likely to have breast self-examination compared to women who were not employed. Similarly a study done in Eastern China, Jordan and Ethiopia (Debretabor) indicated that Occupation was significantly associated with breast cancer screening (42). The justification behind this is that women who were employed are usually with good level of education having better awareness on breast cancer compared to women who are not employed as most them are usually housewives with low/no educational level lacking awareness about breast cancer.

Limitation of the study

As the source of information is participants self-report there might be a chance of information bias.

5. CONCLUSION

Breast self-examination practice was low in the study area.Knowledge of women on breast cancer; perception of women towards breast cancer, women's source of information about cancer; family history of breast cancer; marital status and occupation were significantly associated with breast self-examination.

Abbreviations

APHI Amhara Public Health Institute
BCAS Breast Cancer Screening
BDU Bahir Dar University
BSC Bachelor of Science
BSE Breast Self-Examination
CBE Clinical Breast Examination
ECA Ethiopian Cancer Association
MPH Master of Public Health
NGOS Non-Governmental Organizations
PI Principal Investigator
STI Sexually Transmitted Infection
WHO World Health Organization

Ethics approval and consent to participate

Ethical clearance was obtained from the Ethical review board of Bahir Dar University. Communication with different Bahir Dar city and kebele administrators was made through formal letter obtained from Bahir Dar University; Permission letter was taken from each kebele administrators .written informed consent was taken from each participant. Informed consent was obtained from a parent or guardian for participants under 16 years old. Participants were also informed that they could withdraw from the study at

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any time if they were not comfortable. In order to keep confidentiality, the data collection procedure didn't include respondent's name.

Authors' contribution

GW contributed in the generation of the topic, preparation of proposal, data collection, analyses and development of the manuscript. FG contributed in reviewing the proposal, assisted in data collection, analysis and critical review of final manuscript. Both authors have read and approved the manuscript for submission.

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Conflict of interest

The authors declare that they have no conflict of interest.

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Data and materials availability

All data associated with this study are present in the paper.

REFERENCES AND NOTES

1. CDC. Breast Cancer January 14, 2020 [Available from: https://www.google.com/search?q.
2. Wikipedia. Breast cancer January 2020, [Available from: https://en.wikipedia.org/wiki/Breast_cancer.
3. WHO. National cancer control programmes: policies and managerial guidelines 2002 [Available from: https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q.
4. AC S. Global Cancer Facts & Figures (2nd Edition) 2011 [Available from: https://oralcancerfoundation.org/wp-content/uploads/2016/03/acspc-027766.pdf.
5. Ishaaque S GN. Knowledge attitude practice on breast self-examination in a rural area in North Kerala. International Journal of Community Medicine and Public Health. . 2019; 6(5):2069.
6. A F. Breast cancer: Symptoms, causes, and treatment on August 12, 2019.
7. Center M SR, Jemal A. Global cancer facts & figures. Atlanta: American Cancer Society. 2011;3:1-52.
8. Mustafa M, Nornazirah A, Salih F, Illzam E, Suleiman M, Sharifa A. Breast Cancer: Detection Markers, Prognosis, and Prevention. 2016.
9. Khan TM LJ, Ming LC, Khan AH. Association of knowledge and cultural perceptions of Malaysian women with delay in diagnosis and treatment of breast cancer: A systematic review. Asian Pac J Cancer Prev. 6(13):5349-57. 2015;1.
10. Alemayehu A. level of awarness of mammography among breast cancer patients attending follow up at Tikur Anbessa specialized hospital, Addis Abeba, Ethiopia: Addis Ababa University; 2017.
11. Ng'ida FD, Kotoroi GL, Mwangi R, Mabelele MM, Kitau J, Mahande MJ. Knowledge and practices on breast cancer detection and associated challenges among women aged 35 years and above in Tanzania: a case in Morogoro Rural District. Breast Cancer: Targets and Therapy. 2019;11:191.
12. CDC. Breast Cancer September 11, 2018 [Available from: https://www.cdc.gov/cancer/breast/basic_info/what-is-breast-cancer.htm.
13. Hailu T BH, Hailu D, Berhe H. Knowledge of breast cancer and its early detection measures 2014 [Available from: https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q.
14. Gemta E, Bekele A, Mekonen W, Seifu D, Bekurtsion Y, Kantelhardt E. Patterns of breast Cancer among Ethiopian patients: presentations and histopathological features. J Cancer Sci Ther. 2019;11:2.
15. Hailu T, Berhe H, Hailu D, Berhe H. Knowledge of breast cancer and its early detection measures among female students, in Mekelle University, Tigray region, Ethiopia. Science Journal of Clinical Medicine. 2014;3:57-64.
16. Altay B, Avci IA, Rizalar S, Oz H, Meral D. Breast and cervical cancer knowledge and awareness among university students. Asian Pac J Cancer Prev. 2015;16(5):1719-24.
17. Dibisa TM, Gelano TF, Negesa L, Hawareya TG, Abate D. Breast cancer screening practice and its associated factors among women in Kersa District, Eastern Ethiopia. The Pan African Medical Journal. 2019;33.

18. Makurirofa L, Mavu J, Mangwiro P, Nyamuranga M. Women's Knowledge, Attitudes and Practices (KAP) Relating to Breast and Cervical Cancers in Rural Zimbabwe: A Cross Sectional Study in Mudzi District, Mashonaland East Province. American Society of Clinical Oncology; 2018.
19. Abay M TG, Zewdie E, Abraha TH, Grum T,. Brhane E. Breast self-examination practice and associated factors among women aged 20–70 years attending public health institutions of Adwa town, North Ethiopia. BMC research notes. 11(1):622. 2018.
20. Tewabe T, Mekuria Z. Knowledge and practice of breast self-examination among undergraduate students in Bahir Dar University, North-West Ethiopia, 2016: A cross-sectional study. Journal of Public Health in Africa. 2019;10(1).
21. Shallo SA, Boru JD. Breast self-examination practice and associated factors among female healthcare workers in West Shoa Zone, Western Ethiopia 2019: a cross-sectional study. BMC research notes. 2019;12(1):637.
22. Shiferaw N, Salvador-Davila G, Kassahun K, Brooks MI, Weldegebreal T, Tilahun Y, et al. The single-visit approach as a cervical cancer prevention strategy among women with HIV in Ethiopia: successes and lessons learned. Global Health: Science and Practice. 2016;4(1):87-98.
23. Negeri EL, Heyi WD, Melka AS. Assessment of breast self-examination practice and associated factors among female health professionals in Western Ethiopia: A cross sectional study. International Journal of Medicine and Medical Sciences. 2017;9(12):148-57.
24. Khan TM, Leong J, Ming LC, Khan AH. Association of knowledge and cultural perceptions of Malaysian women with delay in diagnosis and treatment of breast cancer: A systematic review. Asian Pac J Cancer Prev. 2015;16(13):5349-57.
25. Kantelhardt E, Zerche P, Mathewos A, Trocchi P, Addissie A, Aynalem A, et al. Breast cancer survival in Ethiopia: a cohort study of 1,070 women. International journal of cancer. 2014;135(3):702-9.
26. Legesse B GT. Knowledge on breast cancer and its prevention among women household heads in Northern Ethiopia. Open Journal of Preventive Medicine. 2014; [Available from: https://scholar.google.com/scholar?hl=en&a.
27. Chaka B, Sayed A-R, Goeieman B, Rayne S. A survey of knowledge and attitudes relating to cervical and breast cancer among women in Ethiopia. BMC public health. 2018;18(1):1072.
28. Society AC. . Global Cancer Facts & Figures(2nd Edition) ; 2011 [Available from: https://oralcancerfoundation.org/wp-content/uploads/2016/03/acspc-027766.pdf.
29. Makurirofa L MP, James V, Milanzi A, Mavu J, Nyamuranga M, et al. Women's knowledge, attitudes and practices (KAP) relating to breast and cervical cancers in rural Zimbabwe: a cross sectional study in Mudzi Distric 2019; [Available from: https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q.
30. Desta F, Workicho A, Atomsa A, Workneh D, Tebeje B. Knowledge, Practice and Associated Factors of Breast Self-Examination Among Female Students of the College of Public Health and Medical Science, Jimma University, Ethiopia. American Journal of Health Research. 2018;6(2):44-50.
31. Kebede SG. Assessment of Knowledge of Major Reproductive Cancers, Early Detection Measures and Associated Factors among Women of Gondar Town, North West Ethiopia, 2010. Journal of Obstetric, Gynecologic & Neonatal Nursing. 2011;40:S89.
32. Hamad H. Cancer initiatives in Sudan. Annals of oncology. 2006;17(suppl_8):viii32-viii6.
33. Farzaneh E, Heydari H, Shekarchi AA, Kamran A. Breast and cervical cancer-screening uptake among females in Ardabil, northwest Iran: a community-based study. OncoTargets and therapy. 2017;10:985.
34. Tilaki KH, Auladi S. Awareness, attitude, and practice of breast cancer screening women, and the associated socio-demographic characteristics, in Northern Iran. Iranian journal of cancer prevention. 2015;8(4).
35. Liu L-Y, Wang Y-J, Wang F, Yu L-X, Xiang Y-J, Zhou F, et al. Factors associated with insufficient awareness of breast cancer among women in Northern and Eastern China: a case–control study. BMJ open. 2018;8(2):e018523.
36. Aydogan U, Doganer YC, Kilbas Z, Rohrer JE, Sari O, Usterme N, et al. Predictors of knowledge level and awareness towards breast cancer among Turkish females. Asian Pac J Cancer Prev. 2015;16(1):275-82.
37. Doumit MA, Fares S, Arevian M. Knowledge, practices, and attitudes of women toward breast cancer in Lebanon. American Journal of Hematology/Oncology®. 2017;13(7).
38. Altwalbeh D, El Dahshan M, Yassin R. Factors influencing delayed presentation of breast cancer among Saudi women. International Journal of Science and Research. 2015;1(4):967-74.
39. Trupe LA, Rositch A, Dickerson L, Lucas S, Harvey SC. Knowledge and attitudes about breast cancer in limpopo, South Africa. Journal of global oncology. 2017;3(5):509-14.
40. Godfrey K, Agatha T, Nankumbi J. Breast cancer knowledge and breast self-examination practices among female university students in Kampala, Uganda: a descriptive study. Oman Medical Journal. 2016;31(2):129.
41. Jemebere W. Practice of Breast Self-Examination and Associated Factors among Female Nurses of Hawassa

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University Comprehensive Specialized Hospital, South Ethiopia in 2018. South Ethiopia in. 2018.

42. Dagne AH AA, Assefa EM. Assessment of breast self-examination practice and associated factors among female workers in Debre Tabor Town public health facilities, North West Ethiopia, 2018: Cross-sectional study. PloS one. 2019;14(8).
43. Freitas ÂGQ, Weller M. Knowledge about risk factors for breast cancer and having a close relative with cancer affect the frequency of breast self-examination performance. Asian Pacific Journal of Cancer Prevention. 2016;17(4):2075-81.
44. Freitas ÂGQ, Weller M. Women's knowledge about risk factors of breast cancer in a Brazilian community. Women & health. 2019;59(5):558-68.
45. Said SA, Tamimi Y, Weli AM, Akhtar MS. A pimarane diterpene from Juniper servaschanica inhibits growth of Ovarian and Breast Cancer Cells. Drug Discovery, 2021, 15(35), 1-5
46. Alghamdi T, Abuobaida E.E. Abukhelaif, Abdullah A. S. Alzahrani, Abdulraheem A. A. Alghamdi, Ziad E.S. Alzahrani, Majed A. Almuafa, Muteb S.M. Alrobai, Abdulmohsin A.A. Alghamdi, Areej E.S. Alzahrani. Perception and awareness of Albaha University female students towards breast self-examination and breast cancer: A cross-sectional observational study. Medical Science, 2020, 24(102), 673-679
47. Alrashid FF, Idris SA, Elamin AAE, Alnajib AMA, Elmisbah HOI, Hussien TMA. Perspicacity of medical students towards breast self-examination. Medical Science, 2021, 25(108), 440-446

ISSN 2278–5469 EISSN 2278–5450 I OPEN ACCESS