Original Article

What women know about breast cancer: In the case of Ethiopia

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ABSTRACT

Background & Aim: Breast cancer is the leading cause of death among women worldwide. Good knowledge of breast cancer enhances timely screening, early detection, and treatment; however, women's knowledge about breast cancer is very low. Thus, this study assesses the level of knowledge regarding breast cancer among women of childbearing age living in Jimma town.

Methods & Materials: A community based cross-sectional study was conducted in Jimma town in 2018. Respondents were identified using multistage sampling methods. Data was collected using a standard questionnaire developed by cancer research UK and used in different languages in many parts of the world. Multiple logistic regression analyses were used to identify a variable with a significant association based on OR, with 95%CI and P-value of less than 0.05.

Results: Out of 724 respondents, 686 gave their complete responses. The majority of 496 (72.3%) of the respondents were young adults with a mean age of 31, and about 307 (44.8%) of them had completed secondary school (9-12). Only 35% of respondents knew breast cancer; more specifically, 20% had knowledge of risk factors, 45% had knowledge of signs and symptoms, and 39 % had knowledge of screening methods. Maternal age, educational level, marital status, occupation, source of information, and monthly income, and positive family history of breast cancer were significantly associated with women's breast cancer knowledge.

Conclusion: Just over one-third (35%) of women are knowledgeable about breast cancer. However, women's breast cancer knowledge plays a great role in controlling before reaching an advanced stage.

Introduction

Breast cancer is the most common leading cause of death among women worldwide; it is a compilation of distinct malignancies in the mammary glands (1). Even though it varies from country to country, Morbidity and mortality related to breast cancers are generally increasing from time to time. In 2018 alone, globally, an estimated 2,088,849 million cases and 626,679 deaths registered due to breast cancer, which accounts for 11.6% of cancer cases and 6.6% of cancer deaths among women worldwide (2).

Estimates of age-standardized incidence rates of breast cancer (per 100,000 women) are 38.9 in southern Africa, 38.6 in western Africa, 30.4 in eastern Africa, and 26.8 in central Africa (3). In Ethiopia, breast cancer is the first leading cancer among females, with 33% of all cancers identified (4). According to WHO country profiles in 2014, 12,956 women were diagnosed with breast cancer, and 26,200 women died of breast cancer in Ethiopia (5). One of the main reasons for the high cancer mortality in sub-Saharan Africa is late diagnosis due to poor public knowledge and awareness about cancer (6). Cancer awareness is important to increase risk reduction behaviors, promote timely cancer screening, enhance case early detection, and ultimately reduce the cancer burden (7). The low survival rates in less developed countries can be explained mainly by the lack of early detection programs, resulting in a high proportion of women presenting with late-stage disease and the lack of adequate diagnostic and treatment facilities (8).

Even though breast cancer causes are not fully known among women at the community level (9), researchers have identified a

number of factors that increase the likelihood of getting breast cancer. Established risk factors for breast cancer are familial history of breast cancer, prolonged exposure to endogenous estrogens, early menarche, late menopause, late age at first childbirth, Exogenous hormone, and oral contraceptive and hormone replacement therapy. Breastfeeding, weight control, physical activity, and smoking avoidance also have a protective effect (10). The American Cancer Society recommends mammography, Clinical Breast Examination (CBE), and Magnetic Resonant Image (MRI) to detect breast cancer by depending on a woman's age. However, Breast self-examination is one of the cheapest screening methods for early detection in developing countries that women can do by themselves, in private, in their schedule. Mammography is a low-dose x-ray procedure that allows visualization of the internal structure of the breast. MRI screening, in addition to mammography for women at high lifetime risk, begins at 30 years of age (11).

Screening, early detection, and prompt management is the key strategy in reducing breast cancer-related mortality and distant complication. Early diagnosis usually results in successful treatment before its metastasis and signifies a better outcome. Women themselves can detect more than 90% of breast cancer cases through BSE (12). A woman who knew about breast cancer and its screening method can benefit from practicing BSE that can help her discover lumps in the breast (13). Research conducted in northern Ethiopia showed that only 12.7% of participants were knowledgeable about breast cancer (14).

In a country like Ethiopia, where the illiteracy rate is very high and health-seeking behavior is poor, it is difficult to detect breast cancer before it reached the advanced stage. In such a situation, information on women's breast cancer knowledge is very important to design and develop information, education, and communication materials (15). Several studies have been conducted to determine the knowledge of university students (16, 17) and health care providers (18). Even though there

was a study on women's knowledge of breast cancer in northern Ethiopia, it's not comprehensive enough to provide up to date information at a community level in all parts of the country. Thus, this study aims to determine overall breast cancer knowledge and associated factors among women of childbearing age. The study aimed to describe knowledge of breast cancer risk factors, signs and symptoms, and screening methods among women of childbearing age in Jimma town.

Methods

A community-based cross-sectional study design study was conducted in Jimma town, Oromia regional state, southwest Ethiopia from March 01 to March 31, 2018. Jimma town is located at 352 km southwest of Addis Ababa. Based on data 2016 from the town administration, it has a total population of 195,443. For the administrative reason, the town divided three sub-city and 17 kebeles. The town has 128 health institutions, one referral hospital, one governmental and one private hospital, 4 governmental health centers, 55 private clinics, 25 pharmacies, 36 drug stores, and 5 drug distributors providing health service in Jimma city. There are two hospitals where breast cancer surgery is performed, and one oncology center is built.

All randomly selected women of childbearing age group living in selected kebeles (neighborhood) of Jimma town were our study population. The required number of samples from each kebele was selected by systematic random sampling technique. All women who resided at least six months in the selected kebeles and not critically ill to give responses were included in the study.

Knowledge of breast cancer is our dependent variable. Independent variables include; Socio-demographic characteristics (Age, Occupation, Educational status, Income, Marital status, and Religious), Family history of breast cancer, personal history of breast cancer, and source of information.

The sample size was determined using a sample size formula for estimating a single

population proportion with a margin of error of 5%, confidence interval of 95%, and assumption of design effect of 2 and expected non-response rate of 5 %. It is calculated based on the proportion of knowledge of breast cancer, 31.1% (16).

After adding 10% for non-response rate and 2 of the design effects, the final sample size was 724.

We used lists of kebeles developed by the city administration. Then five kebeles were randomly selected, and a predetermined study sample was proportionally allocated to the women population size of randomly selected kebeles. The required number of samples, from each kebele, was selected by systematic random sampling technique. The first women on the list were selected randomly.

Data was collected using a standard questionnaire developed by cancer research UK and used in different languages in many parts of the world (19). The tool has four domains; Domain I Socio-demographic characteristics, domain II Knowledge of breast cancer risk factors, domain III Knowledge of breast cancer sign and symptom, domain IV Knowledge of breast cancer screening methods, which contains 11, 15, 11, and 6 items respectively. The English version questionnaire was translated to the local language, Afaan Oromo and Amharic, by experts and then translated back to English. Data collection was carried out using ten trained Bsc Nurse and two supervisors with previous data collection experience. The training was provided for the data collectors and the supervisor for two days by the research team. The training sessions are the study's objective, the meaning of each question, techniques of interview and filling the questioner, and how to keep confidentiality of information obtained from respondents.

Knowledge of breast cancer is women's ability to know important information related to breast cancer risk factors, signs and symptom/early warning signs, and screening methods.

Knowledge level: Respondents who answered 16 (50%) items and above out of a total of 32 items of the breast cancer awareness measurement questionnaire were considered knowledgeable. Those who scored below 50% were considered as not knowledgeable. Similarly, similar criteria were used to judge the knowledge of specific domains of breast cancer knowledge, breast cancer risk factors, breast cancer early warning signs, and breast cancer screening methods (16).

To assure the data collection tool's quality, Pilot-test was conducted on 10 % of the sample at serbo town to identify any weakness in the organization and structuring of the research instruments. The filled questionnaire was checked for completeness by the supervisor every day.

The ethics committees approved this study of the Institutional Review Board of Jimma University. A formal letter from the Institute of health science was submitted to Selected Kebeles and Jimma town municipality to obtain their cooperation, and written informed consent was obtained from all the study subjects.

After checking completeness, data were entered using Epi Data version 3.1 and exported to Statistical Package for Social Sciences (SPSS) version 20 for analysis. There were thirty-two questions aimed to assess breast cancer knowledge, and a score 1 was given for correct response, and 0 was given for subjects who answered incorrectly or ''I don't know''. All variables with a p-value of less than 0.25 in bivariate analysis were considered candidates for multiple logistic regression analyses to identify a variable with a significant association based on OR, with 95%CI and P-value of less than 0.05.

Results

Socio-demographic characteristics of the respondents

Out of 724 planned, 686 respondents gave a complete response, which provides a response rate of 95%. Regarding respondent characteristics, the majority 72.3% of the respondents were young adults with mean age 31, High percent, 44.8% of them had

completed secondary school (9-12), and one-tenth of the participants had no formal education, Majority 71.1% of the study participants were married. In comparison, just about 10.6% were Single. Concerning occupation, 50% of the respondents were farmers and housewives. More than half, 62.1% of the respondents were earned <=1380 Ethiopian birr (40 Dollar) monthly, while a small number, 7.1% were earned greater than 2872 Ethiopian birr (82 Dollar) monthly. Only 11.8% of study subjects had a positive breast cancer family, 35.8% from the mother's side. Similarly, 10.9% of study subjects were having a positive Personal History of breast cancer. (Table 1)

Table 1. Distribution of respondent's background characteristics on breast cancer among childbearing age group women of Jimma town, Oromia region, southwest Ethiopia,2018 (N=686)

Variable Response category		N	%
Age	21-35	496	72.3
	36-49	190	27.7
Educational status	Secondary education (9-12)	307	44.8
	Primary school (1-8)	169	24.6
	College and above	129	18.8
	No formal education	81	11.8
Marital status	Married	488	71.1
	Single	73	10.6
	Widowed	62	9.0
	Divorced/separated	63	9.2
Occupation	Employed	318	46.4
	Housewife	211	30.8
	Farmer	128	18.7
	Private business	29	4.2
Religion	Muslim	295	43.0
	Orthodox	223	32.5
	Protestant	127	18.5
	Catholic	22	3.2
	Other*	19	2.8
Ethnicity	Oromo	390	56.9
	Amhara	100	14.6
	Tigre	30	4.4
	Gurage	43	6.3
	Other**	123	17.9
Age of menarche	<=12	94	13.7
	>12	592	86.3
family history of breast cancer	Yes	81	11.8
	No	605	88.2
Family with a history of breast cancer	Mother	29	35.8
	Sister	19	23.45
	Grandmother	11	13.6
	Aunt	19	23.4
	None	3	3.7
Personal Hx of breast cancer	Yes	75	10.9
	No	611	89.1
Monthly income	Low income	426	62.1
	Middle income	211	30.8
	High income	49	7.1

*Waqefata, none **Kefa, Silte, Dewuro, Yem

Knowledge of breast cancer risk factors

Concerning the overall knowledge of breast cancer risk factors, only one-fifth of the respondents are knowledgeable.

However, specifically; Smoking, Alcohol consumption, and exposure to high-dose radiation were the most common risk factors listed by most of the respondents. (Table 2)

Knowledge of breast cancer sign and symptom/early warning signs

Concerning the knowledge of breast cancer, signs and symptom domain, about 309 (45.0%) of the respondents were knowledgeable. More than half the respondents were mentioned; breast swelling, the lump under the armpit, skin redness, breast wound, and Change in the breast's position as signs and symptoms of breast cancer. (Table 3)

Knowledge of breast cancer screening methods

Regarding knowledge of breast cancer screening methods, the greater proportion of respondents, 63.8%, knew breast self-examination and 59% clinical breast examination screening methods; however, only one-fifth of respondents, 20.6% were known mammography as screening methods. (Table 4)

Table 2. Respondents knowledge level of breast cancer on breast risk factors Jimma town, southwest Ethiopia, 2018 (N=686)

Variable	N	%
Increasing age	248	36.2
Positive personal history of breast cancer	277	40.4
Positive family history of breast cancer	168	24.5
Smoking	375	54.7
Exposure to another persons' cigarette smoker	279	40.7
High-fat diet	138	20.1
Having first child late	169	24.6
Early-onset of menarche	146	21.3
Late menopause	202	29.4
Overweight	267	38.9
Alcohol consumption	336	49.0
Exposed to radiation	300	43.7
Long term use of contraceptive pills	280	40.8
Hormonal replacement therapy	134	19.5
Lack of physical activity	225	32.8

Table 3. Distribution of respondents' knowledge of breast cancer signs and symptoms among childbearing age group women of Jimma town, Oromia region, southwest Ethiopia, 2018 (N=686)

Variable	N	%
Breast or armpit Pain	344	50.1
Change in the position of the breast	366	53.4
Change in the size of the breast	333	48.5
Breast redness/breast skin change	384	56.0
Breast wound	376	54.8
Discharge	356	51.9
Change in the shape of the breast	308	44.9
Pulling in of the nipple	313	45.6
Lump under armpit	384	56.0
Breast lump/swelling	406	59.2
Breast rash	290	42.3

Table 4. Distribution of respondent's knowledge of breast cancer screening methods among childbearing age group women of Jimma town, Oromia region, southwest Ethiopia, 2018 (N=686)

Variables		N	%
Breast self-examination	Yes	438	63.8
	No	248	36.2
The recommended age to start BSE	Yes	323	47.1
	No	363	52.9
Know the frequency of BSE	Yes	313	45.6
	No	373	54.4
Clinical breast examination	Yes	405	59.0
	No	281	41.0
Mammography	Yes	365	53.2
	No	321	46.8
Know age to start mammography	Yes	145	20.6
	No	545	79.4

Table 5. Respondents knowledge level of breast cancer risk factors, sign and symptom and screening methods, and overall knowledge level Jimma town, southwest Ethiopia, 2018 (N=686)

Variable		N	%
Knowledge of breast cancer risk factors	Not knowledgeable	549	80.0%
	Knowledgeable	137	20.0%
Knowledge of breast cancer sign and symptom	Not knowledgeable	377	55.0%
	Knowledgeable	309	45.0%
Knowledge of breast cancer screening methods	Not knowledgeable	417	60.8%
	Knowledgeable	269	39.2%
Overall knowledge of breast cancer	Not knowledgeable	445	64.9%
	Knowledgeable	241	35.1%

Overall Level of Knowledge of Breast Cancer

Only 35% of the respondents were knowledgeable about the overall knowledge of breast cancer. Specifically, the respondents had a better knowledge score of 45% on breast cancer signs and symptoms, and only one-fifth of the respondents were knowledgeable about breast cancer risk factors. (Table 5)

Factors associated with knowledge of breast cancer

The association of different background factors of the respondents with breast cancer knowledge was investigated using bivariate analysis. The analysis cheeked each variable with a bivariate analysis for all variables with a P-value of less than 0.25 separately. Variables were age, educational status, marital status, occupation, age at first menarche, information about breast cancer, Family history of breast cancer, personal history of breast cancer, and Monthly income, but the age at first menarche and personal history of breast cancer was not significant in the bivariate analysis; therefore, they were not candidates for multiple logistic regression. Finally, seven variables were candidates for multiple regression analysis.

Women age 35 years and below were 3.6 times (AOR = 3.6 (95% CI: 2.2, 5.9), more likely knowledgeable than women older than 35 years. Similarly, the educational level of participants has a significant association with knowledge of breast cancer. Women who completed college and above were 5.6 times (AOR=5.6 (95% CI: 2.5, 12.7), more likely knowledgeable than women who had no formal education. Also, single women were 4.3 times (AOR=4.3(95%CI: 1.7, 11) more likely knowledgeable than divorced/separated women. Employed women were 3.5 times (AOR = 3.5 (95% CI: 1.1, 11.1), more likely knowledgeable than housewife women. Those respondents who heard about breast cancer were 29.7 times (AOR=29.7(95% CI :(11.6, 76.3), more likely knowledgeable than those who had not heard any information about BC. Regarding monthly income, women who earned less than 1380(low income) were 67 times (AOR=.3

(95% CI: (0.1,0.7) less likely knowledgeable than women who earned greater than 2872 Ethiopian birr (82 Dollar)(high income) and women who had positive family history

were two times (AOR=2 (95% CI: (1.18,3.6) more likely knowledgeable than those who had no positive family history. (Table 6)

Table 6. The association between socio-demographic and knowledge of breast cancer of respondents among childbearing age group women of Jimma town, southwest Ethiopia, 2018

Variables		Knowledge level		P-value
		Not knowledgeable	Knowledgeable	
Age	21-35	288	208	.00*
	36-49	157	33	10.0
Educational status	No formal education	59	22	1.00
	Primary school	128	41	.18
	Secondary education	170	137	.00*
	College and above	88	41	.00*
Marital status	Divorced/separated	44	19	.00*
	Single	33	40	.00*
	Married	315	173	1.00
	Widowed	53	9	.002*
Occupation	House wife	142	69	.83
	Employed	16	13	.00*
	Private Business	197	121	1.00
	Farmer	90	38	.03*
Heard about breast cancer?	No	149	6	.42
	Yes	296	235	.28
Age of menarche	<=12	57	37	1.00
	>12	388	204	.22
Family history of BC	No	404	201	1.00
	Yes	41	40	0.01*
Personal history of BC	No	394	217	1.00
	Yes	51	24	.24*
Monthly income	High income	29	20	1.00
	Middle income	117	94	.25
	Low income	299	127	.00*

*Significant at P-Value<0.05 in multiple logistic regression

Discussions

This study's findings confirmed that only 35% of the women of childbearing age living in Jimma town were knowledgeable about breast cancer's overall knowledge. However, they have a relatively better knowledge score on the breast cancer sign and symptom and breast cancer screening methods than breast cancer risk factors. The fact is that only 35% of the women had overall knowledge of breast cancer, suggests a number of unrecognized breast cancer cases in the early stage. This implies that many patients with breast cancers do not benefit from the importance of early case detection and treatment.

The findings of the current study of the overall knowledge of breast cancer are comparable to the study reported from; Saudi Arabia (35.6%) (20) and Northern Ethiopia

(34.7%) (14). Whereas it is lower than the study reported from China (46.7%) (21), Jordan (51.8%) (22), and Addis Ababa-Ethiopia (57.8%) (23). These differences can be attributed to the types of study participants and the setup of the study. For instance, the current study involved all women of childbearing age in the community, regardless of their occupation and educational status. However, those studies were involved only female health Care providers and students only.

Other important findings of the current study are variations on a score of different breast cancer knowledge dimensions, knowledge of breast cancer risk factors (20%), breast cancer sign and symptom (45%), and breast cancer screening methods (39.2%). This variation on a score of different breast cancer knowledge dimensions also reported studies from northern Ethiopia (23)

and Jordan (22). This indicates variations on a score of different breast cancer dimensions seem similar between different countries and within the same countries.

More specifically, this study found that 20% of respondents were knowledgeable about breast cancer risk factors; further analysis on specific areas of breast cancer risk factors such as smoking (57%), alcohol consumption (49.0%), high-dose radiation exposure to the chest (43.7%), positive personal history (40.4%) and later age (36.2%) are areas of better knowledge reported by women's regarding breast cancer risk factors. These areas of breast cancer risk factors were also similarly mentioned in other studies from Jordan (24), China (22), Nigeria (25), Addis Ababa, Ethiopia (18). However, it is contrasted with reports from; Pakistan (26), India (27), Eastern China (21), and South Egypt (28) mentioned other better areas of breast cancer risk factors knowledge, such as; heredity, late marriage, early menarche, late menopause, HRT, long term use of contraceptives and consuming a high-fat diet. The variation may be due to differences in the study area, accessibility to information, and socio-cultural factors.

This study's knowledge of breast cancer signs and symptoms is where study subjects had better scores (45%). This implies the information they got from different sources, mainly focused on breast cancer signs and symptoms. Apart from this, it can be explained by women that may easily detect abnormalities in their breast. Similar findings were also reported from studies in Northern Ethiopia (14), south Egypt (28), and Kuwaiti (29).

In the current study, breast cancer screening method knowledge is one of the areas of knowledge deficit (39.2%) among women of childbearing age of Jimma town. This may be due to the unavailability of a breast cancer screening center in the area. This study is slightly lower as compared with a similar study conducted in Addis Ababa, Ethiopia (18), and Mekelle University Ethiopia (16). This discrepancy may be related to the fact that health care providers and students were more

knowledgeable than other classes of women and easy access to health information.

In the current study, women who complete college and above were 5.6 times more likely knowledgeable than women who had no formal education. The association between women's educational level and better knowledge of breast cancer is also supported by a study conducted in Saudi Arabia (20) and eastern China (21). This shows the influence of education in promoting the knowledge level of breast cancer.

This study also showed that single women were 4.3 times more likely knowledgeable than divorced/separated women. This finding contrasts with a study conducted in Kuwaiti (29), and Ethiopia (14) showed that married women were more knowledgeable than divorced/widowed women. This difference may be due to single women giving attention to their health and more access to information than married women because married women are more focused on family-related issues than their physical health.

Regarding monthly income, the current study found that women who earned less than 1380 Ethiopian birr (40 Dollar) (low income) were 67 times less likely knowledgeable than women who earned greater than 2872 Ethiopian birr (82 Dollar) monthly. This is almost similar to a study conducted in eastern china in which women who had high annual family income were more aware of BC (21). This implies that income plays a major role in increases women's awareness level. The current study also revealed that employed women were 3.55 times more likely knowledgeable than housewife women. This result is consistent with a study done in Pakistan (26) that employed women/working women were more knowledgeable than unemployed women

Several factors can limit this study's findings; It is difficult to establish the cause-effect relationship, didn't include men, and absence of information on breast cancer attitude and practice of breast cancer screening service utilization. However, the current study is very comprehensive than any

other study conducted in Ethiopia, especially at the community level, because it assessed the knowledge of women about breast cancer through three main domains; breast cancer risk factors, sign and symptom, and screening methods and also, the use of community-based knowledge survey with large sample size could be taken as strong side of this study.

Conclusion

Even though there is variation in the three dimensions of breast cancer knowledge, breast cancer knowledge of women of childbearing age of Jimma town is generally low (35%). From this study, we can also conclude that; Maternal age, educational status, marital status, occupation, information about breast cancer, Family history of breast cancer, and Monthly income are significantly associated with the women's knowledge of breast cancer.

Conflict of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

Acknowledgment

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