

# **Determinants of breast cancer screening among women above 18 Years in Banaadir region Mogadishu, Somalia**

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## **Abstract**

**Background:** In Somalia, data on breast cancer screening is sketchy because the Ministry of Health has limited documented cases of BCS. Somali women remain significantly under-screened for breast cancer due to educational, financial, access, and cultural barriers among others. A majority do not even know how to do BSE. This prompted the researcher to carry out a study on the determinants of BCS among women above 18 years in the Banaadir region of Mogadishu, Somalia.

**Methods:** The study used a cross-sectional research design that employed quantitative methods for data collection and analysis. A sample size of 217 women from 18 years of age and above were enrolled from households using systematic and simple random sampling. Data was collected using a questionnaire

**Results:** Out of the 217 respondents that participated in the study, a minority of 41 (19%) screened for BC while the majority 176 (81%) never screened for BC. After adjusting for confounding, statistically significant factors were; social demographic factors included; having 30-39 years (AOR 10.4, P=0.006), being single (AOR 14.9, P=0.048), having secondary education (AOR 138.4, P=0.005), and having 1-2 children (AOR 44.4, P=0.007) and not believing in cultural beliefs against clinical BCS (AOR 112.9, P=0.001). Knowledge factors included; knowing anybody who suffered from BC (AOR 99.95, P=0.026) and family history of BC (AOR 99.98, P=0.003). Among health-system factors; being frequently given brochures/handouts or videotapes on BCS at the MCHC (AOR 13.7, P=0.001) was statistically significantly associated with uptake of BCS services among women.

**Conclusion:** In conclusion, uptake of BCS services was associated with being of young age, single, having lower levels of education, having fewer children, not believing in cultural beliefs against BC, knowing anybody who suffered from BC, family history of BC, and frequent receiving of brochures/handouts or videotapes on BCS at the MCHC. The study recommends that women be health educated about BCS.

**Keywords:** Breast Cancer Screening, Somalia

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## **Background**

Breast cancer is the leading cause of cancer-related deaths in women worldwide. GLOBOCAN estimated about 1.7 million new cases of breast cancer diagnoses worldwide and about 522,000 deaths in 2012. The burden of breast cancer mortality lies in the developing low-income and middle-income countries, where about 70% of such deaths occur (Lukong, Ogunbolude, & Kamdem, 2017).

It is estimated that over 270,000 and 508,000 women die from CC and BC each year globally of whom approximately 85% and 58%, respectively are women living in low-income and middle-income countries (LMICs) (World Health Organization, 2015c; World Health Organization, 2015b).

Breast cancer is the second most common cancer in the world and, by far the most frequent cancer among women with an estimated 1.67 million new cancer cases diagnosed in 2012 (25% of all cancers). A slight majority of cases occur in women in

less developed regions. Incidence rates vary nearly fourfold across the world regions, with rates ranging from 27 per 100,000 in Middle Africa and Eastern Asia to 96 in Western Europe (Ferlay, 2010).

Breast cancer ranks as the fifth cause of death from cancer overall (522,000 deaths) and while it is the most frequent cause of cancer death in women in less developed regions (324,000 deaths, 14.3% of total), it is now the second cause of cancer death in more developed regions (198,000 deaths, 15.4%) after lung cancer. The range in mortality rates between world regions is less than that for incidence because of the more favorable survival from breast cancer in (high-incidence) developed regions (Ferlay et al., 2015).

Breast cancer (BC) was a leading malignant tumor regarding incidence, prevalence, and mortality among women worldwide as well as in Europe in 2018. The worldwide incidence of female BC was 2 million while BC was responsible for more than 0.6 million fatalities in 2018. Within Europe, BC incidence was 522,513 with more than 137,707 BC-related fatalities in 2018 (Kissné, Gede, Szakács, & Kiss, 2021).

Breast cancer is the uncontrolled or abnormal growth of breast cells that spread, multiply, and also affect other body parts in women (Centre for Disease Control (CDC), 2021). Breast cancer is one of the three major cancers observed in women of both developed and developing countries (WHO, 2021). Worldwide, one among the four women diagnosed with cancer has breast cancer and among frequently diagnosed cancer types, breast cancer lies second with an incidence of 11.9%. Predictions according to the International Cancer Agency stated that breast cancer incidence has increased to 20% and breast cancer mortality has increased to 14% from the 10.9% (Ferlay *et al.*, 2013).

In the United States of America, breast cancer is the most frequent non-skin cancer in women, and it is also the second-largest cause of cancer death. The death rate from breast cancer in the United States had stagnated for more than four decades before the advent of widespread mammographic screening in the mid-1980s. The death rate has decreased by at least 38% since 1990. Early detection by mammography is responsible for a large part of this trend (Monticciolo *et al.*, 2017). In China, approximately 187,213 new cases of breast

cancer were diagnosed, with 47,984 deaths attributed to the disease in 2012 (Youlten *et al.*, 2014), although breast cancer incidences increased dramatically, it was lower than those registered in Western countries. Furthermore, in China, the mean age of women diagnosed with breast cancer is 45–55 years of age, which is younger than those who typically receive the diagnosis in Western countries (Fan *et al.*, 2014).

Breast cancer is the most common cancer among women in the United Kingdom (UK) accounting for about 15% of cancer deaths. The National Breast Cancer Screening Programme in the UK was introduced in 1988 to assist with early detection and better management of breast cancer. Black and Minority Ethnic (BME) women however have a low uptake of the National Breast Screening program when compared to their White counterparts (Bamidele, *et al.*, 2017).

The International Agency for Cancer Research (IARC) states that breast cancer incidence is high in central and west Africa (Ferlay *et al.*, 2015). Although the incidence of breast cancer appears to be relatively low in Sub-Saharan Africa, survival from the disease is also generally poor in the region, with high mortality recorded in many settings (Ferlay *et al.*, 2015; Jedy-Agba *et al.*,

2016). It was then indicated that the situation arises from the problems experienced by women in developing countries to access breast cancer screening, diagnosis, and treatment services to reduce breast cancer mortality among women (Pace and Shulman, 2016). Corresponding to these statistics, Middle East and North Africa have a total of 30 % breast cancer cases thus dominating the cancer pattern in Africa (Globocan, 2012). However, in Nigeria, the trends in breast cancer cases were declining, and more so the frequency at which patients visit the hospital has risen, together with reduced early detection methods for BC and also increased knowledge about the usefulness of breast cancer examination (Jedy-Agba *et al.*, 2012).

In a study done in Kenya in 2018, 7.4% of women were diagnosed with stage I cancer, 33.7 % with stage II cancer, 29.7% with stage III cancer, and 21% with stage IV cancer at Kenyatta Hospital (Othieno-Abinya *et al.*, 2018; Ministry of Health, Kenya, 2019). While in Addis Ababa longer hours were taken for a cancer patient to be diagnosed according to a report by (Gebremariam *et al.*, 2019). In addition to these factors, the proportion of breast cancer in most Sub-Saharan African countries is not adequately

documented and does not accurately depict the burden of the disease (Qiao, Li and Hu, 2011; Omaka-Amari *et al.*, 2015).

To estimate cancer incidence and mortality rates, the world was divided into 20 areas. East Africa includes Somalia. It is evaluated that approximately 22.4% of breast cancer cases in Africa occur in the East Africa region (Bray *et al.*, 2020). Since there is no national cancer registry system in Somalia, the population-based breast cancer incidence is not known. Although (Baş *et al.*, 2017) conducted the first study in 2017 to evaluate the cancer incidence in Somalia, especially in the capital Mogadishu and its surroundings, however, the findings were insufficient to illustrate the true situation for the whole population due to the small number of patients.

Several alternatives to increase accessibility to breast cancer screening services especially in developing countries is limited, however, the provisions are not fully implemented because of the poor health systems, attitudes, low awareness and knowledge among women linked with accessibility to breast cancer screening services (Pace and Shulman, 2016; Silverstein, Sood and Costas-Chavarri, 2016). The most practical solution to increase access to breast

cancer screening services is to increase awareness and knowledge so that women can be able to judge their risks and take applicable measures. This study, therefore, seeks to determinants of breast cancer screening among women in the Banaadir region of Mogadishu, Somalia.

## **Methods**

### **Study design**

This study used a cross-sectional survey research design. The design is preferred to obtain diverse information about the determinants of breast cancer screening among women, data was collected at on specific point in time and it also aimed at providing quantified and numerical data from women of reproductive age under study.

### **Setting**

Banaadir is an administrative region in southeastern Somalia. It covers the same area as the city of Mogadishu, which serves as the capital. It has the highest percentage of residents who are internally displaced persons among the regions of Somalia, because of its relative safety, economic opportunities, and availability of resources. It comprised of 1,650,227 residents of which

50.7% are female and come from 303,021 households

### **Statistical analysis**

The data collection instruments were coded and data were manually checked and entered using Epi-Info version 7.0. It was cleaned and edited accordingly and exported to SPSS version 26 for analysis. Data was rechecked for missing values before analysis.

Descriptive statistics, numerical summary measures, frequencies, proportions, distributions were used to check for normality and also diagrams for describing the study population about relevant variables. Cross tabulation and logistic regression analysis were carried out to determine the association between independent variables and BCS among the study participants with a 95% confidence interval. Those variables associated at binary logistic regression with a significance level ( $p < 0.05$ ) were entered into multiple logistic regressions to identify determinants by controlling the possible confounding effect. Statistical significance was declared at a  $p$ -value of 0.05 and the predictors of the outcome variable were identified accordingly.

## Results

*Table 1: Demographic factors women in Banaadir region Mogadishu, Somalia* *N=217*

<b>Variable</b>	<b>Category</b>	<b>Frequency</b>	<b>Percentage</b>
Age	18-29 years	39	18.0
	30-39 years	63	29.0
	40-49 years	92	42.4
	50 years and above	23	10.6
Marital status	Married	153	70.5
	Single	51	23.5
	Divorced	13	6.0
The highest level of education attained	Non	17	7.8
	Primary	55	25.3
	Secondary	71	32.7
	College/Training Institute	50	23.0
	University	16	7.4
	Apprenticeship	8	3.7
Number of children respondents had	No children	22	10.1

ever given birth to	1-2 children	77	35.5
	3-4 children	83	38.2
	5 children and above	35	16.1
Needed to ask for permission to go for BCS	Yes	132	61
	No	85	39

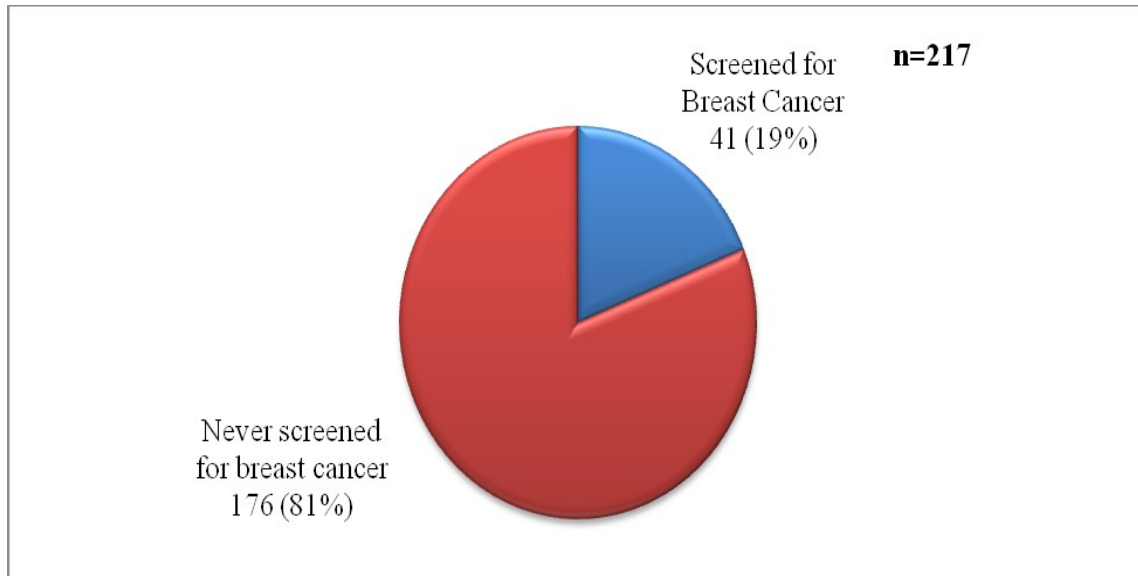
**Source: Primary Data 2021**

Table 1 above shows results from the social-demographic factors influencing BCS among women indicated that out of the 217 respondents that participated in the study; the majority; 92 (42%) were between 40-49

years, 153 (70%) were married, 71 (33%) had secondary education as the highest level of education attained, 83 (38%) had 3-4 children and 132 (61%) reported that women needed to ask for permission to go for BCS.

***Figure 1: Prevalence of Breast Cancer Screening among women n=217***





***Source: Primary Data 2021***

From figure 1 above, out of the 217 respondents that participated in the study, the results of the study showed that a minority of 41 (19%) screened for breast cancer while the majority 176 (81%) screened for breast cancer.

***Table 2: Factors influencing BCS among women in Banaadir region Mogadishu, Somalia***

**n=217**

Category	Breast Cancer Screening		Crude Odds Ratio (95%CI)	P-value	AOR (95%CI)	P-value
	Screened	Never screened				
Age						
18-29 yrs	4 (9.8%)	35 (19.9%)	1	0.003**	1	0.027**
30-39 yrs	8 (19.5%)	55 (31.3%)	8.02 (2.15-29.99)	0.002**	10.4 (1.94-55.85)	0.006**
40-49 yrs	18 (43.9%)	74 (42.0%)	6.3 (2.09-19.01)	0.001**	4.3 (0.63-29.27)	0.138
50 yrs & above	11 (26.8%)	12 (6.8%)	3.8 (1.43-9.91)	0.007**	4.8 (1.4-16.02)	0.012**
Marital status						
Married	29 (70.7%)	124(70.5%)	1	0.029**	1	0.047**
Single	6 (14.6%)	45 (25.6%)	3.7 (1.15-11.73)	0.029**	14.9 (1.02-218.12)	0.048**
Divorce	6	7	6.4 (1.61-	0.008**	0.54 (0.00-	0.810

d	(14.6%) )	(4.0%)	25.65)		81.44)	
Education level						
Non	6 (14.6%) )	11 (6.3%)	1	0.048**		0.006**
Primary	6 (14.6%) )	49 (27.8%)	1.8 (0.33-10.09)	0.486	2.2 (0.29-16.61)	0.450
Secondary	15 (36.6%) )	56 (31.8%)	8.2 (1.61-41.46)	0.011**	138.4 (4.55-4214.2)	0.005**
Training Institute	6 (14.6%) )	44 (25.0%)	3.7 (0.83-16.71)	0.085	56.3 (4.88-661.35)	0.001**
University	4 (9.8%)	12 (6.8%)	7.3 (1.44-37.33)	0.016**	42.5 (4.17-433.61)	0.002**
Apprenticeship	4 (9.8%)	4 (2.3%)	3.0 (0.50-17.95)	0.229	4.1 (0.41-40.91)	0.228
Parity						
No children	1 (2.4%)	21 (11.9%)	1	0.008**	1	0.007**
1-2 children	9 (22.0%)	68 (38.6%)	12.4 (1.49-103.38)	0.020**	44.4 (2.8-703.4)	0.007**

	)					
3-4 children	18(43.9%)	65 (36.9%)	4.5 (1.68-11.85)	0.003**	21.9 (3.08-156.65)	0.002**
> 5 children	13(31.7%)	22 (12.5%)	2.1 (0.90-5.05)	0.085	2.5 (0.55-11.70)	0.235
Cultural beliefs						
Yes	9 (22.0%)	129 (73.3%)	1		1	
No	32 (78.0%)	47 (26.7%)	9.7 (4.34-21.97)	0.001**	112.9 (8.24-1546.9)	0.001**
Knows someone with BC						
Yes	28 (68.3%)	5 (2.8%)	1		1	
No	13 (31.7%)	171 (97.2%)	0.01 (0.004-0.041)	0.001**	0.05 (0.003-0.69)	0.026**
Family history						
Yes	31 (75.6%)	8 (4.5%)	1		1	

No	10 (24.4%)	168 (95.5%)	0.02 (0.006-0.042)	0.001**	0.02 (0.002-0.28)	0.003**
Brochures						
Never	7 (17.1%)	29 (16.5%)	1	0.001**	1	0.010**
Rarely	5 (12.2%)	124(70.5%)	6.2 (1.97-19.62)	0.002**	0.99(0.00-0.001)	0.995
Frequently	14 (34.1%)	13 (7.4%)	37.2 (11.21-123.48)	0.001**	13.7 (2.93-63.85)	0.001**
Very Frequently	15 (36.6%)	10 (5.7%)	1.4 (0.46-4.19)	0.555	0.0 (0.00-0.001)	0.995

\* <p-value <0.05 significant

Table 2 above shows all variables that were statistically significant at bivariate analysis were fitted into a multivariate logistic model. After adjusting for confounding, results indicated that women who were 30-39 years were ten times more likely to screen for breast cancer (AOR 10.4, 95% CI: 1.94-55.85, P=0.006), as compared to women who were between 18 and 29 years and women who were 50 years and above were five times more likely to screen for breast cancer (AOR 4.8, 95% CI: 1.4-16.02, P=0.012), as

compared to women who were between 18 and 29 years. However, having 40-49 years was not significantly associated with BCS.

Being married, single, or divorced all were significantly associated with BCS. Being single had higher odds of breast cancer screening (AOR 14.9, 95% CI: 1.02-218.12, P=0.048) compared to being married while being a divorcee (AOR 0.54, 95% CI: 0.00-81.44, P=0.810) wasn't significantly associated with BCS.

Women who had secondary education were 138 times more likely to screen for breast cancer (AOR 138.4, 95% CI: 4.55-4214.2, P=0.005) compared to women who never had formal education. The odds of carrying out BCS among women with college/ Training Institute level of education were 56 times (AOR 56.3, 95% CI: 4.88-661.35, P=0.001) while women who had university education were 42 times more likely to carry out BCS (AOR 42.5, 95% CI: 4.17-433.61, P=0.002) compared to women without formal education. Having primary (AOR 2.2, 95% CI: 0.29-16.61, P=0.450) and apprenticeship (AOR 4.1, 95% CI: 0.41-40.91, P=0.228) as the highest levels of education weren't statistically significantly associated with BCS.

Findings showed that women who had 1-2 children were forty-four times more likely to screen for breast cancer (AOR 44.4, 95% CI: 2.8-703.4, P=0.007), while women who had 3-4 children were 22 times more likely to screen for breast cancer (AOR 21.9, 95% CI: 3.08-156.65, P=0.002) as compared to who never had children. However, being with 5 children and above wasn't statistically significantly associated with BCS.

Whether women had cultural beliefs that influenced BCS was the only statistically

significant factor associated with BCS among women. Women who never believed in cultural beliefs were 113 times more likely to screen for breast cancer (AOR 112.9, 95% CI: 8.24-1546.9, P=0.001) compared to women who believed in cultural beliefs.

Knowing one who suffered from BC and is related to one who suffered from BC were the only knowledge factors that were statistically significant factors associated with BCS among women. Women who never knew anybody who suffered from BC were less likely to screen for breast cancer (AOR 0.05, 95% CI: 0.003-0.69.9, P=0.026), and women who weren't related to one who suffered from BC had lower odds of screening for breast cancer (AOR 0.02, 95% CI: 0.002-0.28, P=0.003).

The frequency of being given brochures/handouts or videotapes on BCS at the MCHC was the only health system factor that was statistically significant factors associated with BCS among women. Women who frequently received brochures and videotapes were 14 times more likely to screen for breast cancer (AOR 13.7, 95% CI: 2.93-63.85, P=0.001) compared to women who never received brochures/handouts or videotapes. However, receiving brochures/handouts or videotapes rarely

(AOR 0.99; 95% CI: 0.00-0.001, P=0.995)  
and very frequently (AOR 0.01, 95% CI:  
0.00-0.001, P=0.995) weren't statistically

significantly associated with BCS among  
women.

## **Discussion**

### **Prevalence of BCS among women**

In this study, women who carried out Breast Self-Examination (BSE), Clinical Breast Examination (CBE)-Examined by a health care provider, Breast Ultra Sound Scan, and Mammography were regarded as having carried out BCS. This was because these are the clinically known methods of BCS while not practicing any of the above is regarded as having never carried out BCS.

Out of the 217 women who participated in the study, findings showed that the majority of respondents' twenty percent of the women had ever carried out BCS while eighty percent had never carried out BCS. This was attributed to the fact that the majority of them related BC to cultural beliefs while others were not well health educated about the etiology and epidemiology of BC.

### **Discussion of the social-demographic factors influencing BCS among women in Banaadir region Mogadishu, Somalia**

Social-demographic factors influencing BCS among women were described by age, marital status, the highest level of education attained, distance to the health facility from

respondents' home, type of health facility nearest to respondents' home, and several children respondents had ever given birth to. These are discussed as follows

Results from the social-demographic factors influencing BCS among women indicated that out of the 217 respondents that participated in the study; the majority; 92 (42%) were between 40-49 years. This implied that the majority of the respondents that participated in the study were women of older age. This could be attributed to the fact that women become more knowledgeable about sexual and reproductive health as they grow older due to more visits to health care facilities. At bivariate analysis, the age of the women was statistically significantly associated with BCS. It was also found out that the majority of the women who screened for BC were 40 years and above. It could be that majority of them related BC to old age or women became more uncomfortable with pain in their breasts as they grew older. Similarly, few participants knew that women should start CBE at the age of 20 years, and very few participants reported that women should have a CBE performed on them every 3 years. Women's knowledge about mammography varied minimally in this survey with more than one-third of the participants mentioning that in general women



should start mammography screening at the age of 40 years (Othman *et al.*, 2015).

Further on the majority of the respondents were married. This could be attributed to the fact that it was married women who in most cases have a breast-related complication and the fact that SRH studies are mostly done among adults who can consent to research studies according to the local laws in the area of study. At bivariate analysis, the marital status of the women was statistically significantly associated with BCS. Married women had very higher odds of carrying out BCS compared to single and divorced women. This could be attributed to the fact that the majority of adult women in the area were married women.

Regarding the respondents' levels of education, the majority had attained secondary education as the highest level of education. This was attributed to the fact that traditionally in the area of study, education to women isn't given much priority as compared to males. At bivariate analysis, the highest levels of education attained were statistically significantly associated with BCS. Women who had secondary education had the highest odds of screening for BC as compared to women of other levels of education. This could be attributed to the fact that the majority had

secondary education and SRH is highly emphasized in secondary education because that is when women are prepared for marriage in most educational institutions. This finding is consistent with those of previous study results, suggesting that a community with a high concentration of educated women can increase the utilization of health care services including cervical cancer screening (Mehta *et al.*, 2014; Mekonnen *et al.*, 2015).

Almost half of the respondents resided at a distance of less than 5km from the nearest health facility. This was attributed to the liberalization of the health sector in the area of study where many private health care facilities are permitted to operate. At bivariate analysis, distance to the health facility was statistically significantly associated with BCS. Women who resided at a distance less than 5km from the health facility were two-thirds more likely to access BCS services as compared to other women who stayed more than 5 km from the nearest health care facility. This was attributed to the fact that shorter distances made it easy for most women who even never had permission from their caretakers and spouses to seek BCS services with ease.

Lastly, the majority of the respondents had 3-4 children. This could be attributed to the fact that the majority of them were older (40 years

and above) which made them more likely to have 3 children or more. Several children ever given birth to were also significantly associated with BCS. Almost three-quarters of women who had 3 children and above were more likely to have practiced BCS as compared to women with fewer children. This could be attributed to the fact that the majority of them related BC to old age.

#### **5.1.2.2 Discussion of the social-economic factors influencing BCS among women in Banaadir region Mogadishu, Somalia**

Social-economic factors influencing BCS among women were described by; current employment status, level of family income per month, expected source of payment for the BCS services if service is to be utilized, a thought that cultural beliefs influence breast cancer screening, cultural beliefs are known about BCS and need to ask for permission to go for BCS.

Results of the study about the social-economic factors influencing BCS among women indicated that the majority; ie almost two-third of the respondents were unemployed. This could be attributed to the fact that in the area of study women aren't given many priorities to engage in income-generating activities away from their home due to cultural norms and

Islamic religious restrictions on the female gender. At bivariate analysis, current employment status was statistically significantly associated with BCS. More than three-quarters of women who had BCS, it was on a surprising note found out they were unemployed. This could be attributed to the fact that the majority carried out BSE which could be done at home after getting information from the media. So it didn't necessarily mean that all women who had BCS did it under proper guidance and supervision to confirm that they did the right thing and came up with the right conclusions. Similar findings were reported where women with low-income status and those in economic deprivation had issues with accessing BCS services (Alice et al., 2008).

Further on the majority of the women expected payment for the BCS services if service was to be utilized by the government. This was because the majority of them were low-income earners due to being unemployed. At bivariate analysis, the expected source of payment for the Breast cancer screening services if service is to be utilized was statistically significantly associated with BCS. Respondents who expected services from government facilities were more likely to access BCS service as compared to women who expected payment

from other sources. This was because government health care services were free of charge. In relation, women of the low occupational class were less likely to access BCS services because of the expensive nature of these services compared to people's income-earning ((Macheneri, 2012)

Almost two-thirds of the respondents had cultural beliefs that influenced them to practice BCS. This could be attributed to the fact that people in the area weren't well health educated about BC and respected their cultural values so much. At bivariate analysis having cultural beliefs influence breast cancer screening was statistically significantly associated with BCS. Women who never had cultural norms were more likely to practice BCS as compared to women who had cultural beliefs towards BC. This could be attributed to the fact that they thought care from trained health care workers who health educated recommended them to carry out BCS.

In this regard, a third of the respondents felt shame and dishonor to carry out BCS and this was statistically significantly associated with BCS. This was because touching a woman's breast by someone who isn't a spouse is taboo and discouraged in the area due to traditional and religious restrictions

Further on BCS was jeopardized by the need to first ask for permission to go for BCS from either caretakers or spouses. This was done in a pretext to minimize promiscuity among women. In bivariate analysis need to ask for permission to go for breast cancer screening was statistically significantly associated with BCS Findings showed that women who had to first ask for permission were more likely to access BCS services as compared to those who didn't have to ask for permission. This was because in most cases women had to move in the company of either a spouse or a relative

However, the level of family income per month wasn't significantly associated with breast cancer screening among women. It could be that majority of the women carried out BSE.

### **5.1.2.3 Discussion of the behavioral factors influencing BCS among women in Banaadir region Mogadishu, Somalia**

Behavioral factors influencing BCS among women were described by; frequency of breastfeeding/including expressing milk, duration of breastfeeding, whether respondents took alcohol, and whether respondents engaged in physical activities.

Findings showed that among the behavioral factors influencing breast cancer screening among women majority; of the women breastfed twice. This could be attributed to the fact that their children could have died as neonates. At bivariate analysis, the frequency of breastfed/including expressing milk was statistically significantly associated with BCS. Women who breastfed twice and more were more likely to access BCS services as compared to those who had breastfed fewer times. This could be attributed to health education and experience they got as mothers regarding seeking SRH.

Further on, the majority of the respondents had breastfed for a period between 6 months and 1 year. This implied that they breastfed for a short period which put them at risk of developing breast lumps. At bivariate analysis, duration of breastfeeding was statistically significantly associated with BCS. Respondents who breastfed for longer were more likely to access BCS services probably because they were health educated about BCS during their visits to MCHC.

Three-quarters of the respondents never took alcohol. This could be attributed to the fact that the study was carried out in an Islam-dominated area where alcohol taking is highly forbidden. At bivariate analysis taking of

alcohol was statistically significantly associated with BCS. Respondents who never took alcohol were more likely to seek BCS services as compared to those who took alcohol probably because the majority of the study participants never took alcohol. Additionally, women who had not consumed alcohol in the previous 30 days were 1.96 times more likely than those who had used alcohol to get breast cancer screening (Patel *et al.*, 2014).

Six out of ten respondents engaged in physical activities and this was statistically significantly associated with BCS. These mainly include domestic chores which were the majorly known activities women do.

However, whether the respondent smoked and the nature of Physical activities wasn't significantly associated with breast cancer screening among women. by (Lee, Lim and Park, 2010) in which a multivariate logistic regression after adjusting for other factors was done showed that health behavioral risk factors, such as smoking status were significantly associated with breast cancer screening.

#### **5.1.2.4 Knowledge factors influencing breast cancer screening among women in Banaadir region Mogadishu, Somalia**

Knowledge factors that influenced BCS among women were described by; source of information about BCS, knowledge about anybody who complained of pain in the breast, knowledge about anybody that has suffered from breast cancer, whether respondents were related to any person who suffered from breast cancer, awareness of risk factors for breast cancer, whether someone could discover breast cancer early before feeling sick, knowledge about any of the warning signs of breast cancer, warning signs of breast cancer, advertisements through media platforms may improve access to breast cancer screening and breast cancer had treatment.

Results of the study about the knowledge factors that influenced breast cancer screening among women showed that the majority of the respondents got the information about BCS from health care workers and this was the source of information about breast cancer screening was statistically significantly associated with BCS. Women who got information from health care workers about BCS were more likely to seek BCS as compared to women who got information from other sources. This could be attributed to the fact that health care workers had more reliable information about BCS with better facts and figures about the threat of BC.

More than half of the respondents knew anybody who complained of pain in the breast. This however didn't transcend into more women getting BCS services despite getting information from a health care worker. This could be related to too much belief in cultural norms related to BC which made them live on misconceptions. At bivariate analysis, knowing anybody who complained of pain in the breast was statistically significantly associated with BCS. Women who knew others who complained of pain in the chest area, breasts, and armpits were more likely to practice BCS as compared to women who didn't have that pain. This could be associated with fear they had that they could develop breast cancer.

A vast majority of the respondents never knew anybody that has suffered from breast cancer which could be associated with inadequate documented information about BC in the area of study and Somalia as a country at large. At bivariate analysis, knowing anybody that has suffered from breast cancer was statistically significantly associated with BCS. Women who had relatives who had suffered from BC were more likely to carry out BCS as compared to women who didn't know. This could be associated to fear they had thus wanted to know their status.

Every eight out of ten women weren't related to any person who suffered from breast cancer. This could be attributed to a lack of documented information and much respect to sexuality in the area where SRH relate diseases aren't much discussed in public. At bivariate analysis, is related to any person who suffered from breast cancer was statistically significantly associated with BCS. Over three-quarters of women who had a family history of BC were more likely to screen for BC as compared to women who never had a family history of BC. This was attributed to a recommendation by the health care providers and fear women had that they could also develop BC.

The majority of the respondents thought that growing old was a risk factor for breast cancer and this was statistically significantly associated with BCS. This could be attributed to the fact that the majority of women who suffered from breast cancer were women of old age above 40 years. Fatty diet was reported to be the commonest risk factor (17.7%) for breast cancer, while women who have never breastfed were considered to have low risk (7.7%) (Ng'ida *et al.*, 2019).

The majority of the respondents reported that someone couldn't discover breast cancer early before feeling sick. This could be attributed to

a lack of knowledge about the imminent warning signs of BC. At bivariate analysis, whether someone could discover breast cancer early before feeling sick was statistically significantly associated with BCS. Women who thought that BC could be discovered were more likely to screen for BC.

Almost two-thirds of the respondents knew some of the warning signs of breast cancer and knowledge about any of the warning signs of breast cancer was statistically significantly associated with BCS. In this regard, a majority reported breast lump as a warning sign of breast cancer. This could be attributed to the knowledge they got from their fellow women.

More than half of the respondents agreed that advertisements through media platforms could improve access to breast cancer screening and this was statistically significantly associated with BCS. This was because advertisements equipped women with reliable information about the prevention of BC.

Over half of the respondents thought that breast cancer doesn't have treatment. This could be associated with the high tendency of discovering that one suffers from cancer at a late stage when it can't be cured. At bivariate analysis, whether breast cancer had treatment was statistically significantly associated with

BCS. Higher odds of BCS were among women who didn't know that BC has treatment probably because they wanted to prevent the disease since they thought it couldn't be cured thus, they weren't complacent and didn't want to risk their lives.

However, where one would send someone with breast cancer for treatment/care wasn't significantly associated with breast cancer screening among women.

### **5.1.3 Discussion of environmental factors influencing BCS among women in Banaadir region Mogadishu, Somalia**

Results about health system factors influencing BCS among women showed that three-quarters of the respondents reported that women in their area never had powers to decide for BCS which was associated with cultural and religious norms. At bivariate analysis, whether women had powers to decide for breast cancer screening was statistically significantly associated with BCS. Women who had powers to screen for BC were more likely to access BC services as compared to women who never had powers. This was because they could decide to access health care services at any time of their wish.

Almost three-quarters of the respondents reported that women's health was given priority in their area. This could be attributed to the growing phenomenon of respect for human rights under the Sustainable Development Goals (SDGs) since Somalia is a signatory of the UN. At bivariate analysis, whether women's health was given priority in the area was statistically significantly associated with BCS. Women who knew and agreed that women's health was given priority in the area were more likely to carry out BCS as compared to those who didn't because they knew their rights to medical care.

Further on, the majority of the respondents reported that they never had VHTs who educate women about BCS. This could be attributed to the fact that door-to-door health care services are still poor in Banaadir Region in Somalia. At bivariate analysis, having VHTs who health educated women about BCS was statistically significantly associated with BCS. Women who had access to VHTs had higher odds of BCS because they had the knowledge about BC after health education right from their homes.

About the above, majority of the respondents never had access to breast cancer screening facilities in their area. This could be attributed to the fact that BCS wasn't much available in

the area probably due to inadequate funding of health care facilities. At bivariate analysis having access to a BCS facility was statistically significantly associated with BCS. Women who had access to health care facilities were more likely to access BCS as compared to those who didn't.

#### **5.1.4 Discussion of health system factors influencing BCS among women in Banaadir region Mogadishu, Somalia**

Health system factors influencing BCS among women were described by; whether women had powers to decide for BCS, whether women were health given priority in the area, whether they had VHTs who health educated women about BCS, whether they had access to a BCS facility, whether health workers were available to offer BCS services, several times did nurses/doctors guide you on how to perform BSE at the MCHC within this year, frequency provided with brochures/handouts or shown videotapes on BCS at the MCHC within this year and whether were advised by a nurse/doctor at the MCHC to go for a mammogram/ a breast scan in the last two years.

Very few of the respondents had health workers readily available to them to offer BCS services. This could be attributed to giving

more priority to other diseases such as communicable diseases than Non-Communicable diseases. In this area, health care workers have many patients with communicable diseases and these have more threats than NCDs. At bivariate analysis, whether health workers were readily available to offer BCS services was statistically significantly associated with BCS. Respondents who agreed and strongly agreed were more likely to practice BCS as compared to those who never agreed because they were given the knowledge on how to practice BCS by themselves.

Just a third of the nurses/doctors at least guided women once a month on how to perform BSE at the MCHC. This was due to a big number of the women who attended health care facilities which provided health care workers with inadequate time to health educate them about BCS. At bivariate analysis, the frequency of nurses/doctors' guide on how to perform BSE at the Maternal and Child Health was statistically significantly associated with BCS. on the contrary, the majority of study participants had a low level of knowledge regarding breast cancer risk factors which was disappointing given their exposure to health education sessions and also



contact with health workers such as doctors and nurses (Manzour and Gamal Eldin, 2019).

Almost two-thirds of the respondents were rarely provided with brochures/handouts or shown videotapes on BCS at the MCHC within this year. This was due to inadequate funding to public health care facilities. However, the frequency brochures/handouts or videotapes on BCS at the MCHC were offered was statistically significantly associated with BCS. respondents who were frequently provided with brochures were more likely to practice BCS due to knowledge they had acquired.

Lastly, the majority of women were advised by a nurse/doctor at the MCHC to go for a mammogram/ a breast scan in the last two years. This was in line with the health education routinely given in MCHC. At bivariate analysis, the frequency of being advised by a nurse/doctor at the MCHC for a mammogram/ a breast scan in the last two years was statistically significantly associated with BCS. Women who were very frequently recommended to carry out BCS were more likely to do so because they feared annoying health care workers and at times it was one of the protocols of treatment.

### **5.1.7 Discussion of multivariate binary logistic regression analysis of factors influencing BCS among women in Banaadir region Mogadishu, Somalia**

Factors that were statistically significantly associated with influencing BCS among women after multivariate binary logistic regression analysis were; age, marital status, highest levels of education attained, number of children ever given birth to, Cultural beliefs that influenced BCS, Knowledge about someone who suffered from BC, being related to one who suffered from BC and Frequency brochures/handouts or videotapes on BCS at the MCHC are offered.

After adjusting for confounding, results indicated that women who were 30-39 years were ten times more likely to screen for breast cancer as compared to women who were between 18 and 29 years, and women who were 50 years and above were five times more likely to screen for breast cancer as compared to women who were between 18 and 29 years. This implied that BCS was more likely among women who were still in reproductive age.

Being married, single, or divorced all were significantly associated with breast cancer screening. Being single had higher (odds fourteen times) of breast cancer screening

compared to being married. On the other hand, being a divorcee wasn't significantly associated with breast cancer screening. This implied that single women feared suffering from BC before they gave birth. It could also be attributed to misconceptions women had that not giving birth to children is a risk factor for BC. On the contrary, a study carried out in Egypt showed that BCS was higher among married women probably because sexual and reproductive health services were more accessed by married than single women (Manzour and Gamal Eldin, 2019).

Women who had secondary education were 138 times more likely to screen for breast cancer compared to women who never had formal education. The odds of carrying out BCS among women with college/ Training Institute level of education were 56 times while women who had university education were 42 times more likely to carry out BCS compared to women without formal education. This implied that the odds of BCS reduced as mothers attained higher levels of education probably because women became complacent that they knew much and ignored some warning signs of BC. Similar findings were reported in a study carried out in Korea (Lee, et al., 2010).

Findings showed that women who had 1-2 children were forty-four times more likely to screen for breast cancer, while women who had 3-4 children were 22 times more likely to screen for breast cancer as compared to those who never had children. This implied that the urge to screen for BC lessened as women gave birth to more children. This was associated with the decrease in fear to give birth to children because women with breast cancer aren't advised to give birth.

Women who never believed in cultural beliefs were 113 times more likely to screen for breast cancer as compared to women who believed in cultural beliefs probably because they carried the right information regarding the causes of BC. This could be attributed to the fact that much belief in cultural norms against clinical breast examination rendered women to misconceptions from the community members which were associated with poor healthcare-seeking behavior thus low uptake of BCS services. Similar findings were reported in a study carried out in Fiji and Kashmir India (Malik, *et al.* 2020).

Women who never knew anybody who suffered from BC were less likely to screen for breast cancer and women who weren't related to one who suffered from BC had lower odds of screening for breast cancer.

This was associated with the fact that they didn't believe or think that at any time they could be BC patients. They didn't even know who the disease presents or progresses but respondents who had seen people suffer from breast cancer immediately screened because they feared falling victims to the circumstance. Similar findings were reported in a study carried Ethiopia (Mehta *et al.*, 2014; Mekonnen *et al.*, 2015).

Women who frequently received brochures and videotapes were 14 times more likely to screen for breast cancer compared to women who never received brochures/handouts or videotapes because they had adequate knowledge about BCS. This implied that receiving visual information provided a better and more understandable message about breast cancer which increased women's alertness to take up breast cancer screening services. Similar results were reported in a study carried out in Ethiopia (Bamidele, *et al.*, 2017) and other Sub-Saharan Regions settings (Ferlay *et al.*, 2015; Jedy-Agba *et al.*, 2016).

## **Conclusion**

This study was carried out in the Banaadir region of Mogadishu, Somalia, on the determinants of breast cancer screening

among women above 18 years. It was guided by specific objectives that included social demographic, social-economic, knowledge, behavioral, and health facility factors influencing breast cancer screening among women above 18 years in Banaadir region Mogadishu, Somalia.

The study used a cross-sectional survey research design that employed a quantitative method for data collection and analysis. A sample size of 217 women between 18 and 60 years was enrolled from households using systematic and simple random sampling from regions of Banadir Central, Medina, Keysapey, and Lazarettro Forlanini regions in Banaadir District in Somalia. Data was collected using a questionnaire.

Results showed that two out of ten women had ever screened for breast cancer. Breast Cancer Screening was majorly influenced by old age, being single, having lower levels of education, having fewer children, not believing in cultural beliefs, knowing women who never knew anybody who suffered from BC, knowing their relatives who suffered from BC, and frequent receiving of brochures/handouts or videotapes on BCS at the MCHC.

## **Abbreviations**

AOR: Adjusted Odds Ratio; BC: Breast Cancer; BCE: Breast Cancer Examination; BCS: Breast Cancer Screening; BSE: Breast Self-Examination; BUSS: Breast UltraSound Scan; NBCCEDP: National Breast and Cervical Cancer Early Detection Program; CBE: Cancer Breast Examination; CBE: Clinical Breast Exam; CDC: Centre for Disease Control; COR: Crude Odds Ratio; COVID19: Corona Virus Disease 2019; IARC: The International Agency for Cancer Research; MCHC: Maternal and Child Health clinic; OR: Odds Ratio; SPSS: Statistical Package for Social Scientists; WHO: World Health Organization

#### **Availability of data and Materials**

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

#### **Authors' contributions**

Nasteho Abdullahi Mohamud

#### **Ethics**

All interviews were conducted and recorded with the participants' consent. This study was approved by the research and ethics committee of Clarke International University. Approval was also sought from

the administration of Banaadir region Mogadishu.

#### **Consent for publication**

Not applicable

#### **Competing Interest**

We declare that we have no conflict of Interest

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