Knowledge and Practice of Breast Self Examination for Early Detection of Breast Cancer Among Young Women Attending Maternal Health Clinic at JOOTRH, Kisumu County

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Abstract

Background

Breast self-examination (BSE) is a simple, low-cost, and non-invasive method that women use to detect breast cancer at early stages. BSE is recommended for teenage and adult women as it helps to detect unusual swelling and lumps. The early intervention reduces the spread of cancer cells and improves health outcomes. This study assessed the knowledge and practices of BSE for early detection of breast cancer among women attending maternal health clinic at Jaramogi Oginga Teaching and Referral Hospital (JOOTRH), Kisumu County in Kenya.

Methods

A cross-sectional study targeting women of reproductive age seeking maternal health services at the JOOTRH facility was conducted. Systematic sampling was used to select the study participants while purposive sampling was used to select the nurses involved in key informant interviews. Semi-structured questionnaires and recording were used to collect data. Descriptive and logistic regression was conducted for the quantitative data. Qualitative data was transcribed, coded and analyzed thematically.

Results

The study found that 39% of the participants had the correct knowledge and practice of BSE. An increase in education level was significantly associated with correct knowledge and practice of BSE. Single participants (aOR = 0.6, 95%CI [0.36−0.99]), participants who heard about BSE from media (aOR = 0.51, 95%CI [0.27−0.97]) and friends (aOR = 0.25, 95%CI [0.09−0.69]) were less likely to report correct knowledge and practice of BSE.

Conclusion

There needs to be concerted effort to raise the knowledge and practice of BSE by the national and county governments, stakeholders and health practitioners for the early detection of breast cancer.

Background

Cancer is a primary health concern in most regions of the world, and breast cancer, in particular, is a leading cause of cancer death among women in both developed and developing countries[1]. Breast cancer is not only the most diagnosed cancer in women, but also the leading cause of cancer death globally. It accounted for 24.2% of the 8.6 million new cases, and 15% of the 4.2 million deaths of cancer globally in 2018. Sub Saharan Africa accounted for 8.1% and 15% of new cases and deaths[2]. An estimated 7 out of 10 breast cancer patients in developing countries are likely to die from the condition as

compared to only 2 out of 10 in developed countries[3]. According to the Kenya Ministry of Health, National Cancer Screening Guidelines [4] breast cancer accounts for 6.6% (626,679) of all cancer deaths, having an incidence of 2,088,849 cases. These projections of incidence and mortality in sub−Saharan Africa are worrying, hence the need to prevent and detect breast cancer early through various screening methods as a means of achieving the sustainable development goal (SDG) 3.4 by 2030.

Stage of disease at diagnosis is the most important prognostic variable and thus early diagnosis is a crucial alternative that should be prioritized in the management of breast cancer. Research conducted by [5] reported that most of the breast cancer patients are being diagnosed with advanced stages of cancer, leading to high mortality and reduced chances of survival and approximately 80% of reported breast cancer cases get diagnosed at a late stage (III or IV) which greatly hinders curative treatment and chances of survival. Thus, screening for early detection is an important aspect in the control of breast cancer as it increases the detection of breast cancer in its early stages and hence improve prognosis and reduce mortality[6−8]. However, it is essential to assess the efficacy of the screening method in minimizing disease burden and its affordability to the target populations [5]. For example, while mammography may be effective in high-resource setting, resource constrained areas may not be able to afford it and thus might opt for Breast Self-Examination (BSE) as it is cost-free, convenient, and easy to conduct.

Educating women about BSE helps them to be familiar with the anatomy of the breast and the normal condition of the breast, enabling them to identify any changes in the breast like abnormal swelling and lumps should they occur in the future. According to WHO [6], BSE is most effective when combined with Clinical Breast Examination (CBE) and mammography to detect the early signs of breast cancer. Review of breast self-examination techniques during gynecological and general hospital visits with health providers are among the most effective factors in promoting the use of breast self-examination. Additionally, the encouragement of the practice and education complement BSE practice [9].

Breast cancer is detected through three major ways: secretion of nipple discharge, changes in the feeling of breast and nipple, and change in breast appearance [10]. Even though the presence of lumps may not be an indication of a breast cancer, but when accompanied with unexplained shape and size of breasts, nipple retraction, nipple discharge, and redness on the skin, it might be an indication of breast malignancy [9]. The most common presentation of breast cancer is a lump (79.4%), while breast pain accounts for 26.8% [9]. Creating awareness about breast cancer among clinicians and non-clinician informants helps in early detection and effective treatment and management of breast cancer [9].

According to [11], breast cancer incidence is relatively high in developing countries as compared to developed countries with the former diagnosing twice as many breast cases among women aged between 15 and 49 years. The research reports that in low-resource regions, 70% of the newly diagnosed cancer patients are likely to die as compared to only 20% in high-resource locales. Data from National Screening Guideline shows that between 2014 and 2016, about 64% of cancer patients were diagnosed at stage III or IV in Kenyatta National Hospital according to Kenya Ministry of Health National Cancer

Screening Guidelines [4]. During these later stages, it is difficult to achieve treatment for cure. Breast cancer awareness and surveillance in Kenya have been suboptimal and many women are not exposed to information that will promote awareness and early detection of this disease such as routine breast self-examinations and the red flags to look for.

Methods

Study aim, design and setting

The study aimed to assess the knowledge and practice of breast self-examination for the early detection of breast cancer among young women. This cross-sectional study was conducted at the maternal clinic of Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH) in Kisumu County, Kenya. JOOTRH is a regional referral hospital in Western Kenya. Most of the residents in this community are peasant farmers and businesspersons, mainly dealing with fish products. The focus of this study was women within the reproductive age bracket.

Study Participants and Data Collection

The study participants constituted of the health facility nurses and women of aged 15–49 years attending an antenatal and maternal clinic at JOOTRH, Kisumu, Kenya. Data was collected through interviewing study participants using semi-structured questionnaires with both open and closed ended questions to answers research questions. Key informant interviews were used to interview the health care providers (nurses) in the maternal health clinic at JOOTRH

Sampling

The study used the sample size formula for a single population proportion [12] by using the prevalence of 41% taken from Mbagathi hospital in Nairobi, Kenya [13], level of significance at 5%, margin of error at 5% and attrition rate of 10% leading to a sample size of 410 women. Five nurses who were working in the maternal section were purposefully selected to participate in the key informant interviews. Systematic sampling was used to select the study participants.

Data Processing, Analysis and Presentation

Data from the participants was cleaned and analyzed using R version 4 and qualitative data was transcribed, coded and analyzed thematically. Participant characteristics were presented in tabular and graphical form. Categorical variables were presented by use of frequencies and percentages while continuous variables were presented by use of median and interquartile range. Knowledge and practice of breast self-examination was coded in a binary form as the outcome. Prevalence of knowledge and practice of breast self-examination was presented by use of proportions. Knowledge and practice indicators were scored. Participants with a mean score of more than 80% for all indicators were coded as having substantial knowledge and practice. Bivariate logistic regression was used to determine factors associated with the study outcome. A priori of $p < 0.2$ was used at the bivariate analysis to fit the

variables to the multivariate logistic regression. The multivariate logistic regression identified independent determinants of knowledge and practice of breast self-examination. Associations were reported by use of odds ratios (OR) with their 95% confidence intervals (CI). Statistical significance was taken at $p < 0.05$.

Qualitative data was collected from the nurses working in the maternal clinic by use of key informant interviews. Thematic content analysis was used to identify the broad themes on knowledge and practice of breast self-examination for the early detection of breast cancer among women seeking services at the maternal clinic. Analysis was done by use of NVivo 12 software.

Results

The study collected data from 398 of the 410 intended women of reproductive age attending maternal clinic at JOOTRH. Most of the participants were aged between 25–30 years, 37.9% (151/398), 31–35 years and 27.6% (110/398). Approximately half of the participants 50.75% (202/398) had primary education while slightly more than a quarter had secondary education 28.6% (114/398). Participants that were married were 38.7% (154/398) and never married were slightly less at 37.2% (148/398). More than half of the participants were in the semi-skilled manual labor at 55.8% (222/398) compared to less than a tenth who were unemployed 9.1% (36/198) Table 1.

Table 1
Participant Characteristics

Characteristics	N	%
Age group		
18–24 years	85	21.36
25–30 years	151	37.94
31–35 years	110	27.64
36–49 years	52	13.06
Education Level		
None	20	5.03
Primary	202	50.75
Secondary	114	28.64
College/higher	62	15.58
Marital status		
Married	154	38.69
Single/Never married	148	37.19
Separated/Divorced	96	24.12
Occupation		
Unemployed	36	9.05
Semi-Skilled Manual	222	55.78
Unskilled manual	48	12.06
Agriculture	38	9.55
Sale & Service	31	7.79
Clerical	3	0.75
Professional technical/managerial	14	3.52
Student	6	1.51
Religion		
Catholic	136	34.17
Protestant	150	37.69
Muslim	8	2.01

Characteristics	N	%
Other	104	26.13

Almost all the study participants had at least heard of breast cancer 96.2% (383/398). Majority of the participants reported having heard of breast cancer from the media (radio and television) 57.0% (227/398), the friends, doctor/nurse 10.1% (40/398) and relatives at 7.8% (31/398) as shown in Fig. 1. More than half of the participants who ever heard of BSE in relation to breast cancer were of the opinion that BSE should be conducted weekly 54.6% (209/383) while only a paltry 6.3% (24/383) yearly. Majority of the participants were of the opinion that BSE should be performed in front of the mirror 53.3% (204/383) and slightly more than half thought they were at a risk of having breast cancer 52.0% (207/383) (Table 2).

Table 2
Knowledge of Breast Self-Examination

Characteristics	N	%
Ever heard of BSE and breast cancer		
Yes	383	96.23
No	15	3.77
Where heard from		
Internet	54	13.57
Media (Radio & TV)	227	57.04
Friends	40	10.05
Doctor/Nurse	31	7.79
Relatives	31	7.79
Never Heard	15	3.76
How often should one conduct BSE		
Not sure	2	0.52
Weekly	209	54.57
Monthly	148	38.64
Yearly	24	6.27
How should BSE be performed		
Don't Know	2	0.52
In front of mirror	204	53.26
Lying on bed	127	33.16
In the bathroom	50	13.05
Do you think you are at risk of breast cancer		
No	191	47.99
Yes	207	52.01

Of the participants who ever heard of BSE, 42.3% (162/383) reported of ever practicing BSE. Among those who practiced 93.2% (151/162) reported performing BSE once in a month. The study found that 96.2% (383/398) of their partners are aware of breast cancer and a further 62.7% (240/383) reported that their partners had knowledge of BSE. More than three-quarters of the participants reported they would be

willing to train their partners on BSE 78.3% (300/383). All the women reported that they would recommend BSE to other women while 87.0% (333/383) of the women reported that they would encourage other women to engage their partners on assisting them to perform BSE (Table 3).

Table 3
Practices of Breast Self-Examination

Characteristics	n	%
Do you practice BSE		
Yes	162	42.30
No	221	57.70
How often perform BSE		
Once weekly	3	1.85
Once monthly	151	93.21
Once quarterly	5	3.09
Once yearly	3	1.85
Partner aware of breast cancer		
Yes	383	96.23
No	15	3.77
Partner has knowledge about BSE		
Yes	240	62.66
No	143	37.34
Are you able to train partner on BSE		
Yes	300	78.33
No	83	21.67
Partner can assist on BSE		
Yes	137	35.31
No	251	64.69
Partner helps perform BSE		
Yes	48	35.04
No	89	64.96
Would like partner to help perform BSE		
Yes	205	81.67
No	46	18.33
Would you recommend BSE to other women		

Characteristics	n	%
Yes	383	100.00
No	0	0.00
Would advise other women to engage their partners perform BSE		
Yes	333	86.95
No	50	13.05

On the Key Informant Interviews on male involvement in BSE, it was reported by some of the nurses that the cultural aspect acts as a challenge in their participation

"*Very few men are involved in women health related services of their spouses including cancer screening services such as breast cancer and BSE education. In addition, men who take their wives to the hospital for maternal visits are always viewed as inferior by their fellow men.*" (KII, Female, 46)

"*In this facility I have not seen very many men escort their wives for common maternal hospital visits such as child delivery or infant vaccination services let alone for cancer awareness*". (KII, Male, 38)

Some of the KIIs also gave the perceived benefits of male involvement as shown in the excerpts that follow

"*Generally, if the man understands his role as the head of the home and cares for his family decision making on woman health-related matters will be prompt. This discussion creates awareness in the home on the needs of the woman to the spouse making the man more responsible*" (KII, Female, 30)

"*The man will be aware of the benefits of healthy maternal lifestyle leading to prompt detection diagnosis and treatment should there be need.*". (KII, Female, 34)

About 39.4% (151/383) of the interviewed participants who ever heard of Breast Cancer had the correct knowledge and practice of BSE. Participants who were aged 41–49 years, 18(43.9%), of them had correct knowledge and practice of BSE. Fewer participants aged 18–24 years 24 (28.2%) had the correct knowledge and practice of BSE. Among participants who had college/ higher education, 31 (50.0%) of them had correct knowledge and practice of BSE. Almost half of the separated/divorced participants had the correct knowledge and practice of BSE. More of the results are as shown in Table 4.

Table 4
Determinants of correct knowledge and practice of BSE among women seeking maternal health care at JOOTRH

Characteristics	Knowledge and Practice (%)	uOR (95%CI)	p value	aOR (95%CI)	p value
Age Group			0.284		
18–24 years	24(28.24)	ref.			
25–30 years	62(41.06)	1.77(0.99–3.14)	0.051		
31–35 years	42(38.18)	1.57(0.85–2.89)	0.147		
36–40 years	18(43.90)	1.99(0.91–4.33)	0.083		
41–49 years	5(45.45)	2.12(0.59–7.60)	0.249		
Education Level			0.0794		
None	6(30.00)	ref.			
Primary	67(33.17)	1.16(0.43–3.15)	0.774	1.67(0.59–4.73)	0.333
Secondary	47(41.23)	1.64(0.59–4.57)	0.347	2.23(0.77–6.50)	0.141
College/higher	31(50.00)	2.33(0.79–6.86)	0.123	3.25(1.03–10.25)	**0.044**
Marital status			**0.0063**		
Married/Cohabiting	61(39.61)	ref.			
Single/Never married	43(29.05)	0.62(0.39–1.01)	0.054	0.60(0.36–0.99)	**0.048**
Separated/Divorced	47(48.96)	1.46(0.87–2.45)	0.147	1.07(0.61–1.88)	0.808
Occupation			0.1282		
Unemployed	16(44.44)	ref.			
Agriculture	87(39.19)	0.81(0.40–1.64)	0.551		
Unskilled manual	16(33.33)	0.63(0.26–1.52)	0.301		
Semi-Skilled Manual	8(21.05)	0.33(0.34–2.38)	**0.035**		

Characteristics	Knowledge and Practice (%)	uOR (95%CI)	p value	aOR (95%CI)	p value
Sale & Service	13(41.94)	0.90(0.34–2.38)	0.836		
Clerical	3(100.00)	-			
Professional technical/managerial	8(57.14)	1.67(0.48–5.79)	0.422		
Student	0(0.00)	-			
Religion			0.9967		
Catholic	53(38.97)	ref.			
Protestant	58(38.67)	0.98(0.61–1.59)	0.958		
Muslim	0(0.00)	-	-		
Other	40(38.46)	0.98(0.58–1.65)	0.936		
Partner Knows about BSE					
Yes	150(39.16)	ref.	**0.035**		
No	1(6.67)	0.11(0.01–0.85)		0.08(0.01–0.76)	**0.028**
How often should one perform BSE			**0.0304**		
Not sure	1(50.00)	ref.			
Weekly	67(31.31)	0.46(0.03–7.40)	0.581	0.10(0.00-4.55)	0.24
Monthly	71(46.41)	0.87(0.05–14.10)	0.919	0.18(0.00-7.87)	0.372
Yearly	12(41.38)	0.71(0.04–12.43)	0.812	0.14(0.00-6.46)	0.312
Where heard from			**0.045**		
Internet	29(53.70)	ref.			
Media (Radio & TV)	84(37.00)	0.51(0.28–0.92)	**0.026**	0.51(0.27–0.97)	**0.039**
Friends	7(17.50)	0.18(0.07–0.48)	**0.001**	0.25(0.09–0.69)	**0.007**
Nurse/Doctor	10(32.26)	0.41(0.16–1.03)	0.059	0.45(0.17–1.21)	0.115

Characteristics	Knowledge and Practice (%)	uOR (95%CI)	p value	aOR (95%CI)	p value
Relatives	14(40.00)	0.57(0.24−1.36)	0.208	0.61(0.25−1.50)	0.281
Never Heard	7(63.64)	1.51(0.40−5.76)	0.548	1.65(0.39−7.02)	0.495

The study also found that participants with college education were more likely to report correct knowledge and practice of BSE (adjusted Odds Ratio [aOR] = 3.25, 95%CI [1.03−10.25], p = 0.044) compared to those with no education. In addition, those with primary and secondary education were also more likely to report correct knowledge on BSE (aOR = 1.67, 95%CI [0.59−4.73], p = 0.333) and (aOR = 2.23, 95%CI [0.77−6.50], p = 0.141) respectively than participants with no education, but it was not statistically significant. Participants who were not married/cohabiting were less likely to report correct knowledge and practice of BSE (aOR = 0.60, 95%CI [0.36−0.99], p = 0.048) compared to the married/cohabiting. Lastly, participants who heard about BSE from media (aOR = 0.51, 95%CI [0.27−0.97], p = 0.039) and friends (aOR = 0.25, 95%CI [0.09−0.69], p = 0.007) were less likely to report correct knowledge and practice than those who got the information from the internet (Table 4).

Discussion

This study found that a majority of its respondents both women and their partners were aware of breast cancer. Studies that have examined the attitudes and knowledge towards BSE have evidenced that improved breast cancer awareness has significant impacts on early detection practices [14]. In this study, the proportion of women with good knowledge of BSE was close to 40%. This finding is comparable to studies done in Ethiopia, Eritrea and Nepal that ranged from 27−40% [15]. However, the proportion of knowledge in this study is lower than what was reported in Saudi Arabia 79%, Uganda, 76.5%, Egypt 63.4% and Nigeria 55.4% [15]. The differences in knowledge levels can be attributed to the varying socioeconomic and demographic characteristics among the study population.

Our study findings showed that majority of the participants had heard of BSE from the media and is in line with previous studies [16]; [17]. These studies have shown the need to increase knowledge of breast cancer and BSE through the use of media and healthcare providers. The role of healthcare providers has been mentioned severally as they educate and manage health diseases and detection such as breast cancer [18]. Some of the study participants had heard of BSE from friends and it has been evidence that discussion on health issues is anticipated to foster awareness on the subject matter of interest [15]. A study conducted in Kenya recommended the need to increase BSE coverage in the media [19]. It has been shown that health promotion programs on BSE increases the practice of BSE among women as it will increase their confidence thus leading to regular self-examination [20]. Studies have documented that women with adequate knowledge on breast cancer are more likely to regularly practice BSE [18].

In this study, it was observed that BSE is infrequent as less than half of the participants reported practicing BSE. Only 37% of the participants performed with the recommended periodicity of health institutions. A study done in Mexico reported 35% of women carrying out BSE as per the health institutions recommendations [21]. Similar findings were observed in a study carried out in Ethiopia that reported 41% of women reported practicing BSE and only 18% knew the recommend frequency [22]. A study conducted in Cameroon on women reported in 120 women reported that 60% did BSE but only 35% performed it monthly [23]

This study found that almost all of the participants' male partners were aware of breast cancer, however only close to a third knew how to perform BSE. Similar findings were observed by [17] where it was revealed that even though 98.8% of the male participants were aware of breast cancer, they had limited knowledge about the disease.

The KIIs revealed that most of the males do not think that it is culturally appropriate to accompany their wives to maternal health care visits and consider themselves dominated by their wives. The study finding are similar to a study by conducted in sub Saharan Africa that showed that men reported that they would be regarded as being 'ruled' by their wives if they were seen participating in maternal health care services [24]

The study's prevalence of BSE practice was almost similar to a study done on Indonesian women which found that 39.5% of the participants reported practicing BSE [25]. Almost similar finding were found in a study done in Tanzania, 33%, and Ethiopia at 37% [26] and [27].

Studies have shown statistical significance difference between socio-demographic characteristics and the knowledge and practice of BSE. This study found that women with higher level of education were more likely to practice BSE compared to those with little or no education. A study on Malaysian women found a positive association between the level of education and practice of BSE [18] Similarly, the findings corroborate results from an Ethiopian study that reported higher levels of education to be significantly associated to BSE [28]. Higher education increases BSE practice in detecting any difference in their breast due to adequate knowledge to perform BSE [21].

Married women were more likely to have the correct knowledge and practice and BSE as reported in this study. This finding is in line with previous studies that suggested that married women were more conscious of their breasts and were more likely to perform BSE [16]. In addition, the study found that participants who reported that their partners knew of BSE were more likely to report correct knowledge and practice. It has been evidenced that spousal emotional and economic support is key to a woman's confidence in seeking early treatment [18]. Despite the majority of the participants had heard of BSE from the media and their friends, they had less likelihood of practicing BSE than those who heard about it from the internet. This contradicts other studies that found that respondents who discussed with others on BSE were more likely to regularly practice it [15]. This discrepancy can be due to the difference in population as the study was conducted among university students who form a homogenous cohort compared to our study done in the general population.

This study found no statistically significant association between age and BSE. A study conducted in Cuba on 80 women found that older women > 40 years had greater knowledge and adherence to BSE practice though no statistically significant difference was observed and this is similar to the study findings[29]. However, previous studies done in Asia indicated that women with lower socio-economic status and women above 50 were less likely to perform BSE [18]. Studies done in Mexico and Ethiopia found that women who self-explored the most were aged between 20–29 years [30]; [21].

Conclusions And Recommendation

The study found that marriage and source of information as key factors that influence BSE. Participants who were married were more likely to have correct knowledge and practice of BSE compared to those who were not. Participants who got their source of information from the media and through friends were less likely to practice BSE than those who got the information from the internet.

The County together with the Ministry of Health should take steps to raise awareness on the importance and benefits of BSE in maternal health care services. They should also stress on the need for the correct practice of BSE. During routine hospital visits women should be educated on BSE; when and how to perform it and encouraged to report to a health facility in case any abnormality is detected.

Limitations

The study did not do a comparison of responses from the women who did not seek maternal services at the facility. However, this will not hinder the results of the study as most of the women access the free maternity services offered at the facility. Another limitation of the study was the impact of COVID – 19 pandemic on data collection. The study ensured that all the ministry of health COVID-19 containment protocols was strictly adhered to during the data collection. The research assistants were tested for COVID-19 on a biweekly basis and provided with Personal Protective Equipment kits. The participants were only allowed in with a mask and after washing their hands with soap that was provided by the facility.

Abbreviations

BSE – Breast Self-Examination

CBE- Clinical Breast Examination

JOOTRH-Jaramogi Oginga Odinga Teaching and Referral Hospital

JOOUST- Jaramogi Oginga Odinga University of Science and Technology

NACOSTI- National Commission for Science, Technology and Innovation

IERC-Internal Ethical Review Committee

Declarations

Ethical Considerations

Authorization to conduct this study was obtained from board of post graduate studies of Jaramogi Oginga Odinga University of Science and Technology (JOOUST). Permission to conduct the study was given from the County Health Management Team (CHMT) of Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH).All methods of the study were performed in accordance with all the relevant guidelines and regulations of the research and ethical committee of JOOTRH (Approval number IERC/JOOTRH/370/20). Additionally, permission was also obtained from the National Commission for Science, Technology and Innovation (NACOSTI) for the collection of information (Ref No:835921). An informed consent of the research participants was obtained before collecting the data. For the illiterate participants, informed consent from their parent or legal guardian was obtained and an impartial witness present during the informed consent process also signed and datedthe form. The collected data was deidentified and anonymised, and the information collected was only used by the researcher to ensure privacy and confidentiality of the participants' data.

Consent for publication

Not applicable

Availability of data and materials

All data generated or analysed during this study are included in this published article [and its supplementary information files].

Competing interest

The authors declare that they have no competing interest.

Funding

The study was self-funded.

Authors' Contributions

MAO designed, collected and authored the manuscript, SSA and GA assisted in the design, authorship, analysis and interpretation of the results, and HF did the cleaning and statistical analysis. All authors critically reviewed and revised the manuscript.

Acknowledgements

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Figures

A

Ever heard of Breast Self Examination or Breast Cancer
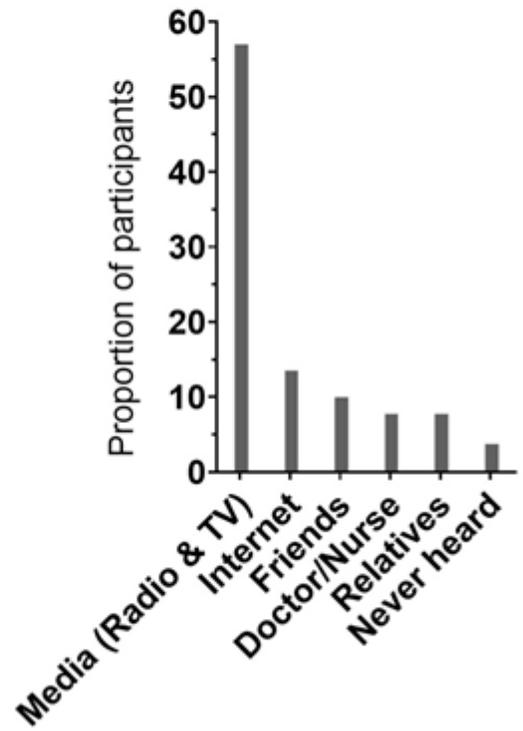
■ Yes
■ No
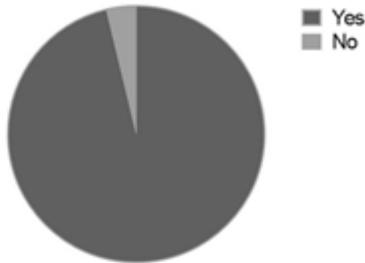
B

Where heard from

Figure 1

A) Heard of BSE and breast cancer; B) Place heard of BSE

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