Knowledge attitude and practice regarding breast cancer early detection and breast self-examination among women in the city of Yaoundé–Cameroon

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Background: Breast cancer (BC) is among the commonest causes of deaths among women in the world. It is becoming a major concern for many developing countries and its incidence in Cameroon is on the rise and accounts for a leading cause of mortality. An understanding of the knowledge and practices on breast cancer and breast self-examination (BSE) among women are important first steps which will guide the adjustment and redesigning of interventions aimed at raising awareness across the general population.

Methods: We conducted a cross-sectional study in March 2019 involving 213 consenting women in the city of Yaoundé- Cameroon. Data was collected using a pretested self-administered questionnaire and analyzed using descriptive methods.

Results: The mean age of the respondents was 20.4±7.0 years and a vast majority (n = 133, 62%) had heard about BCD primarily from the television/radio (n=113, 77%). Overall, less than a quarter (n=21, 9.9%) of respondents who had heard about BCD could cite BSE as a breast cancer diagnostic method and (n=123, 58%), (n= 127, 60%) and (n=1, 0, 5%) agreed to have heard of BSE, mammography and CBE respectively when cited by the researchers. Among those who could cite or who had heard of BSE, only (n= 36, 17%) knew that BSE should be performed seven days after menstruation and (n=82, 38%) knew how to perform BSE. While just (n= 63, 30%) were very confident to notice a change in their breast. Moreover, (n= 34, 16%) could cite lumps as a symptom of BC and financial constraint (n=70, 33%), ignorance of the disease (n= 61, 29%) and do not bother to check (n=56, 26%) were the main reasons given by those who did not know how to perform any of the diagnostic methods. The majority had insufficient knowledge on its risk factors and signs/symptoms. A majority (n=126, 59%) agreed that BC was very serious and deadly while (n= 33, 15%) and (n=14, 7%) said it was caused by an infection and by evil spirits respectively.

Conclusion: Though most women are aware of the existence of breast cancer, their overall knowledge on its risk factors and clinical presentation is insufficient with a concomitant low practice of BSE. These highlighted gaps warrant intensification of sensitization campaigns and educational programmes in order to raise knowledge levels and enhance prevention strategies that would aid in reducing the burden of breast cancer in Cameroon.

Keywords—Breast cancer; knowledge; Attitudes; Practice;Breast self examination; Women; Early detection;Yaounde-Cameroon

I. INTRODUCTION

Worldwide, breast cancer is ranged the second most frequent cancer and the fifth cause of cancer-related mortality [1]. It is the most common cancer in women and it is second only to lung cancer as the leading cause of death resulting from cancer among female patients [1-3]. In low and middle-income countries (LMICs), it remains a significant public health challenge with incidence rates shown to increase yearly by as much as 5% with over 1 million projected new cases annually by 2020 [2-5]. The emergence of the disease and its subsequent development to cancer appears to be more aggressive in young women than its progression in older women [6,7]. In 2008, the prevalence of breast cancer in women ≥15 years in sub-Saharan Africa was estimated at 23.5 per

100,000 women and approximately 35,427 women died from the disease (crude mortality rate of 12.8 per 100.000 women) [8,9]. In Cameroon, the incidence of breast cancer is estimated at 2625 per 100,000 women [3,5]. The high morbidity and mortality due to breast cancer can be in-part reduced if the lesion is detected early enough [2]. In this regard, women need to be "breast aware" by being able to identify the risk factors and symptoms of breast cancer as well as risk reduction strategies.

Screening methods aimed at early detection and treatment of BC includes breast self-examination (BSE), clinical breast examination (CBE), and mammography and these are usually done in combination [10–12]. An ideal screening test needs to be simple, inexpensive, and effective. Among these methods, only mammography has been proven to be effective, but the method is very costly, and is cost-effective and feasible in countries with good health infrastructure [13, 14]. BSE is the recommended method in developing countries because it is easy, convenient, and safe and requires no specific equipment [15]. Breast self-examination is a monthly examination of the breast and underarm area that a woman can do physically or visually while she is looking and feeling for changes. Dorsay [16] defines breast self-examination as a method whereby a woman examines her breasts regularly and at specific intervals. When performing breast self-examination, premenopausal women should examine their breasts 5-7 days after the beginning of their periods while as menopausal women should perform BSE at the same date each month. About 69% of women practicing BSE detect their tumors by this method and study has shown that 18.8-24.4 percent of breast cancers might be reduced by using a combined method of Breast self-examination and routine clinical examinations [17].

In Cameroon, the cancer surveillance system is not well organized as many deaths related to cancer are not reported nor recorded. Control of cancer including breast cancer is through the organization of periodic screening campaigns which are often not very effective since they are in most times organized only in major urban centers [18]. In Yaoundé like in most other urban areas in Cameroon, women often learn of BSE from several different sensitization structures like from; health personnel, media including radios, televisions, churches, female associations, just to name a few. It had been demonstrated that factors related to women´s awareness, knowledge and perceptions about breast cancer may contribute significantly to medical help-seeking behaviors [19-21]. Thus, considering the potential pivotal role played by these different sensitization structures in information dissemination, this study sought to assess the awareness, knowledge and perceptions of breast cancer and practice of breast self-examination among females of all social class, and also to evaluate if the efforts played by these different sensitization structures and the Government in disseminating information on BC is actually well understood by the these women of different social groups.

II. METHODOLOGY

A. *Study design and setting*

We conducted a cross-sectional descriptive study on the 8th of March 2019 in the Ministry of Scientific Research and Innovation, specifically in the Institute of Medical Research and Medicinal plants Studies and particularly at the center of medical research in Yaoundé, the capital city of Cameroon. Yaoundé is a centre of attraction for a multi-ethnic population who either move there for; business, studies or to explore the diverse economic activities the town can offer.

B. *Study population*

It involved women of reproductive age (18 years and above), who attended the free medical screening campaign organized by the center of medical research in commemoration to several other activities launched by the institute of Medical research and medicinal plant studies to accompany the international day of the woman. The sample size of 335 was calculated based on result of previous similar study. A confidence interval of 95% ,absolute precision of 0.05 and prevalence of 26.8% were used. The study excluded all women who were below 18 and those who were not willing to give their consent.

C. *Ethical consideration*

The Ethical approval for this study was obtained from the Ethical Committee of the Institute of Medical Research and Medicinal plant Studies while written and verbal consent was obtained from the participants and they were assured of the anonymity and confidentiality of their information. There was no financial benefit for participating in the research and participation was on a voluntary basis.

D. *Data collection and analysis*

Data were collected using a pre-tested self-administered questionnaire, written in both English and French, the semi-structured questionnaire comprising of 6 sections covering; socio-demographic information, knowledge, perception, attitude , practice of the respondent and personal reasons for late presentation/ diagnosis or for not practicing breast cancer screening. It was developed using a modified Cancer Awareness Measure Toolkit (version 2.1) developed by the UK cancer research and on

questions used in previous peer reviewed published studies. The questionnaires were self-administered to the women who came for the free medical campaign; however special assistance were given to women who were not sufficiently literate. The completed questionnaires were collected and verified by senior researchers.

The data was entered into Microsoft excel and descriptive methods were used to summarize the data. Chi square test was used to test for associations between the variables.

III. Results

A. Socio-demographic characteristics

A total of 213 completed questionnaires were received. The participants' were between 19 and 55years (mean = 30.4 ± 7.0) of age. A vast majority 33 (15.4%) of the participants were in the age range of 26 -32 years. 19 (9%) were married and the West region was the most represented with 52(24.4%) participants. 45 (21.1%), 15 (7.04%) and 9 (4.23%) had a tertiary level of education, a secondary level of education and a primary-level of education respectively and only nine (4.23%) of the participants had no formal education, whilst 135 (63.4%) did not give any response regarding their educational level. 15 (7%) were workers,9 (4.2%) were unemployed whilst 38 (17.8%) were still studying, 1 (1%) was Disabled or too ill to work and 150 (70%) preferred not to give any response. 2 (1%) have had cancer of the breast, 22 (10.3%) had a close family who had breast cancer and 16 (7.5%) have had a close friend who had breast cancer (Table 1).

B. Knowledge on breast cancer diagnostic methods and source of information

Ninety one (42.5%) of the women had never heard of breast cancer, whilst only 133 (62 %) had heard of breast cancer diagnostic methods, with their source of information being mainly from the media (TV, n = 113; 53%, radio, n=101; 47%) as opposed to coming from a health facility (n=37; 17%) and Doctors/Nurses (n=72; 34%), (figure 1). Among those who have heard of breast cancer diagnostic methods, 21 (9.9%), 9 (4.2%) and 1 (0.5%) could actually cite BSE, mammography and CBE as breast cancer diagnostic methods respectively. While 123 (58%), 127 (60%) and 78 (37%) agreed to have heard of BSE, mammography and CBE as breast cancer diagnostic methods respectively. Furthermore, 177 (83.0%) of the participants did not know the appropriate time to perform BSE, whereas 36 (17%) knew that BSE should be performed seven days after menstruation and 82 (38%) knew how to perform BSE whereas 131(62%) did not know how to perform BSE.

C. Knowledge on symptoms of breast cancer

The women's knowledge on breast cancer symptoms was assessed in two sections;

The first part consisted of testing their own knowledge to see if they could cite by themselves the different symptoms of breast cancer. Lumps was cited by the majority of participants (*n* =34; 16%), followed by pains (n=33; 15.5%), swelling of the breast or armpit (*n* =11; 5.2%) and nodules (*n* =8; 3.8%). Nipple changes (*n* =5; 2.4 %), breast skin changes (*n*=3; 1.4%) and abscess (*n* =2; 0.94 %).

In the second part, a series of symptoms were listed and the women were being asked to response to the series of listed symptoms with categorical responses (yes, I don't know, and no) as shown on Table 2. Furthermore their knowledge on the age range of which females are more likely to develop breast cancer was also tested and most participants said: a woman of any age group could develop breast cancer with n= 137 (64%), n= 38 (18%) agreed that only women of age 30 years old could develop the disease while n= 23 (11%) talked of women of age 50 years old and n= 5 (2%) of the respondents cited the age of 70years old while n= 10 (5%) gave no response.

D. Perceptions of breast cancer

Participants' opinion on several statements related to breast cancer or breast cancer screening are summarized in Table 3. Participant's had differing opinions on the statement, more than half, n=135 (63%),n= 126 (59%) agreed that breast cancer was very serious and deadly respectively, while n=80 (38%) of them agreed with the statement that they were convince that treatment could save a woman from losing her breast if detected early and that breast cancer was curable. Meanwhile n=33 (15%) said it was caused by an infection, n= 28 (13%) said the cancer affected only Caucasians and n=14(7%) said breast cancer was caused by an evil spirit.

E. Practices of breast cancer screening and behavior (Attitudes)

Eighty (40%) of the women said that they had never or rarely performed any of the breast cancer diagnostic checks, 21 (10%) said they check their breast at least once every 6 months, 36 (17%) do check their breast at least once a month and 72 (34%) said they do check their breast at least once a week.

Regarding health-seeking behavior, 40 (19%) reported that they were not at all confident to noticed any change in their breast,50 (23%) said they were not very confident to notice a change,60 (28%) said they were fairly confident and 63 (30%) said they were very confident to notice a change in their breast when checking. Two hundreds and ten (99%) said they would consult the medical doctor, 21 (14.0%) said that they would consult the traditional doctor and only five (3.3%) would consult a prophet in case of symptoms. Furthermore, 132 (62%) believe that there is a National breast cancer screening programme in

Cameroon while 15 (7%) denied the fact and 66(31%) of the women said they had no idea or did not know if there is a National breast cancer screening programme in Cameroon. Among those who accepted that there is a National breast cancer screening programme in Cameroon, 38 (13%) of them said they have been once invited for breast cancer screening during the programme, and 198 (93%) said they were never invited.

F. Attitudes towards risk of development of breast cancer

Almost a quarter of the women (n = 69; 32.4 %) were not sure, 61 (28.6%) gave no response, 20 (9.4%) disagreed and 22(10.3%) strongly disagreed that having a family history of breast cancer could increase the chances of developing breast cancer whereas 19 (9%) agreed and 22 (10.3%) strongly agreed that having a family history of the disease could increase the chances of developing breast cancer. Thirty one (14.6%) strongly agreed and twenty three (10.8%) agreed that using hormone replacement therapy (HRT) could increase the risk of developing breast cancer whereas 55 (26%) gave no response, 75 (35%) was not sure, 15 (7%) disagree and 14 (6.6%) strongly disagreed that HRT could increase risk of development of the disease. Also, nine (4.2%) of the women agreed that drinking more than 1 unit of alcohol a day ,could increase the possibility of developing breast cancer and 12 (6%) strongly agreed with this statement, whereas 24 (11.2%) disagreed, 39 (18.3%) strongly disagreed,82(38.3%) was not sure and 47 (22%) gave no response regarding the possibility that drinking more than 1 unit of alcohol a day could be a risk factor for the development of breast cancer .Furthermore , 20 (9.4%) of the women disagreed, 35 (16.4%) strongly disagreed,80 (38%) was not sure and 54 (25%) had no response regarding to the fact that obesity (BMI> 25) could be a risk factor for the disease meanwhile 11 (5.2%) of the women agreed and 13 (6%) of them strongly agreed that obesity could be a risk factor for the development of breast cancer . The other indicators used to evaluate the risk factors that could increase a women chance of developing breast cancer are summarized in table 4.

G. Personal reasons for late presentation/ diagnosis or for not practicing breast cancer screening

The main reason for not performing BSE,CBE or mammography as cited by the respondents were financial constraint 70 (33%); followed by the reason that the respondents were ignorant of the nature of the disease 61 (29%); did not bother to check 56 (26%); unaware of appropriate facilities / procedures 53 (25%) ; fear of having cancer or death 46 (22%); fear of stigma 31 (15%) ;forgetfulness or too busy 18 (8%) and beliefs in alternative treatments 16 (8%).Figure1

IV. DISCUSSION

As the incidence of breast cancer increases worldwide, understanding women's knowledge, attitude, and behaviors engaged towards breast cancer screening is essential, because screening is a first step toward early detection. Developed countries have recognized this for decades and have often created culturally specific awareness campaigns. However, a lack of similar research marks many developing countries, including Cameroon, to the detriment of women. With limited resources and access to healthcare, many developing countries may not have the luxury to plan several campaigns to make the required impact and reach women all over a given nation.

In Cameroon, the Ministry of Public Health, the media and women association groups have tried to organize awareness sessions and campaigns to reach as many Cameroonian women as possible, in different regions. However, studies have not been conducted to examine the post-campaign knowledge, attitudes, and practices of the women the campaigns sought to reach. Post campaign studies are important to identify geographical areas that may have not been reached, messaging that needs to be modified, or remaining cultural barriers to this screening. Our study was timely to address these important issues to make breast cancer screening more widespread among Cameroonian women, and our findings help us understand women's knowledge of, attitudes toward, and practices of BSE, CBE, and mammography.

Although strong evidence indicates that BSE does not reduce breast cancer mortality, it is still recommended that women know their breasts. Also, CBE is highly recommended for women in their 20s and 30s, every 3 years, and for women aged 40 and older on an annual basis. [22]

Our study results showed that most of the surveyed women had an average awareness about the existence of breast cancer, but insufficient knowledge and misperceptions on its risk factors and causes as well as infrequent practice of breast self-examination. In our findings, 62%, n=133 of the participants had heard about breast cancer with aim source of information being the media (TV 77%) as oppose to health facilities (17%). This is lower than the 88.1% and 81.2% observed in a group of Cameroonian [23] and Malaysian [24] women respectively who have heard of BC. It is however much lower than the 100% among female medical students in Harar, Ethiopia [25], 98.7% among female students in the University of Ibadan, Nigeria [26] and 95% among female university students in Ghana [27] and 64% among Iranian women [28]. The lower rate of awareness on the existence of breast cancer in our study with respect to these studies may be due to the fact that in Cameroon, we lack a National Breast Cancer Awareness Committee which can organize frequent awareness sessions and campaigns to reach as many Cameroonian women of different intellectual class as possible, in the ten different regions. Among those who have heard of breast cancer (62%), 42.5% of them have heard of breast cancer diagnostic methods and only 9.9%, 4.2% and 0.5% could actually site by themselves BSE, Mammography and

CBE respectively as a diagnostic method. Meanwhile, 58%, 60% and 37% agreed to have heard of BSE, Mammography and CBE when sited by the investigators as a diagnostic method. Furthermore, among the 58% who agreed to have heard of BSE, only 38% claimed to know how to perform it, while 17% knew that BSE should be performed seven days after menstruation, other studies have also shown contrasting values: 33.3% [29], 30% [30] in nurses and 80.2% [31] in female medical students. More efforts should be put on increasing the practice of BSE.

83% did not know the appropriate time to perform BSE while 62% did not know how to perform BSE. This is similar to other previous studies who reported 63.3%, 60% and 22.6% of female medical students and health workers who did not know how to do BSE[29] [30] [31].

Knowledge of breast cancer signs and symptoms according to Table 2 could be said to be fairly good. Previous studies in Nigeria have indicated lower knowledge with only 21.4% and 1.9% respectively being able to identify painless lump as a sign. [32, 33]. Their knowledge could be said to be poor when asked to cite by themselves without using the signs and symptoms table. Previous studies in a rural South African community and in Jordan, indicated a higher knowledge with 60% (n= 90) and 43.5% respectively being able to cite painless lump [36] [37] by themselves as a sign of breast cancer as oppose to 16 %(n= 34) in our study. It is disturbing that about 35% were still in the dark about all the signs and symptoms of breast cancer. Timely presentation has been linked to ability to recognize breast cancer signs/symptoms[34,35].

Most of the respondents (59%) were of the opinion that breast cancer was very serious and deadly but just few (38%) agreed that treatment could save a woman from losing her breast and breast cancer could be cured if detected early. This is lower as compared to related studies among nurses in general hospital Lagos, Nigeria where about 78.4% of the respondents agreed that breast cancer is curable if diagnosed and treated early.[38] This study further revealed that a relatively good number did not see early screening procedures as effective in detecting breast cancer. This is opposed to a similar perception reported in Ibadan Nigeria [39]. While this may suggest a poor attitude towards early detection procedures, the high percentage of those whose opinion were against early detection deserves a strong attention.

In relation to level of practice, almost half, n= 80 (40%) had poor practice, and said they had never or rarely practiced any of the three preventive measures. About 17% (n=36) and 10% (n=21) who had fairly good practice, do check their breast at least once a month or once every six months respectively, while only about 34% (n= 72) check their breast at least once a week. Generally, this indicates that practice is low compared to the total numbers who practice at least once a month. Previous studies have reported low practice levels, for BSE (34.9%) and CBE (9.1%), and no history of practice for Mammography [40] Though the respondents felt BSE was necessary, the majority who did not practice any of the preventive measures, had false beliefs, unaware of appropriate facilities, financial constraint, ignorant ,fear, shyness, and embarrassment to the procedure. Previous studies always cited lack of knowledge 73 (44%); forgetfulness 33 (19.9%); lack of time 16 (9.6%); fear of finding lumps 12.9 (7.8%); and embarrassment 8 (4.8%) as main reason for not performing BSE [41]. Evidence says that women who correctly practice BSE monthly are more likely to detect a lump in the early stage of its development, and early diagnosis has been reported to influence early treatment to yield a better survival rate [42].

Knowledge about risk factors was very limited with more than half of participants providing the wrong answers were not sure or gave no response to this question. This is consistent with results from Saudi Arabia where the total knowledge score for the sample was low (with a median of 7.0 out of 14) (Amin et al., 2009). Smoking was the most commonly reported risk factor (22%) followed by Women who do not breastfeed (21%). This is contrary with those of Ramathuba *et al*., 2015 and Al-Dubai *et al*. (2011:2536), who reported poor understanding of risk factors such as smoking, genetics, hormones and obesity. Yan (2009:100) also found that breastfeeding, age of menopause and menarche were not recognized as risk factors.

The results of the survey suggest the need for more educational programmes to improve current knowledge of cancer. Knowing the risk factors for breast cancer might help the participants to adopt a healthy lifestyle of proper nutrition and exercise, avoidance of unnecessary exposure to radiation and going for genetic testing if at risk, as well as avoiding such practices such as smoking and drinking in order to reduce the incidence of breast cancer morbidity and mortality (Hadi *et al*. 2010:33). Poor knowledge of risk factors and knowledge of their relative risk of developing breast cancer also explains why they do not engage in health-promotion behaviour or breast-screening practices.

Conclusion

Despite the diverse sensitization campaigns organized by the Ministry of Health, the audiovisual media and private organizations to create awareness about breast cancer screening and BSE, lack of knowledge about breast cancer screening is still evident. The study conducted to assess the Knowledge, attitude and practice of BC and BSE among women in the city of Yaoundé- Cameroon demonstrated a considerable gap between the Knowledge and practice of BC and BSE. This brings to light the need by the ministry of health to reformulate programs and sensitization strategies that will close the existing gap. The use of the media, especially television for intensified sensitization programs can greatly change the women' knowledge level and hence, improves the practice of BSE for

early detection of breast cancer. We recommend the ministry of health to create national breast screening program in all the ten regions of Cameroon and create holistic approach to tackle socioeconomic, cultural, and religious factors with respect to each region.

Limitations of the Study

Our findings are confined to women who reside in Yaoundé and those not reflect the situation among women in other regions and in rural areas, thus a potential limitation.

What is known about this topic

- Generally, Cameroonian women have poor knowledge on breast cancer and infrequently practice breast-self-examination.

What this study adds

- The women had limited knowledge and attitudes on the risk factors that could increase the chance of development of breast cancer.
- Breast lump is the most commonly known symptom of breast cancer: important knowledge deficits on signs/symptoms;
- The women did not practice any of the breast cancer diagnostic methods due to ignorance of the nature of the disease, unaware of appropriate facilities of diagnostic, fear to hear that they have cancer and fear of stigma from the society.

Competing interests

The authors declare no competing interest.

Authors' contributions

Akwah Lilian, Mbuh Salioh Mbinyui and Ngwene Hycentha conceived the study, participated in its design and coordination, and critically revised the manuscript. Mbah Clarisse and Kabeyene Okono Angele Clarisse participated in the design of the study, statistical analysis and critically revised the manuscript. Maidaidi Fouda Martin, Kountchou Cyrille Levis, Adamou Velhima Elie, Mansour Mohamadou, Enama Franck Stephane, Abdouraman Bouba, Adamou Oumar, Claude Ngwayu Nkfusai, Marie Chantal Ngonde Essome participated in data collection, statistical analyses, conducted the literature search and review, and wrote the first draft. All authors read and approved the final manuscript.

Abbreviations

BC- Breast cancer, BSE Breast Self – Examination, CBE- Clinical Breast Examination

Table 1: Socio demographic characteristics of the 213 women in the city of Yaoundé-Cameroon, March 2019

Variables	Frequency	Percentage (%)
- Age		
19- 25	10	5
26- 32	33	15,4
33-39	9	4,2
40-46	6	3
47- 53	3	1,4
Prefer not to say	152	71
- Gender		
Female	179	84
Prefer not to say	34	16
- Ethnic group		
North west region	6	2,8
South west region	4	1,9
Adamanuo region	0	0
Littoral	19	8,9
Center	36	16,9
North	8	3,8
Extreme north	4	2
East	6	2,8
West	52	24.4
No response	78	36,5
- Marital status		
Single/never married	51	24
	19	9
	1	1

Married/living with partner	0	0
Divorced	4	2
Widowed	5	2
Sexual intercourse	133	62
Prefer not to say		
No response		
- Highest level of education	45	21,1
qualification	15	7,04
Tertiary education	9	4.23
Secondary education	9	4,23
Primary education	135	63,4
Still studying		
Prefer not to say	15	7
- Currently	9	4.2
Employed full-time	38	17.8
Unemployed	1	1
Still studying	150	70
Disabled or too ill to work		
Prefer not to say[‘]		
- Have you, your family or	2	1
close friends had cancer?	/	/
You	22	10.3
Partner	16	7.5
Close family member	173	81,2
Close friend		
No response		

Table 2: Knowledge on symptoms of breast cancer of the 213 women in the city of Yaoundé- Cameroon, March 2019

Variables	Frequency	Percentage (%)
- Do you think a lump or thickening in your breast could be a sign of breast cancer?		
Yes	109	51,2
No	69	32,4
Don’t know	35	16,4
- Do you think a lump or thickening under your armpit could be a sign of breast cancer?		
Yes	79	37
No	72	34
Don’t know	62	29
- Do you think bleeding or discharge from your nipple could be a sign of breast cancer?		
Yes	117	55
No	32	15
Don’t know	64	30
- Do you think the pulling in of your nipple could be a sign of breast cancer?		
Yes	44	20,7
No	89	41,8
Don’t know	80	37,5
- Do you think a change in the position of your nipple could be a sign of breast cancer?		
Yes	83	39
No	48	23
Don’t know	82	38

Yes	81	38
No	60	28
Don't know	72	34
- Do you think a rash on or around your nipple could be a sign of breast cancer?		
Yes	77	36
No	63	30
Don't know	73	34
- Do you think redness of your breast skin could be a sign of breast cancer?		
Yes	97	45,5
No	65	31,5
Don't know	51	23
- Do you think a change in the size of your breast or nipple could be a sign of breast cancer?		
Yes	121	57
No	41	19
Don't know	51	24
- Do you think a change in the shape of your breast or nipple could be a sign of breast cancer?		
Yes	148	69
No	38	18
Don't know	27	13
- Do you think pain in one of your breasts or armpit could be a sign of breast cancer?		
Yes	66	31
No	32	15
Don't know	115	54
- Do you think dimpling of the breast skin could be a sign of breast cancer?		
Yes		
No		
Don't know		

Table 3: Knowledge on perception of the 213 women in the city of Yaoundé- Cameroon, March 2019

Variables	Frequency	Percentage (%)
- What is your perception on breast cancer?		
Very serious	135	63
Deadly	126	59
African women are not susceptible to breast cancer	28	13
Affect only Caucasians	6	3
Caused by infections	33	15
Cause by evil spirit	14	7
Could be transmitted sexually	5	2
	80	38

Convince that treatment could save a woman from losing her breast or death	10	5
Is mastectomy the only treatment	81	38
Breast cancer is curable		

Table 4: Knowledge on attitude towards risk of developing breast cancer of the 213 women in the city of Yaoundé- Cameroon, March 2019

Variables	Frequency	Percentage (%)
- Having a family history of breast Cancer		
Strongly disagree	22	10,3
Disagree	20	9,4
Not sure	69	32,4
Agree	19	9
Strongly agree	22	10,3
No response	61	28,6
- Using HRT (Hormone Replacement Therapy)		
Strongly disagree	14	6,6
Disagree	15	7
Not sure	75	35
Agree	23	10,8
Strongly agree	31	14,6
No response	55	26
- Drinking more than 1 unit of alcohol a day		
Strongly disagree	39	18,3
Disagree	24	11,2
Not sure	82	38,3
Agree	9	4,2
Strongly agree	12	6
No response	47	22
- Being overweight (BMI >25) /obesity		
Strongly disagree	35	16,4
Disagree	20	9,4
Not sure	80	38
Agree	11	5,2
Strongly agree	13	6
No response	54	25
	37	17
	16	8
- Having a close relative with breast cancer	57	27
Strongly disagree	19	9
Disagree	43	20
Not sure	41	19
Agree		
Strongly agree		
No response	52	24
- Having children later on in life (after 30 years) or not at all	16	8
	76	36
Strongly disagree	7	3
Disagree	21	10
Not sure	41	19
Agree		
Strongly agree	56	26
No response	20	9
	78	37
- Starting your periods at an early age	13	6
Strongly disagree	8	4
Disagree		

Not sure	38	18
Agree		
Strongly agree		
No response	44	21
- Having a late menopause	22	10
Strongly disagree	22	10
Disagree	8	4
Not sure	12	6
Agree	105	49
Strongly agree		
No response	38	18
- Doing less than 30 minutes of moderate physical activity	24	11
5 times a week	76	36
Strongly disagree	10	5
Disagree	20	9
Not sure	45	21
Agree		
Strongly agree	42	20
No response	12	6
- Smoking	52	24
Strongly disagree	17	8
Disagree	47	22
Not sure	43	20
Agree		
Strongly agree	45	21,1
No response	13	6,1
- Increase age	72	34
Strongly disagree	9	4,2
Disagree	22	10,3
Not sure	52	24,3
Agree		
Strongly agree	31	14,6
No response	17	8
- Diet	70	32,8
Strongly disagree	15	7
Disagree	31	14,6
Not sure	49	23
Agree		
Strongly agree	36	17
No response	14	7
	65	30
	22	10
- Induce abortion	30	14
Strongly disagree	46	22
Disagree		
Not sure	41	19,2
Agree	20	9,4
Strongly agree	60	28,2
No response	19	9
- Dense breast tissues	73	34,2
Strongly disagree		
Disagree	37	17,4
Not sure	22	10,3
Agree	58	27,2
Strongly agree	17	8
No response	24	11,1
- Hurting the breast	55	26
Strongly disagree		
Disagree	30	14
	17	8
	65	31

Not sure	18	8
Agree	30	14
Strongly agree	53	25
No response		
- Constant use of hair dyes	30	14
Strongly disagree	16	8
Disagree	19	9
Not sure	19	9
Agree	45	21
Strongly agree	84	39
No response		
- Women who do not breastfeed		
Strongly disagree		
Disagree		
Not sure		
Agree		
Strongly agree		
No response		

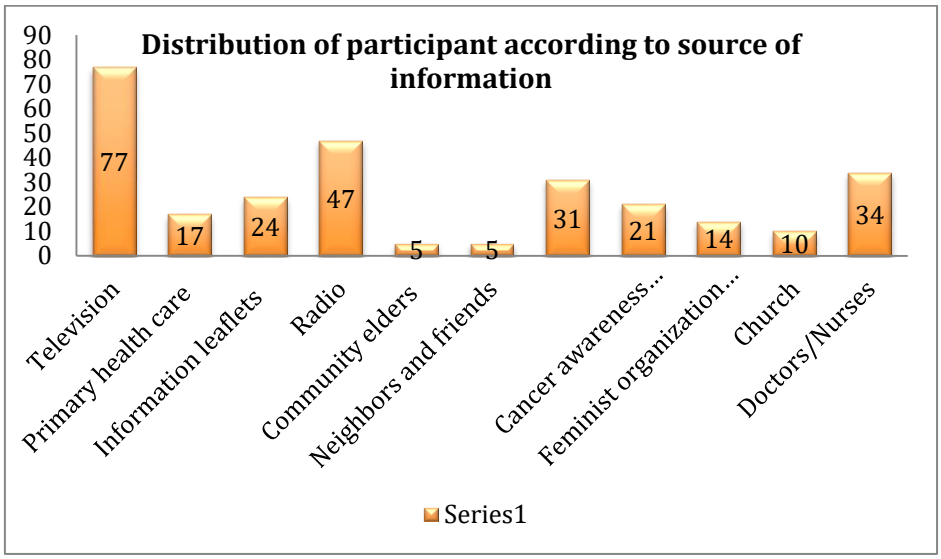

Figure 1: Distribution of participant according to sources of information

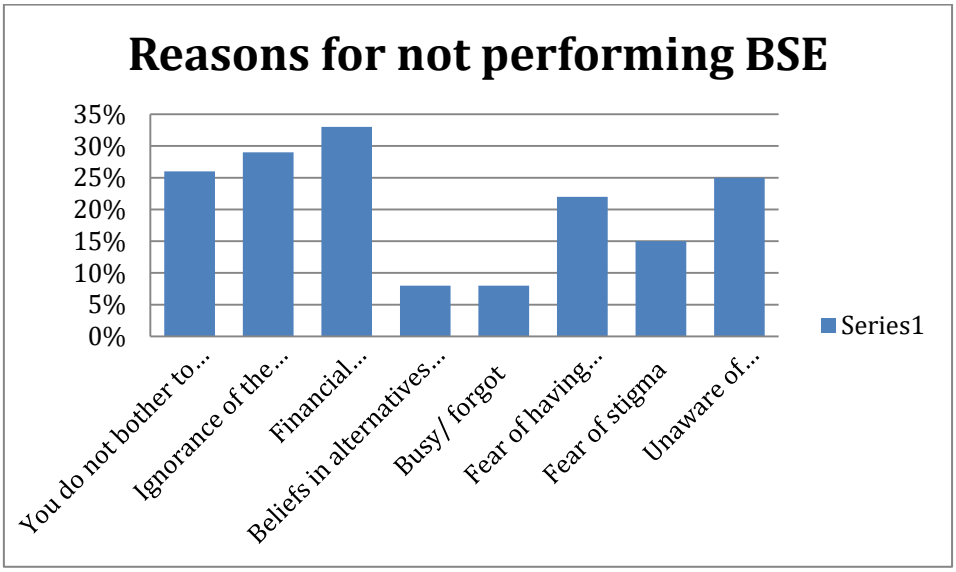

Figure 2: Reasons for not performing BSE

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