



Research article

Breast cancer awareness and screening practice amongst health personnel and general population of the littoral region of Cameroon



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ABSTRACT

Introduction: Late diagnosis has been observed as the hallmark of breast cancer in Cameroonian women where over 70% of patients report with either stage III or IV of the disease, with high mortality and dire socioeconomic consequences. The present study was undertaken to assess the awareness of breast cancer, warning signs and screening methods among Health professionals and general population of Douala.

Methods: Participants included in this study were health practitioners and women randomly selected and enrolled in six health facilities in the city of Douala, Littoral Region, Cameroon. A self-administered questionnaire was designed for each group and aimed at assessing their knowledge about breast cancer, warning signs and screening practices. Then, 616 women underwent breast palpation, followed by fine needle aspiration (FNA) when a nodule was found.

Results: Out of a total of 737 participants (121 health personnel and 616 women) interviewed, a majority (96.3%) were aware of the disease with the main source of information being the hospital (76.0%), media (47.1%) and vocational training schools (45.4%) for health personnel; medias (39.9%), health professionals (26.1%) and their entourage (21.9%) for the population. Health workforce presented suitable awareness of the risk factors for breast cancer and its clinical signs even though 37.1% of them had misconceptions and myth-based ideas on the origin of the disease. Both the population and health personnel were aware of the possibility of early screening for breast cancer and cited breast self-examination, clinical breast examination and mammography as screening techniques. Nonetheless, screening practice amongst all women is very poor and mainly due to ignorance, high cost of mammography, together with a lack of mastery of the BSE technique and the fear of actually discovering signs of the disease.

Conclusion: Our findings show lack of awareness and low practice of breast cancer screening amongst women in Douala and highlight the need to raise awareness and provide the right information to the public for early detection of breast cancer.

1. Introduction

Breast cancer is the second most common cancer in the world and, by far, the deadliest cancer in women worldwide and has become a real public health concern and challenge as it is the leading cause of cancer-related deaths amongst women, particularly in developing countries

where the situation is seriously increasing [1, 2]. Indeed, in Africa, breast cancer represented 16% of cancer incidence and 18.3% of cancer-related mortality in 2018. As in most African countries, the situation in Cameroon is becoming more and more alarming: breast cancer-related mortality rate displayed an increase of 34% only in five years, thus between 2012 and 2018 and 1780 women died of breast cancer in 2018,

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making it the cancer with the highest incidence and highest overall death toll cancers in Cameroon [1, 3].

Early detection of breast cancer in asymptomatic women through screening is aimed at detecting the disease when it is less invasive, reducing advanced stage-associated morbidity and its rate of mortality [4, 5]. When breast cancer is diagnosed at an early stage patients usually have better prognosis and higher probability of survival [6]. Unfortunately, in Cameroon, as in most developing countries, a high proportion of women are diagnosed only in advanced disease stages of breast cancer, leading to a poor prognosis which further reduces the survival rates [7, 8, 9].

Lack of awareness on screening methods, with few women attending national screening programs when available, local beliefs and misconceptions surrounding breast cancer; especially amongst Africans, have shown to be the main reasons and biggest barriers to breast cancer screening and early detection [8, 10, 11, 12]. Moreover, mammography, which is recommended by all screening programs for women above 40 years of age is still inaccessible to a majority of the population due to a small number of imaging centres, and because of its high cost still beyond the financial possibilities of the average Cameroonian [13]. This sounds alarming and we need to find Cameroonian solutions for our Cameroonian problems. It is necessary to rely on cost-effective alternative screening methods, thus adapted to our economic context, such as clinical breast examination (CBE), particularly considering that severe cases of high-grade breast cancer are more and more diagnosed in young women [14, 15]. This cross-sectional and descriptive study aimed to assess the awareness of breast cancer, warning signs and screening methods among Health professionals and general population of Douala, Cameroon. This was done to determine the implication of low awareness on late diagnosis of breast cancer.

2. Materials and methods

2.1. Participants and ethical considerations

The study included 121 health professionals and 616 amongst health workers and women who came for consultation in the gynecology and obstetrics and outpatient departments in 06 health facilities in the city of Douala namely: Gyneco-obstetrics and Pediatric Hospital of Douala; Laquintine Hospital of Douala; District Hospital Nylon; Catholic Hospital Notre Dame d'Amour; the Ad Lucem Foundation of Bonamoussadi and the Ad Lucem Foundation of Bali during the period from June to October 2017. An informed consent was obtained from each participant at recruitment. Before analysis, data collected were anonymized to protect the privacy of participants.

All the procedures of the study were approved by the ethical committee of the Faculty of Medicine, University of Douala (N^o CEI-UDo/1004/06/2017/M), and an authorization was obtained from the Regional Delegation of the Ministry of Health to recruit participants for this study.

2.2. Study procedures

From June 1 to October 30, 2017, a cross-sectional and descriptive study was conducted in six health facilities of the city of Douala, Littoral Region of Cameroon, where simple random sampling was used to recruit asymptomatic/healthy women (who came for consultation in the gynecology and obstetrics) for breast cancers screening using Clinical Breast Examination. Women previously diagnosed with breast cancer and those undergoing unilateral or bilateral mastectomy were not included.

After being presented individually with study rationale and detailed information on procedures, each participant willing to join the study had to sign a consent form. Afterwards, she was submitted to a questionnaire which aimed at assessing the level of awareness about breast cancer and screening practice, breast cancer risk factors and to collect some sociodemographic data. Patients who gave their consent underwent clinical breast examination carried out by gynaecologist, midwife or nurse. The

technique involved a thorough physical examination of the breast including visual inspection, checking for palpation of the breast, examination of the axillary lymph nodes and the features breast abnormalities such as breast lumps, lumpiness, changes in breast size, skin and nipple changes. The whole procedure required about 1h per patient.

2.3. Data collection

Awareness about breast cancer amongst Health professionals was assessed using a questionnaire included questions aimed at assessing the awareness about the recommended screening methods for early detection of breast cancer and knowledge about commonly reported breast cancer symptoms. Amongst the general population, the questionnaire aimed at assessing awareness on breast cancer, its screening methods and practice. Also, it was used to collect some sociodemographic data such as age and educational level of participants.

2.4. Breast examination

When a nodule was identified as well as its characteristics (site, number, consistency, size, mobility relative to deep skin and plans, painful or not) during clinical breast examination performed in the gynecology service of the health facility, Fine Needle Aspiration (FNA) was performed with the consent of the participant, with the aid of a 10 mL syringe with a 3-gauge needle, using standard clinical procedures. Each sample collected was mounted on a slide, processed for May-Grünwald Giemsa staining, and analyzed using bright-field microscopy (magnifications 4x to 40x) by an Anatomico-Cytopathologist at the Laboratory of Anatomico-Cytopathology of the University Hospital Center of Yaounde. In case of cancer, Fisher's simplification of Black's nuclear grading scheme was used to determine the grade.

Instead, when nipple discharge occurred at examination, characteristics were determined and recorded as well (aspect, uni- or bilateral, uni- or multi-orificial). Moreover, palpation of armpits was also performed to assess eventual axillary lymph node inflammation. The following characteristics of inflamed axillary lymph nodes were determined and recorded: number, size, and mobility relative to surrounding tissue.

2.5. Statistical analysis

Data was collected, organized, and presented as frequency distributions. Data analysis was performed using Sphinx Version 5.0. The χ^2 test was used to compare proportions and correlations were determined between age, education, occupation, and breast cancer awareness and also with screening practice. Statistical significance was set at $p < 0.05$.

3. Results

616 women and 121 health professionals were involved in this study for a total of 737 participants.

3.1. Sociodemographic information, awareness on breast cancer risk factors and early signs amongst health professionals

Table 1, shows the sociodemographic characteristics of health professionals and their knowledge on breast cancer risks factors and signs/symptoms. Most of them were aged between 35 and 50 (47.1%). Nurses (30.5%) and midwives (26.4%) were the most represented. Hospital (76.0%), medias (47.1%) and vocational training school (45.4%) were their main sources of information on breast cancer. Genetic factors (55.3%) were the most common risk factors followed by tobacco (31.4%) and diet (18.1%). Misconceptions and erroneous ideas were also observed amongst these professionals such as traditional breast massage and extended wearing of brassieres. Breast lump (90.0%), pain (49.5%) and changes in breast shape and appearance (49.5%) were the most known clinical signs.

Table 1. Sociodemographic information, awareness on breast cancer risk factors and clinical signs amongst health professionals.

Variables		N	%
Sociodemographic data			
Age (years)	<35	47	38.8
	[35–50]	57	47.1
	>50	17	14.0
Grade	Gynecologist	22	18.1
	General Practitioner	18	14.8
	Nurses	37	30.5
	Midwife	32	26.4
	Nursing assistant	12	9.9
Breast cancer awareness	Heard about ^a BC	121	100
Source of information	Hospital	92	76.0
	Media	57	47.1
	School	55	45.4
	Collaborators	29	23.9
	Campaigns	22	18.1
Risk factors of BC	None	16	13.2
	Diet	22	18.1
	Genetic	67	55.3
	Prolonged use of pills	23	19.0
	Smoking	38	31.4
	Traditional breast massage	28	23.1
	Extended wearing of tight brassieres	17	14.0
	Changes in breast shape and appearance	60	49.5
Symptoms of BC	None	1	0.8
	Lump in the breast	109	90.0
	Pain in the breast	60	49.5
	Changes in breast size	46	38.0
	Changes in breast shape and appearance	60	49.5

^a BC = Breast cancer.

3.2. Awareness, attitudes and practices regarding breast cancer screening

Table 2 shows the distribution of health professionals according to their knowledge on breast cancer's screening, attitudes and practices. Majority knows about breast cancer prevention (85.9%) and named clinical breast examination (74.3%), mammography (71.0%) and ultrasound (27.2%) as screening methods. Talking about their attitudes and

Table 2. Awareness on breast cancer screening among of heb CBE= Clinical Breast Examination; BSE= Breast Self-Examination-, which is inappropriate. Kindly cite footnote –a– in Table 2 to proceed further.–> alth professionals and their attitudes.

Variables		N	%
Awareness on breast cancers prevention	Existence of prevention	104	85.9
Screening methods	None	1	0.8
	^b CBE	90	74.3
	Mammography	86	71.0
	Ultrasound	33	27.2
Attitudes regarding screening	Mammography prescription	46	38.0
	Practicing CBE	65	53.7
	Advising BSE	34	28.0
Methods use in case of nodule in patient	Mammography	86	71.0
	Ultrasound	33	27.2
	ANAPATH	13	10.7
Frequency of BSE practice	Sometimes	96	79.3
	Often	25	20.7

^b CBE = clinical breast examination; BSE = breast self-examination.

practices, mammography used to be prescribed by about 38% of professionals (mainly by gynecologist and general practitioners) but only in the case of a nodule. About 50% practices clinical breast examination (CBE) on their patients as screening tool and many of them tend to advice breast self-examination (BSE) for individual screening to their patients. However, Anato-mo-Cytopathology analyses (ANAPATH) are used in only 10.7% cases for nodules diagnosis. BSE is regularly practice by 20.7% professionals as individual screening method.

3.3. Sociodemographic characteristics, awareness about breast cancer and screening practice amongst women

Table 3 presents sociodemographic characteristics and distribution of participants according to their knowledge about breast cancer, its screening methods and their practice. Age range between 11 to 78 years old with a mean of 31.6 ± 9.5 . Most participants were younger than 40, had attended at least secondary school (43.6%) and heard about breast cancer (95.6%) with as main sources of information media (39.9%), health professionals (26.1%) and their entourage (21.9%) (Table 3). Mammography, breast self-examination and clinical breast examination were named as screening tools by women but only 9.9% of them already performed mammography and 39.1% had undergone clinical breast examination. Amongst the 34.7% women who were aware of breast self-examination, only 11.7% (4.0% of all participants) do it regularly.

3.4. Factors affecting awareness about breast cancer's risk factors, alarming signs, its screening and frequency of screening practice amongst health professionals

Professionals interviewed in this study had to choose between: 7 choices on risk factors of breast cancer (including two erroneous concepts), 4 on clinical signs/symptoms and on the screening tools. Table 4 shows the association between grade of these professionals and their knowledge regarding breast cancer. Highly qualified professionals were more likely to identify breast cancer actual risk factors (Table 4). Nonetheless, misconceptions and myth-based ideas were also recorded among them: of the 22 gynaecologists and 18 general practitioners interviewed, 4 (18.1%) and 2 (11.1%), respectively, mentioned traditional breast massage, and, extended wearing of tight brassieres were cited by 8% of all professionals as risk factors. Also, 16 (7.5%) professionals amongst which 6 nurses, 7 midwives and 3 assistant nurses had no idea on the origin of the disease (Table 4). We also noted that professionals show good knowledge on signs/symptoms such as breast lumps and changes in breast shape and appearance without association with their grade (Table 4).

3.5. Breast examination outcome

Table 5 presents the results of breast screening done on participants using clinical breast examination. Out of 616 women examined, 37 presented lumps in their breast associated in 5 cases with orange peel, 7 with inflammatory axillary lymph nodes, 2 with nipple discharge and 2 nipple retraction and 1 with nipple ulceration (Table 5).

Analyses of fine needle aspirates of nodules (Table 6) revealed 5 non-malignant lesions among which fibroadenoma and benign papilloma tumour and 3 malignant lesions, all classified stage III cancer with more than 5 cm size.

4. Discussion

The results of study showed that most of the surveyed professionals had good awareness about the existence of breast cancer, but insufficient knowledge and misperceptions on its risk factors and causes, and screening methods as well as infrequent practices of it. Genetic factors followed by tobacco and prolonged use of Oral Contraceptive Pills (OCP) were mainly named as risk factors of breast cancer. Moreover, warning

Table 3. Sociodemographic characteristics, awareness about breast cancer and screening practice amongst women.

Variables		N	%
Age (years)	<20	29	4.7
	[20–39]	487	79.0
	≥40	100	16.2
Education	None	25	4.0
	Primary school	68	11.0
	Secondary school	269	43.6
	University	244	39.6
Breast cancer awareness	Heard about ^a BC	589	95.6
Source of information	Media	246	39.9
	Friends	135	21.9
	Health professionals	161	26.1
	Market	24	3.8
	Campaigns	40	6.4
	Others	12	1.9
Screening practice	Mammography	61	9.9
	CBE	241	39.1
	BSE	214	34.7
Frequency of BSE practice	Never	316	51.2
	Sometimes	275	44.6
	Often	25	4.0

^a BC = Breast Cancer; CBE = Clinical Breast Examination; BSE = Breast Self-Examination.

signs/symptoms were identified by almost 99% of them. These results can be related to the fact that they mainly learned about breast cancer in hospital (76.0%) and in vocational training school. Nonetheless, 16

Table 4. Association between Grade of health professionals and their knowledge regarding BC.

Variables	Grade					Total	P	df/χ ²
	A	B	C	D	E			
Breast cancer awareness								
Information source							0.66	df = 20; χ ² = 16.83
Hospital	18	11	27	27	9	92		
Media	7	6	21	17	6	57		
School	14	12	19	9	1	55		
Collaborators	7	3	9	8	2	29		
Campaigns	4	4	7	4	3	22		
Risk factors of BC							0.01*	df = 28; χ ² = 46.29
None	0	0	6	7	3	16		
Diet	5	2	6	8	1	22		
Genetic	19	16	18	9	5	67		
Prolonged use of pills	8	7	6	1	1	23		
Smoking	5	7	10	12	4	38		
Traditional breast massage	4	2	11	10	1	28		
Extended wearing of tight brassieres	1	1	5	8	2	17		
Awareness on symptoms of BC							0.2	df = 20; χ ² = 24.15
None	0	0	0	1	0	1		
Lump in the breast	20	17	34	27	11	109		
Pain in the breast	11	15	15	16	3	60		
Changes in breast size	14	13	9	8	2	46		
Changes in breast shape and appearance	20	16	11	12	11	70		
Attitudes regarding BC screening								
CBS practice	12	1	2	10	0	25		
Mammography prescription	17	11	9	9	0	46		

A = Gynaecologist; B=General practitioner; C=Nurse; D = Midwife; E = Nursing assistant; *Statistically significant * = p < 0.05; **p < 0.005; *** < 0.0005; df = degree of freedom.

Breast examination findings.

Table 5. Clinical examination findings.

Clinical aspect of the breast	N	%
Normal breasts	571	92.6
Nodules	37	6.0
Axillary lymph nodes	7	1.1
Nipple retraction	2	0.3
Nipple discharge	2	0.3
Orange peel	3	0.4
Wound on the nipple	1	0.1

Table 6. Results of cytological diagnosis.

Cytological diagnosis	N
Breast benign tumors	
Fibroadenoma	3
Benign Neoplasms Papilloma	2
Stage III breast cancer	
Invasive ductal carcinoma	1
Ductal carcinoma in situ	1
Breast Paget's disease	1

health professionals (13.2%), amongst whom were 6 nurses and 7 midwives had no idea on the origin of the disease, and, many others mentioned breast massage (23.1%) and extended wearing of tight brassieres (14.0%) as causes of breast cancer. This further suggests a lack of awareness and erroneous ideas about breast cancer's risk factors amongst nurses and midwives, which could be explained by the fact that media

came as their main source of information before hospital and vocational training school, and also because their training programs does not go deeper in cancerology courses as those of gynaecologists and general practitioners [16]. This underlie the need for reinforcing cancer education and courses in their professional training, they are generally at the first line in consultation (general and pregnancy) and conduct Information, Education and Communication (IEC) in hospitals both in urban and rural areas [16, 17].

Moreover, our finding suggests that there is poor practice regarding breast cancer screening amongst women, thus mainly in the general population than in health professionals. Results which are actually surprising as our participants were young, had attained at least secondary level of education (43.6%), which is a proper educational level to access and pursue more information, and, heard about breast cancer (95.6%) mainly in medias (39.9%) and from health professionals (26.1%). This could be explained by difficult access to good information and poor population awareness about the importance of early detection in the management of the disease as about 20% of participants had the information from their entourage were information provided are often wrong or incomplete [17, 18, 19]. As expected, most of the surveyed professionals were aware of breast cancer prevention and mentioned early diagnosis as being the key to reduce breast cancer mortality and even named clinical breast examination (CBE) (74.3%), mammography (71.0%), and ultrasound (27.2%) as screening methods and recommended breast self-examination (BSE) as individual screening tool. Similarly, several other participants reported that it is possible to detect breast cancer early and mentioned CBE, BSE and mammography as screening tools. However, low levels of practice of screening were recorded here. Only 9.9% of participants had performed mammography once, 39.1% had undergone a CBE and among 34.7% women who were aware of BSE 11.6% practices it regularly which represented only 4.0% of overall participants. This, due to high cost of mammography, together with a lack of mastery of the BSE technique and the fear of actually discovering any sign of breast cancer disease, considered a harbinger of mastectomy and death [20, 21].

Even though lump in the breast is the best-known warning sign by about 90% of health professionals, only 10.7% of practitioners use cytopathological analysis when a nodule is discovered for diagnosis and about 30% of nurses and midwives had no idea of this examination. Surprisingly, their level of practice of screening, even though higher than those of general population are low as only 24.7% practice BSE once a month and 38.8% already performed mammography, corroborating reports in other African countries and above which suggested that good knowledge does not imply better screening practice [22, 23, 24]. This could partly justify why many cases of breast cancer are diagnosed at late stages and why only 8 out of the 37 participants with alarming signs underestimated the importance to confirm or rule out breast cancer diagnosis.

Breast palpation coupled with fine needle aspiration (FNA), a cost-effective cytopathological analytic technique efficient in this context [17, 25, 26, 27], allowed reliable diagnosis and classification of breast cancer in our study. It revealed nodules in 37 (6.0%) of participants, confirming the need to raise awareness of breast cancer screening campaigns in Cameroon. FNA can be performed even in basic health facilities, only requires trained staff, and processed samples can easily be sent to health facilities with a pathologist for analysis. Unfortunately, the discovery of 3 malignant lesions all classified stage III breast cancer, exposes patients to long, expensive, and aggressive treatment, with low chances of good therapeutic outcome [17] in addition to the growing evidence that high-grade cancer is more and more diagnose in young women in Africa [14, 28, 29].

Overall, our findings shows lack of awareness and low practice of breast cancer screening and highlights the need to raise awareness and provide the right information to the public for early detection of breast cancer, and, support that, palpation of breast coupled with fine needle aspiration of nodules is a cost-effective and reliable diagnosis method

for breast tumours, feasible in our economic context, once the staff is trained.

Declarations

Author contribution statement

TAGNE SIMO Richard: Conceived and designed the experiments; Analyzed and interpreted the data; Wrote the paper.

Charlette NANGUE: Conceived and designed the experiments; Performed the experiments; Contributed reagents, materials, analysis tools or data.

Elias NCHIWAN NUKENINE: Conceived and designed the experiments. Halmata MOHAMADOU: Performed the experiments; Wrote the paper.

Grace NGANWA KEMBAOU: Performed the experiments; Contributed reagents, materials, analysis tools or data.

Erika Myriam BAIGUEREL: Analyzed and interpreted the data; Wrote the paper.

Armel Hervé NWABO KAMDJE: Analyzed and interpreted the data.

Phélix Bruno TELEFO: Analyzed and interpreted the data; Wrote the paper.

Lydiane C.C. NDOPWANG: Contributed reagents, materials, analysis tools or data.

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Data availability statement

Data will be made available on request.

Declaration of interests statement

The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.

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