

Fight against Breast Cancer in Cameroon: Cross-Views of the Knowledge of the Female Population of Douala Hospitals

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Abstract

Introduction: Breast cancer in women is a global scourge due to its frequency and high fatality rate. If screening has made it possible to considerably reduce its incidence and its mortality in developed countries, in our developing countries, it remains frequent with a still high mortality due to ignorance, late and non-systematized screening. **Research Question:** Can female health caregivers be incorporated into a breast cancer screening awareness team? **Objective:** It aimed at evaluating the knowledge of female health caregivers in Douala hospitals, added to that of female users on breast cancer screening for their efficient operationalization in this procedure. **Methodology:** This was a comparative cross-sectional study for analytical purposes for a period of 07 months from January 15 to July 15, 2020 conducted by means of a structured and pre-tested questionnaire after informed consent obtained from the participants received in the consultation units of these hospitals. The study variables were socio-demographic and cognitive. The data collected were entered and analyzed using SPSS 23.0 software (statistical package for social sciences) with a significance level established for a value of $p < 0.05$. **Results:** We retained 1000 women fulfilling our inclusion criteria, including 818 users and 182 health caregivers, *i.e.* an average ratio of 4 users for 1 caregiver. The average age of the users was 31.03 ± 11.31 years and that of the caregiver was 29.54 ± 8.14 years (with extremes of 15 and 67 years identical in the two groups) with a respective median of 29 and 28 years old. Good knowledge was significantly associated with level of education (secondary OR = 0.38, $p =$

0.03 and University OR = 0.22, $p = 0.001$) with a predominance of good knowledge among care givers (83.5%) against 56.2% among users. The association between caregiver and good knowledge appeared to be statistically significant (OR = 0.25; $p < 0.0001$). In general, the association of users and poor knowledge carried a 4 times higher risk (OR: 3.94 (2.6 - 5.97) $p < 0.0001$). **Conclusion:** At the end of our study, it appeared that female health caregivers had good knowledge and could therefore be enrolled in breast cancer screening awareness strategies.

Keywords

Screening, Breast Cancer, Knowledge, Attitudes, Practices, Carer, Users

1. Introduction

According to the World Health Organization (WHO), breast cancer is a genetic alteration occurring within a cell of the mammary gland and giving it the power of anarchic proliferation [1]. It (breast cancer) acquires the ability to invade and destroy the original tissue from which it develops, as well as the ability to give distant metastases [1]. It is the first cancer in women in the world [1] and therefore constitutes a real major public health problem on a global scale [2]. Worldwide, breast cancer is the leading cause of death by cancer in women in almost all countries, except in the most economically developed countries where it ranks second after lung cancer [2]. Breast cancer mortality has been decreasing for thirty years in developed countries [2]. It is the leading gynecological cancer in terms of incidence [3].

Worldwide, 2,261,419 cases of breast cancer were diagnosed in 2020; in the United States, data collected by the International Agency for Research on Cancer (IARC) note an incidence of 234,087/100,000 in 2018 [4]. In France, the number of new cases in women in 2018 was 56,162/100,000 [4]. This is the leading cause of death from neoplasia in women with nearly 684,996 deaths in 2020 [4] [5] [6].

Its incidence increases by about 2% per year in all European countries [7]. In China, it is the most frequently diagnosed cancer with 169,452 new cases of invasive breast cancer [8]. In low-income countries, the incidence rate of breast cancer is very increasing [9]. In Algeria, its incidence is clearly increasing, rising from 9.6 cases per 100,000 inhabitants in 2003 to 19.44 cases per 100,000 inhabitants in 2005 [10]. In Tunisia, it is the most common female cancer [11]. In South Africa, its incidence is higher than in sub-Saharan African countries [12]. In the sub-Saharan zone, there has been an increase in its incidence, which has increased from 15 to 53 new cases per 100,000 inhabitants [13]. In Cameroon, it ranked second in the study by Mbakop *et al.* after that of the cervix, skin and liver in 1992 [14] with an overall survival rate of 30% in 5 years reported by Ngowa *et al.* in 2015 at the Yaoundé General Hospital and a death rate of 1780/100,000 [15]. Early detection remains the main means of combating the

disease. It improves the chances of survival as well as the outcome of breast cancer.

The success of early screening in the population depends essentially on rigorous planning and a well-organized and sustainable program that targets the right population group and ensures the coordination, continuity and quality of interventions.

Studies have shown that the attitude and advice of health professionals are important determinants of the population's use of the screening program [16]. This is how we conducted this multicenter study to assess the level of knowledge of caregivers through the reflection of female users' vis-à-vis breast cancer screening for their efficient operationalization in a mass screening team.

2. Methodology

2.1. Type of Study

This was a comparative cross-sectional prospective study with an analytical aim.

2.2. Place of Study

Our study was multicentric (04 hospitals) in the city of Douala including in particular a 2nd category hospital on the health stratum of Cameroon (Laquintinie Hospital Douala (LHD)), and three 4th category hospitals (Deido district hospital (DDH), Logbaba District Hospital (LDH), Nylon District Hospital (NDH)).

2.3. Period and Duration of the Study

Our study covered the period from December 2019 to August 2020, *i.e.* a duration of 09 months.

2.4. Study Population

The study population consisted of female users of these hospitals as well as female caregivers.

Inclusion criteria

Was included in the study:

- Any female user consulting or not in one of the health structures chosen by the study.

- All female caregivers working in the study sites.

Non-inclusion criteria

- Refusal.

Exclusion criteria

Was excluded from the study:

- All female users and caregivers with a personal history of breast cancer;

- Any woman with breast cancer at the time of recruitment.

2.5. Sampling

We proceeded to a non-exhaustive consecutive sampling.

The minimum size was estimated from Lorenz's formula:

$$N = [T^2 * p(1 - p)]/m^2$$

where:

N = minimum sample required;

T = 95% confidence interval (1.96);

p = prevalence of pathology. *i.e.*, 35.1% [4];

m = margin of error at 5% (standard value 0.05).

Numerical application: $N = 1.96 \times 1.96 \times 0.351(1 - 0.351)/0.05 \times 0.05 = 350$ cases.

2.6. Procedure and Collection

2.6.1. Administrative Process

A research protocol had been drafted and submitted to the Faculty of Medicine and Pharmaceutical Sciences of the University of Douala (FMSP-UD).

An ethical clearance authorization had been requested and obtained from the institutional ethics committee of the University of Douala, as well as a research authorization had been requested and obtained from the directors of the 4 selected hospitals in the city of Douala (HLD, HDD, HDL, HDN).

2.6.2. Collection of Data

Data collection was done using a pre-tested technical sheet including informed consent and a questionnaire.

The interview was carried out in complete confidentiality in a room adjoining the various reception services (for users) and in all the care units (for caregivers).

The variables studied were:

- ❖ Socio-demography of the population.
 - Age
 - Education level
 - Marital status
 - Religion
 - Region
 - Nationality
 - Group: (user or caregiver)
- ❖ The level of knowledge of users and female caregivers about breast cancer screening.
 - Knowledge of risk factors (Genetics, Hormones, Dietary habits, Obesity, Lack of physical activity, Regular alcohol consumption, Hormone replacement therapy (HRT), Exposure to ionizing radiation, Absence of breastfeeding, Consumption of tobacco, History of breast cancer in the mother or sister, nulliparity, pauci parity, late first pregnancy after 30 years, early menarche, late menopause).
 - Clinical knowledge (Lump in the breast, Bloody discharge, Change in the shape or texture of the breast or nipple, Discoloration of the breast, Ulceration of the breast or nipple, Inversion or insertion of the nipple, Enlargement of the breast, Mass under armpits).

- Knowledge of screening methods (Breast self-examination, Mammography, Ultrasound, Scanner, MRI).
- ❖ The knowledge of users and caregivers about breast cancer screening (individual screening, mass screening, medical consultation, consultation of the African pharmacopoeia, rituals and customs, religious beliefs, self-examination of the breasts).

2.7. Study Quotations

Knowledge Rating Grid

The evaluation of knowledge was first made by totaling the number of points obtained by each participant in the “knowledge” section of our questionnaire. Each correct answer was worth 1 point and the wrong one 0 points. The results were then reduced to a percentage for an overall assessment as presented in the assessment grid of Essi *et al.* [17]. Secondly, for the search for associations between the different parts, we had grouped into two groups:

- Above 65% = good knowledge;
- Less than 65% = poor knowledge.

Definition of operational terms

Health caregiver: this is paramedical staff made up of state-certified nurses (IDE), midwives, licensed nurses.

Users: any person using a public service. The public service here is the hospital.

2.8. Statistical Analysis

Data were entered and analyzed using SPSS (statistical package for the social sciences) version 23.0 software.

The chi-square test was used when the numbers were greater than 15 and Fisher when it was less than 15. The odds ratio was calculated with a significance level $p < 0.05$.

2.9. Ethical Considerations

- Patient confidentiality was respected and the results were only used in the context of our study.

3. Results

At the end of our study, we recruited a total of 1060 women and 60 were excluded. Among the 60 excluded, 02 women users were carriers of breast cancer at the time of our survey, 48 women refused to participate and 10 files were incorrectly filled out. We had retained a total of 1000 women meeting the inclusion criteria, including 182 caregivers (18.2%) of all the women questioned against 818 users (81.8%) (**Figure 1**).

Many of our recruits from users were mostly students (44.4%) and single in both groups (61.9% and 67%) (**Table 1** and **Table 2**) and nearly 54% of caregivers were state-certified nurses (**Figure 2**).

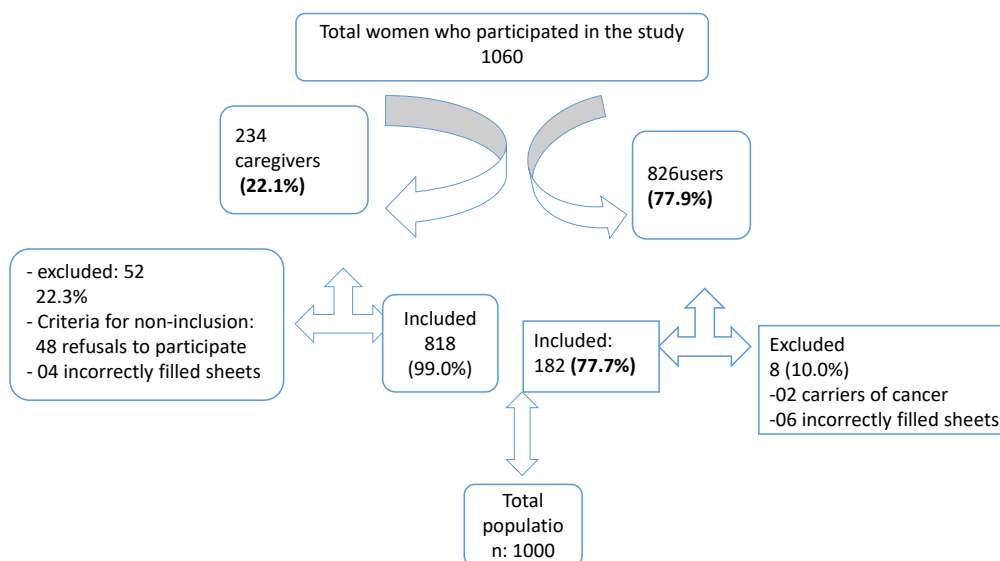


Figure 1. Flow diagram.

Table 1. Distribution of users and caregivers according to age groups and level of education.

	Users n (%)		Caregivers n (%)		
	N = 818		N = 182		
Age groups	<20	121	14.8	4	2.2
	[20 - 30]	307	37.5	110	60.4
	[30 - 40]	202	24.7	43	23.6
	[40 - 50]	114	13.9	18	9.9
	[50 - 60]	62	7.6	6	3.3
	≥60	12	1.5	1	0.5
Education level	No schooling	25	3.1	0	0.0
	Primary	134	16.4	1	0.5
	Secondary	219	26.8	43	23.6
	Superior	439	53.7	138	75.8

Table 2. Distribution by occupation and marital status.

	Users n (%)		Caregivers n (%)		
	N = 818		N = 182		
Occupation	Pupils/student	363	44.4	0	0.0
	Trader	199	24.3	0	0.0
	Household	147	18.0	0	0.0
	Farmer	14	1.7	0	0.0
	entrepreneur	2	0.2	0	0.0
	Health caregiver	0	0.0	182	100
	Others	93	11.4	0	0.0
Marital status	Single	506	61.9	122	67.0
	Married	282	34.5	56	30.8
	Widow	10	1.2	3	1.6
	Divorced	20	2.4	1	0.5

Good knowledge of risk factors was significantly associated with caregiver status with more than once good knowledge for caregivers regarding age, heredity and fatty diet (Table 3 and Table 4) OR = Ref p < 0.001).

In contrast to the user group where nearly twice poor knowledge of breast-feeding was found (Table 5) (OR = Ref p < 0.002).

Same for nulliparity, estrogen-progestogen contraception, hormone replacement therapy and lack of physical activity (Table 6) (OR = Ref p < 0.001).

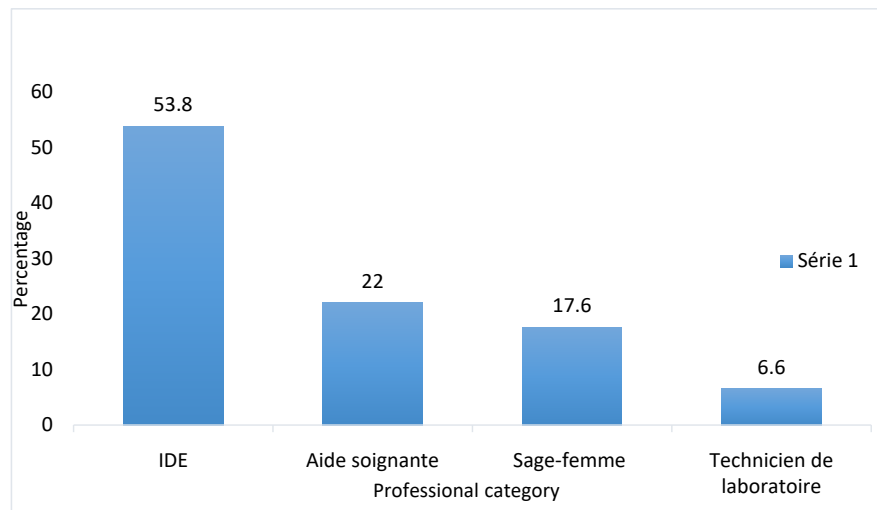


Figure 2. Distribution of the paramedical population according to their professional category. IDE: State certified nurse; Aide-soignante: Caregiver; Sage-femme: Mid-wife; Technicien de laboratoire: Laboratory technician.

Table 3. Distribution of knowledge on risk factors according to users and caregivers.

Variables	Users n (%) N = 818	Caregiver n (%) N = 182	OR (IC 98%)	p value
Risk linked to age				
Yes	523 (79.6)	134 (20.4)	1.57 (1.10 - 2.25)	0.03
No	295 (86.0)	48 (14.0)	Ref	
Hereditary cancer				
Yes	352 (80.9)	83 (19.1)	1.11 (0.8 - 1.53)	1
No	466 (82.5)	99 (17.5)	Ref	0.527
Cancer linked to high fat diet				
Yes	501 (85.5)	97 (23.7)	1.51 (1.10 - 2.08)	1
No	317 (76.6)	85 (14.5)	Ref	<0.001
Tobacco is a RF				
Yes	429 (84.4)	98 (21.6)	0.57 (0.41 - 0.80)	1
No	389 (79.9)	84 (15.5)	Ref	0.001

Ref = 1 (i.e., no association found between the variables under study).

Table 4. Distribution of knowledge about risk factors according to users and caregivers (continued 1).

Variables	Users n (%) N = 818	Caregiver n (%) N = 182	OR (IC 98%)	p value
Alcohol is a RF				
Yes	389 (79.9)	98 (20.1)	1.29 (0.41 - 0.80)	1
No	429 (83.6)	84 (16.4)	Ref	0.125
1st childbirth after 30 years is a RF				
Yes	342 (78.4)	94 (21.6)	0.91 (0.66 - 1.27)	1
No	476 (84.4)	88 (15.6)	Ref	0.015
Menarche before age 11 is a RF				
Yes	314 (79.5)	81 (20.5)	0.87 (0.63 - 1.21)	1
No	504 (83.3)	101 (16.7)	Ref	0.127

Table 5. Distribution of knowledge about risk factors according to users and caregivers (continued 2).

Variables	Users n (%) N = 818	Caregiver n (%) N = 182	OR (IC = 95%)	p value
Late menopause				
Yes	329 (82.7)	69 (17.3)	0.91 (0.66 - 1.27)	1
No	489 (81.3)	113 (18.8)	Ref	0.565
Stress				
Yes	392 (82.7)	81 (17.3)	0.87 (0.63 - 1.21)	1
No	426 (80.8)	101 (19.2)	Ref	0.505
A bigger breast as RF				
Yes	310 (82.7)	65 (17.3)	0.91 (0.65 - 1.27)	1
No	508 (81.3)	117 (18.7)	Ref	0.585
Absence of breastfeeding				
Yes	485 (78.9)	130 (21.1)	1.72 (1.21 - 2.44)	1
No	333 (86.5)	52 (13.5)	Ref	0.002

This trend persists concerning the signs and symptoms of breast cancer as well as the means of screening where the user character is significantly exposed to poor knowledge with a risk of about twice (**Tables 7-9**: OR = Ref p < 0.001; p0.002; p < 0.004).

In general, the risk of poor knowledge was nearly 4 times higher among users (**Table 10**) (OR: 3.94 (2.6 - 5.97) p < 0.0001).

Concerning the means of screening, mammography was significantly associated with the knowledge of the nursing staff (OR = 0.31). Furthermore, fine needle aspiration and magnetic resonance imaging were significantly associated with users' knowledge (OR = 1.63).

There is a significant difference between the level of knowledge of the users

and that of the nursing staff. Indeed, caregivers were more likely to have good knowledge than users (OR = 3.94 $p < 0.0001^*$).

Table 6. Distribution of knowledge on risk factors according to users and caregivers.

Variables	Users n (%) N = 818	Caregiver n (%) N = 182	OR (IC = 95%)	p value
Null parity as RF				
Yes	308 (73.3)	112 (26.7)	2.65 (1.90 - 3.69)	<0.001
No	510 (87.9)	70 (12.1)	Ref	
Oral contraceptive pills				
Yes	482 (79.7)	123 (20.3)	1.3 (0.94 - 1.79)	0.031
No	336 (85.1)	59 (14.9)	Ref	
Traumatism				
Yes	423 (79.8)	107 (20.2)	1.45 (1.03 - 2.03)	1
No	395 (84.0)	75 (16.0)	Ref	0.083
Estrogen increases the risk of breast Kc				
Yes	377 (78.8)	105 (21.8)	1.6 (1.16 - 2.21)	1
No	441 (85.1)	77 (14.9)	Ref	0.005
Lack of physical exercise				
Yes	533 (78.8)	143 (21.2)	1.96 (1.34 - 2.86)	1
No	285 (88.0)	99 (12.0)	Ref	<0.001

RF: Risk factor.

Table 7. Distribution of knowledge on the signs and symptoms of breast cancer according to users and caregivers.

Variables	Users n (%) N = 819	Caregiver n (%) N = 181	OR (IC = 95%)	p value
Lump on the chest				
Yes	536 (80.4)	131 (19.4)	1.35 (0.95 - 1.92)	1
No	282 (84.7)	51 (15.3)	Ref	0.095
Breast discharge				
Yes	510 (79.9)	128 (20.1)	1.43 (1.01 - 2.03)	1
No	308 (85.1)	54 (14.9)	Ref	0.043
Breast or chest pain				
Yes	552 (81.3)	127 (18.7)	0.90 (0.64 - 1.28)	1
No	266 (82.9)	55 (17.1)	Ref	0.548
Discoloration				
Yes	504 (78.5)	138 (21.5)	0.51 (0.35 - 0.73)	1
No	314 (87.7)	44 (12.3)	Ref	<0.001
Ulceration				
Yes	432 (76.7)	131 (23.3)	2.30 (1.63 - 3.25)	1
No	386 (88.3)	51 (11.7)	Ref	<0.001

Table 8. Distribution of knowledge on the signs and symptoms of breast cancer according to users and caregivers (continued 1).

Variables	Users n (%) N = 819	Caregivers n (%) N = 181	OR (IC = 95%)	p value
Weighthloss				
Yes	513 (84.7)	93 (15.5)	0.62 (0.45 - 0.86)	1
No	305 (77.4)	89 (22.6)	Ref	0.004
Breast shape				
Yes	525 (64.2)	137 (75.3)	2.13 (1.62 - 2.79)	
No	283 (76.3)	45 (13.7)		0.004
Inversion/Insertion of nipple				
Yes	530 (81.5)	120 (18.5)	1.58 (1.21 - 2.06)	
No	288 (82.3)	62 (17.7)		0.770
Hump under the armpits				
Yes	332 (82.8)	69 (17.2)	0.78 (0.55 - 1.1)	1
No	486 (81.1)	113 (18.9)	Ref	0.505

Table 9. Distribution of knowledge on means of screening for breast cancer.

Variables	Users N (%) N = 818	Caregiver n (%) N = 182	OR (IC = 95%)	P value
Breast self-exam				
Yes	715 (87.4)	158 (86.8)	0.95 (0.59 - 1.49)	0.827
No	103 (12.6)	24 (13.2)		
Mammography				
Yes	604 (73.8)	164 (90.1)	0.31 (0.19 - 0.52)	<0.007
No	214 (26.2)	18 (9.9)	Ref	1
Echography				
Yes	515 (63.0)	114 (62.6)	1.01 (0.72 - 1.41)	0.935
No	303 (37.0)	68 (37.4)	Ref	1
CT Scan				
Yes	398 (48.7)	76 (41.8)	0.76 (0.55 - 1.05)	0.092
No	420 (51.3)	106 (58.2)		
Cytopunction				
Yes	280 (34.2)	83 (45.6)	1.61 (1.16 - 2.23)	0.004
No	538 (65.8)	99 (54.4)	Ref	1
MRI				
Yes	278 (34.0)	84 (46.2)	1.66 (1.20 - 2.29)	
No	539 (66.0)	98 (53.8)		0.002

Table 10. Répartition des connaissances générales des usagers et du personnel soignants.

	Users	Caregivers	OR (IC 95%)	p-value
	n %	N %		
Knowledge Good	460 (56.2)	152 (83.5)	Ref	<0.0001
Bad	358 (43.8)	30 (16.5)	3.94 (2.6 - 5.97)	

Limitations of the Study

The declarative nature of the answers can constitute a bias.

Just as the concern for self-promotion can lead an under-educated person to outclass themselves with an impact on the content of the results.

For example, nearly 45% of respondents from user groups were students.

It is also a safe bet that a housewife but a graduate of higher education can have a significantly very good level of knowledge compared to a caregiver.

The strong pairing (4 users against 1 caregiver) can be a source of bias in the results, due to the statistical power linked to the user group.

4. Discussion

4.1. Sociodemographic Data

4.1.1. Age

In our series, the mean age at the time of recruitment was 30.7 years \pm 10.8 years with extremes of 15 and 67 years. The age group of 20 and 30 years was the majority among users (37.5%) and among nursing staff (60.4%).

Although heterogeneous in the literature, our finding is similar to that reported by Yeliz *et al.* in Turkey in 2011, Gueye S.M.K *et al.* in Senegal in 2009 and Heena H *et al.* in Saudi Arabia in 2019 with respective average ages of 33, 1 year [18]; 34 years [19] and 34.7 years [20]. Far from the 39 \pm 9 years and 41.6 \pm 12 reported respectively by Nguefack *et al.* in Cameroon in 2018 [21], Sana *et al.* in Tunisia in 2012 [22] and lower than those found in the literature.

The explanation for this discrepancy in our opinion lies in the inclusion of pubescent users in our series, unlike other authors for whom the recruitment threshold was young adults [21].

4.1.2. Educational Level

The positive impact of education in various activities of daily life is consensually established and reported by the international literature.

Although declarative and therefore subject to caution and a source of bias, the higher level of education was mainly represented in our series in the two groups at (53.7% of users and 75.8% of caregivers).

These values are opposed to the 9% of Sana *et al.*, 2009 in Tunisia [22].

Beyond the declarative, this gap could be explained by the large sample of the user group of our series but also by the inclusion of all social strata among users.

4.1.3. Level of Knowledge of Users and Caregivers about Breast Cancer Screening

It appears from our study that the level of knowledge of women on the risk factors, signs and means of screening vis-à-vis screening for breast cancer was good in both groups. This knowledge is more pronounced among caregivers at 83.5% than among users at 56.2%.

But in a discriminatory way by statistical selection, users were associated nearly 4 times with poor knowledge, unlike caregivers who, in addition to their various

basic training, would probably benefit from the in situ effect (knowledge acquired from hospital practices and activities).

This is consistent with the results of Al-Meer *et al.* in the West in 2011 [23], but also with those of Mahdaoui Maroc in 2012 [24] and Heena *et al.* in 2019 [18] which showed a high rate of knowledge among caregivers.

Contrary to the conclusions of Gueye *et al.* in 2009 [19], Nguefack *et al.* in 2018 [21]; Charaka *et al.* in 2015 in Morocco [25] and Toan *et al.* in Vietnam in 2019 [26], who reported the opposite among healthcare workers and women in general, this, in our opinion, could reflect an “inadequate” initial training of caregivers as well as a lack of empowering activities in these study settings.

It should be noted, however, that their caregiver groups (unlike our all-female one) were inclusive.

5. Conclusion

In view of the level of knowledge of the female nursing staff of the hospital sites of this study, it is allowed to integrate them into the teams of sensitization of the users to the screening of breast cancer.

Acknowledgements

The whole team would like to thank the various hospital managers and their staff for the multifaceted facilities granted to them during this study.

Contribution of the Study to Science

This study makes it possible to expand the screening team beyond the gynecologist and to carry the message of screening beyond the hospital setting.

Authors' Contributions

Essome: coordinated the study and wrote the manuscript.

Enama: collected the data.

Tocki: ensured the English translation as well as the formatting of the manuscript.

Ndolo, Ofakem, Ngaha, Mounchikpou, Ngono, Moukouri, Mangala, Ekono, Engbang, Nana, Tchente read and corrected the manuscript.

Foumane supervised the study and corrected the manuscript.

Conflicts of Interest

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

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