



Knowledge of the Practice of Breast Self-Examination by Congolese Women in Kinshasa

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Abstract

Introduction: Breast cancer is the most common malignancy in women worldwide and constitutes a public health problem in the DRC due to its high morbidity and mortality. Its frequency is estimated at 24%, and it is often discovered late due to lack of screening. **Methodology:** This was a cross-sectional study conducted in 11 health zones scattered throughout the 4 Districts of the city of Kinshasa. We included 1296 women. A bivariate and a multivariate analysis were used to analyze factors associated with non-beneficial breast self-examination practices. **Results:** Of a total of 1296 participants, 1072 (83%) were aware of breast cancer, while 28% had a poor level of knowledge. Non-practice of breast self-examination was 64%, compared with 36% of those who practiced. Self-examination technique is poor in 90% of cases, and only 10% know how often it is performed. Level of primary education ($p = 0.173$), lack of formal professional activity ($p = 0.007$), young age ($p = 0.078$) and nulliparity emerged as determinants of non-beneficial practices with regard to breast cancer. **Conclusion:** The practice of breast self-examination enables early diagnosis of the disease and improves prognosis.

Subject Areas

Gynecology & Obstetrics

Keywords

Practice, Breast Self-Examination, Congolese

1. Introduction

Breast cancer is a major health problem among women, due to its high mortality and morbidity rates. Its incidence has increased significantly over the past two decades to 2.0% per year and is expected to reach over 19.3 million women by 2025, the majority from sub-Saharan Africa [1].

Recent GLOBOCAN 2018 data produced by IARC (International Agency for Research on Cancer) from 185 countries reported 2.3 million new cases (11.7%) of breast cancer and a mortality rate of 6.9% [2]. Almost two-thirds of these deaths occurred in less developed regions. In more developed regions, 5-year overall survival for breast cancer is well over 80%; by comparison, 5-year survival in India is reported as less than 70%, and less than 50% in South Africa [3]. The survival advantage observed for patients diagnosed with breast cancer in more developed countries can be largely attributed to a combination of early detection strategies, access to early diagnosis and better access to effective treatments [4]. In contrast, delayed presentation is more common in less developed regions of the world, with more than half of breast cancers locally advanced or metastatic. The reasons for delayed presentation are multifactorial and probably arise due to a combination of low levels of cancer literacy among communities and health workers, coupled with complex and fragmented healthcare systems that are difficult to navigate largely due to financial constraints [5]. Breast cancer screening is an effective measure for detecting disease at an early stage and improving the survival rate of cancer patients. Population-based breast cancer screening programs have been implemented in many developed countries in recent decades, helping to reduce mortality and the rate of advanced cancer [6].

As in other sub-Saharan African countries, breast cancer is a real public health problem in the DRC. Although immense progress has been made in its treatment, the prognosis remains poor. An important reason for the poor prognosis could be a delay in diagnosis. When breast cancer is diagnosed at an early stage, the prognosis is considered good, with reduced morbidity and mortality [5]. Therefore, measures must be taken to ensure early detection and prompt treatment. Two vital strategies for early detection include early diagnosis and screening [6]. An important aspect of early diagnosis is raising awareness of the early signs of cancer among doctors, nurses, other healthcare workers and the general population [7]. Screening, on the other hand, involves the use of simple tests to identify people with cancer even before symptoms appear. Breast self-examination (BSE), clinical breast examination (CBE) and mammography are well-recognized screening methods for breast cancer [8] [9].

To facilitate early detection of breast cancer, the attitude and practice of screening methods are essential.

The practice of breast self-examination: This is the act of palpating one's breast monthly, just after menstruation, and the ability to detect abnormalities [10].

All women should practice it, ready to encourage others to obtain information

and practice it, and to seek early medical care for any abnormality [11]-[13].

Despite this, to date, no study has methodically explored and described the literature and identified research gaps on the attitude and practice of Congolese women in Kinshasa on breast cancer.

The overall aim of our study is to assess the practice of breast self-examination by Congolese women in Kinshasa, and to identify factors associated with non-beneficial practices.

2. Methods

This cross-sectional study was conducted from June 1 to June 30, 2023 in 11 health zones, drawn at random from four administrative districts of the city-province of Kinshasa.

The health zones concerned were: Gombe, Kikimi, Kalamu 1, Mbinza météo, Montngafula 2, Kimbanseke, Lingwala, Makala, Masina1, N'djili, Ngaba (See **Figure 1**).

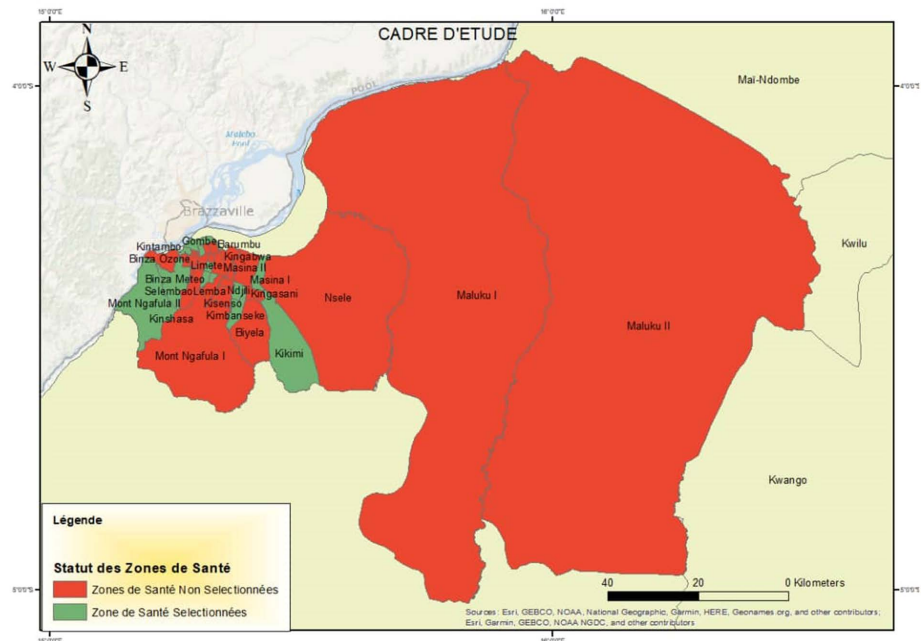


Figure 1. The map of the health zones.

2.1. Inclusion Criteria

Any Congolese woman living in the city of Kinshasa for 5 years, aged 18 to 65, who agreed to participate in the study.

2.2. Data Collection

They were collected using an electronic questionnaire downloaded from kobocollect developed from previous studies after a thorough review of the literature [14]-[17]. These data were exported to Excel 2013 and then to SPSS 26.0 for analysis.

Breast Self-Examination Practice Compliance Score.

It was assessed according to the technique and Rhythm of self-calpation

- Self-examination technique: Scored out of 4 points
Palpation of four quadrants and inspection = 2 points
Inspection alone in front of the mirror = 1 point
Palpation alone = 1 point
- Rhythm of self-calpation: Scored 4 points
Monthly = 2 points
Weekly: 1 point
Quarterly: 1 point
- Practice score

To simplify statistical analysis, the final score was reduced to 8 points for both parameters (Technique and Rhythm of self-calpation). Thus, respondents were divided into two practice groups, those with non-beneficial practices with a score ranging from 0 to 4 points, and those with non-beneficial practices with a score ranging from 5 to 8 points.

2.3. Statistical Analysis

Statistical analysis was performed using SPSS version 21. Qualitative variables were described in terms of numbers and percentages, and quantitative variables were analyzed in their original format in terms of means and standard deviation. A multivariate analysis using the Back ward step wise logistic regression model was used. Multivariate regression model developed using all factors suspected of being associated with non-beneficial practices. Variables retained in the model are those with a significance level below 0.20. The significance level was set at 5%. Model fit using the Hosmer-Lemeshow test was satisfactory ($p = 0.7$) [18].

Sample size calculation

The following formula enabled us to calculate our sample size.

$$n \geq z^2 P.q./d^2$$

n = minimum sample size

z = 1.96 (95% confidence coefficient)

P = 0.4 (percentage of women who performed breast self-examination) *i.e.* 26%.

d = 0.05 (degree of precision)

To minimize selection bias due to non-response, our sample size was increased by 30% ($n \geq 500$ statistical units).

Sampling technique

Our sampling was based on population clusters distributed across the four administrative districts of Kinshasa and its 35 health zones.

First stage: 11 health zones were randomly selected.

Stage 2: 6 health areas were selected at random

Stage 3: 20 women per health area were interviewed.

This study was designed and financed with our own funds.

2.4. Ethical Considerations

This project was prepared in accordance with the Declaration of Helsinki and was approved by the ethics committee of the Department of Obstetrics and Gynecology of the University Clinics of Kinshasa.

3. Results

The analysis of **Table 1** shows that the most represented age group was 18 - 34 years old (45.2%), the majority of women had attended school (94%) and the highest level of education was secondary school (55%). Most of our participants were shopkeepers (39.2%) and 48% belonged to revivalist churches.

Table 1. Socio-demographic characteristics of participants.

Variables	Frequency	Percentage
Age group in years		
18 - 34	587	45.2
35 - 49	316	24.3
≥50	396	30.5
Level of education		
None	121	9.3
Primary	183	14.1
Secondary	709	54.6
Higher/University	286	22
Profession		
None	317	24.4
Farmer	130	10
Tradeswoman	509	39.2
State employees	266	20.5
Private sector	77	5.9
Religion		
Catholic	192	14.8
Protestant	182	14
Kimbanguist	180	13.9
Muslim	126	9.7
Revivalist	619	47.7

The majority of participants had heard of breast cancer (82.5%), and the main source of information was the Internet (48.3%). The level of knowledge about breast cancer was average at 55%, breast pain was the most common warning sign at 25.5%, and systematic examination by a doctor was the screening method most frequently mentioned by participants at 35.1% (See **Table 2**).

Table 2. Level of knowledge about breast cancer, source of information, warning sign and means of screening.

Variables	Frequency	Percentage
Knowledge of breast cancer		
No	227.0	17.5
Yes	1072	82.5
Source of information about breast cancer		
Internet	628	48.3
Conference	145	11.2
Church	151.0	11.6
Word of mouth	375.0	28.9
Level of knowledge about breast cancer		
Poor	363.0	27.9
Fair	714	55.0
Good	222	17.1
Signs of cancer known by participants		
Mass	246.0	18.9
Breast discharge	225.0	17.3
Retraction	162.0	12.5
Breast pain	331.0	25.5
Don't know	335.0	25.8
Knowledge of screening methods		
Mammography	227	17.5
Routine examination by doctor	456	35.1
Breast self-examination	437	33.6
No screening method	179	13.8

Analysis of this table shows that most participants (54.1%) were aware of the risk factors for breast cancer. The majority (31.7%) believe that it is a curse, a good number (83%) know that there is a treatment, and that it is surgical (41.4%), and 73% of participants accept that breast cancer can be cured (See **Table 3**).

Table 3. Knowledge of breast cancer risk factors.

Variables	Frequency	Percentage
Participants' knowledge of breast cancer risk factors		
No	596.0	45.9
Yes	703	54.1
Risk factors		
Heredity	247	19.0
Use of contraceptive pills	108	8.3
Sedentary lifestyle	98	7.5
Diet	302	23.3

Continued

Poor health	412	31.7
Obesity	96	7.7
Intoxications (tobacco, alcohol)	33	2.5
Male breast cancer		
No	880	67.7
Yes	419	32.3
Existence of breast cancer treatment		
No	226	17.4
Yes	1073	82.6
Breast cancer treatment known by participants		
Surgery	538.0	41.4
Medication	406.0	31.3
No treatment	129	9.9
Cancer cure		
No	340	26.2
Yes	959	73.8

Analysis of **Table 4** shows that (829) = 64.0% of participants do not perform breast self-examination, compared with only 36.0%. The practice is done correctly (inspection = palpation of four quadrants) by 11%, with a normal rhythm (once at the beginning of the cycle) at 10.3%. Lack of information on how to do it is the main reason why non-participants do not perform breast self-examination.

Table 4. Practice and obstacles to breast self-examination by participants.

Variables	Frequency N = 1296	Percentage
Practice of breast self-examination		
No	829	64.0
Yes	467	36.0
Self-examination technique n = 467		
Four-quadrant palpation and breast inspection	49	10.5
Inspection alone	89	19.1
Palpation alone	329	70.4
Frequency of breast self-examination n = 467		
Weekly	102	21.8
Monthly	48	10.3
Quarterly	317	67.9
Obstacles to non-palpation of the breast n = 829		
Embarrassing/Cultural	170	20.5
No benefit	219	26.4
Difficult to do	440	53.1

The practice score showed a statistically significant difference between the two groups: 4.18 ± 0.925 beneficial practices versus 7.43 ± 0.89 non-beneficial practices ($p = 0.000$) (See **Table 5**).

Table 5. Distribution of the sample according to the level of non-beneficial or beneficial practices.

Practices	Numbers	Percentage	Mean \pm standard deviation	p
Beneficial	134	20.3	4.18 ± 0.925	
Non-beneficial	333	79.7	7.43 ± 0.89	0.000

The analysis of **Table 6** shows that, after adjustment, the level of primary education is associated with 1 times the risk of non-beneficial practices on self-examination ($p = 0.173$), nulliparity is associated with 5 times the risk of non-beneficial practices ($p = 0.001$), young age is associated with 1 times the risk of non-beneficial practices than older people ($p = 0.008$), while the profession of shopkeeper, private sector and farmer emerge as protectors.

Table 6. Factors associated with non-beneficial practices.

Variables	Practices		Gross OR 95% IC	p	adjusted OR 95 IC	p
	Non-beneficial (n = 333)	Beneficial n = 134				
Level of study						
Higher	108	73	1		1	
Primary	128	36	1.051 [0.945 - 1.169]	0.000	1.543 [0.831 - 1.856]	0.173
Secondary	97	25	1.032 [0.957 - 1.114]	0.434		
Profession						
Civil servant	124	54	1		1	
Tradeswoman	85	27	1.032 [0.957 - 1.114]	0.432	0.542 [0.342 - 0.841]	0.007
Private sector	67	38	1.212 [1.151 - 1.275]	0.000	0.324 [0.135 - 0.698]	0.005
Farming	57	15	1.510 [1.395 - 1.635]	0.000	0.517 [0.267 - 1.000]	0.052
Parity						
Yes	254	111	1		1	
No	79	23	1.212 [1.151 - 1.275]	0.000	5.923 [28.081 - 10.254]	0.001
Age (Years)						
≥ 50	97	38	1		1	1
18 - 34	186	77	1.362 [1.261 - 1.472]	0.000	1.473 [0.964 - 2.27]	0.008
35 - 49	50	19	0.778 [0.620 - 0.977]	0.030	1.992 [2.858 - 1.387]	0.000

4. Discussion

Breast cancer remains the most deadly malignancy among women worldwide [18]. It is a major public health problem worldwide, with over one million new cases diagnosed each year, resulting in more than 400,000 deaths annually and around 4.4 million women living with the disease.

In Africa, breast cancer is the most frequently diagnosed cancer-related cause of death and the leading cause of cancer-related mortality, with an estimated mortality rate of 12.1% [19].

Morbidity and mortality associated with breast cancer are high in developing countries due to late reporting of health care and lack of screening methods. Delayed health care reporting is associated with local beliefs and misconceptions surrounding breast cancer, particularly among Africans. These beliefs include religiosity, spirituality and fatalistic beliefs [20].

It has been reported that awareness and understanding of breast cancer is low among the general population in Africa [21].

This calls for preventive measures to combat this threat on a global scale, particularly in developing countries where access to mammography and clinical breast examination is limited or practically inaccessible. The unavailability of mammography and clinical breast examination (CBE) necessitates extensive training in self-care, which can help in the early detection and management of disease, and thus lead to a reduction in associated morbidity and mortality in women [22]. Personal breast examination is the technique whereby a woman examines her own breast. It also helps them to detect any changes in their breasts at an early stage [23].

Early diagnosis remains an important strategy for detecting disease in its earliest stages, particularly in low- and middle-income countries where diseases are usually diagnosed at advanced stages and resources are severely lacking.

Our study is in line with this strategy, assessing the knowledge of Congolese women in Kinshasa about the practice of breast self-examination in early cancer detection.

4.1. Age Range

In our series, the mean age of the participants was 40.11 ± 14.36 years, with extremes ranging from 18 - 69 years. The 18 - 34 age group was the most represented at 45.2%.

Our results are similar to those of Nguéfack *et al.* in Cameroon in 2018 and Sana *et al.* in Tunisia in 2013, who obtained a mean age of 39 ± 9 and 41.6 ± 12 years respectively [24] [25]. Far superior to those reported by Yeliz *et al.* in Türkiye in 2011 and Heena H *et al.* in Saudi Arabia in 2019 with respective mean ages of 33, 1 years [26]; and 34.7 years [27].

4.2. Study Level

In our study, the majority of participants had attended school (1216) = 93.6% and were at secondary level (709) = 54.6%.

In the DRC, as in most Third World countries, illiteracy affects women more than men. Some 63% of Congolese children complete primary education, compared with 54% and 32% respectively for the 1st and 2nd secondary cycles. This drop is explained by the high level of repetition and drop-out between the dif-

ferent cycles. Completion rates for girls and boys are identical at primary level, but the gaps are widening to the disadvantage of girls. The percentage of girls completing lower secondary education is 6 points lower than that of boys and reaches 10 points at upper secondary level. This inequality is partly linked to factors such as pregnancy and early marriage, which affect girls more than boys.

This situation proves the discrepancy between our results and those of other researchers who have reported a higher level of education for most of the participants [28].

4.3. Practice Breast Self-Examination

There are three aspects to breast cancer screening: breast self-examination, clinical exploration and diagnostics such as mammography or ultrasound. Breast self-examination is recommended from the age of 20. It has extraordinary value as the first resource a woman relies on to arrive at an early diagnosis of some pathological processes of the mammary gland, and more specifically of cancer.

In our series, 64.0% of participants did not perform breast self-examination, compared with 36.0% who did. Unfortunately, knowledge of the technique and frequency of breast self-examination among those who do remains very poor, at around 10%.

In addition, lack of knowledge of the self-examination technique (53.1%) and its benefits in terms of early cancer detection (26.4) are the main obstacles to participants performing self-examination.

Even if the percentage of non-practice in our series (64%) is lower than those of other researchers (80%), a difference that would be due to our sample size, it remains consistent with the numerous studies that have shown poor practice of breast self-examination to range from 20% to 55% [29]-[33].

4.4. Level of Practice and Factors Associated with Non-Beneficial Self-Examination Practices

In our series, respondents with a primary level of education (aOR = 1.543, CI 95% = 0.831 - 1.856, $p = 0.173$) were 1 time more at risk of non-beneficial breast cancer practices than those with a higher level of education. This result is consistent with that of Pal *et al.* in a systematic review of Indian studies, which demonstrated a significant association between breast cancer knowledge and level of education [17].

As mentioned in the literature, despite the increase in primary school enrollment from 52% to 78% between 2000 and 2017, the primary completion rate remains low at 75%, and the quality of education is extremely poor. It is estimated that 97% of ten-year-old children in the Democratic Republic of the Congo are in a situation of learning poverty, meaning they are unable to read and understand a simple text [18]. This could explain the low level of breast cancer knowledge and the non-beneficial practices found in our study.

In our series, nulliparity is associated with a fivefold increased risk of engag-

ing in non-beneficial breast cancer practices compared to multiparous women (aOR = 5.923, 95% CI = 2.081 - 10.254, $p = 0.001$). This could be explained by the fact that nulliparous women have less frequent exposure to hospital environments, thereby limiting access to conventional sources of information like healthcare personnel. Asmare *et al.* also reported a significant association between a family history of breast cancer and having a good level of knowledge about the disease [19].

On the other hand, participants' fatalistic view of the curability of breast cancer and the attribution of its risk to God and the evil eye could be an explanatory factor for non-beneficial practices on breast self-examination. This is in line with many studies that consider fatalism to be a barrier to acquiring knowledge about beneficial cancer practices [20] [21].

Younger people (aOR = 1.473, 95% CI = 0.964 - 2.27, $p = 0.008$) and adults (aOR = 1.992, 95% CI = 1.387 - 2.858, $p = 0.000$) are more likely to have non-beneficial practices on breast self-examination than older people.

Several studies have shown that educational level is associated with better breast cancer screening practices. In our series, most of the participants, 55% of whom were in secondary school and young, had little access to sources of information on breast cancer screening methods such as self-examination. This result is similar to the study on behavioural determinants of breast cancer screening in the United Arab Emirates in 2002 [34], also identical to the Nigerian study on women's knowledge, attitude and practice against breast cancer in 2006 (OR = 3.56 [2.58 - 4.92]) [35] and to that of the Gueye study in Senegal in 2009 ($p < 0.001$) [36]. In this sense, several hypotheses have been put forward to the effect that individuals with formal education pay greater attention to health risks and the use of health services [37]-[39].

5. Conclusion

Breast self-examination appears to be a simple and effective method for detecting abnormalities at an early stage. Unfortunately, it is not widely practised in our communities. Decision-makers should focus on raising awareness and improving access to the right information to reduce mortality from this disease.

Authors' Contributions

All authors contributed to the conception and final drafting of this article.

Conflicts of Interest

The authors declare no conflicts of interest.

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