

Knowledge, Attitudes and Practices of Women Regarding Breast Cancer in Lubumbashi (DRC): A Cross-Sectional Study

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Abstract

Context: Breast cancer represents as neoplasm malign the most common disease in women worldwide. In the Democratic Republic of Congo (DRC), lack of awareness of the disease is a major obstacle to its early treatment.

Objective: To assess the level of knowledge, attitudes and practices (KAP) of women of reproductive age regarding breast cancer in Lubumbashi.

Methods: A descriptive and analytical cross-sectional study was conducted with 589 participants recruited from several communes in Lubumbashi. A structured questionnaire assessing knowledge (16 items), attitudes (10 items) and practices (10 items) was administered face-to-face.

Results: The mean age of the participants was 23.0 ± 6.5 years. The mean knowledge score was $2.92/16$ (18.3%), with only 10.7% of participant searching a good level. The best-known item was the general definition of breast cancer (46.2%). Attitude ($2.66/10$) and practice ($2.29/10$) scores were also low, with a good level noted in 19.5% and 18.0% of participants, respectively. Prior exposure to information about breast cancer was associated with a better level of knowledge ($p = 0.039$). The correlations between knowledge-attitude ($r = 0.33$) and attitude-practice ($r = 0.29$) were significant.

Conclusion: The overall level of breast cancer awareness and literacy (BACC) is insufficient in Lubumbashi. Targeted educational interventions are urgently needed to improve early detection and reduce breast cancer mortality.

Keywords: Breast cancer; knowledge; attitudes; practices; Lubumbashi; screening; DRC

INTRODUCTION

Breast cancer is the most common form of cancer in women worldwide and is the leading cause of cancer death in women (1). According to data from the World Health Organization (WHO), more than 2.3 million new cases are diagnosed each year, with a particularly high incidence in low- and middle-income countries, especially in sub-Saharan Africa (2).

In the Democratic Republic of Congo (DRC), breast cancer is one of the most common gynecological cancers, often diagnosed at advanced stages due to late detection (3). This reality is mainly attributable to a lack of awareness, insufficient screening facilities, and a general lack of knowledge about the disease among the population (4).

In Lubumbashi, the capital of Haut-Katanga and the second largest city in the DRC by population, epidemiological

data on breast cancer remain fragmented. Available studies suggest a profile similar to other major cities in sub-Saharan Africa, characterized by late diagnosis and suboptimal management (5). However, the prognosis of breast cancer is closely linked to early diagnosis, which itself depends on women's knowledge, attitudes, and practices (KAP) regarding screening (6).

The CAP (Knowledge, Attitudes, Practices) approach constitutes a recognized conceptual framework for assessing health behaviors within a population (7).

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METHODS

Type and location of study

This was a cross-sectional study with descriptive and analytical aims, conducted in several communes of the city of Lubumbashi, Haut-Katanga province, DRC. The communes covered included Annexe, Lubumbashi, Kampemba, Katuba, Ruashi, Kenya and Kapemba, thus providing geographical representation of the city.

Population and sampling

The target population consisted of women and young adults residing in Lubumbashi. Convenience sampling was used. Inclusion criteria included: (i) residing in Lubumbashi for at least six months, (ii) being at least 16 years of age, and (iii) having consented to participate in the study not having consented or Those with cognitive impairments that made it impossible for them to answer the questionnaire independently were excluded.

In total, 589 participants were included in the final analysis.

Data Collection Tool

The data was collected using a structured questionnaire organized into several sections:

- **Section 1:** Socio-demographic characteristics (age, sex, municipality, marital status, profession, education level, parity, religion).
- **Section 2:** Prior exposure to information about breast cancer (family history, sources of information, previous examinations).
- **Section 8.1:** 16 items assessing general knowledge about breast cancer (definition, symptoms, screening, treatment).
- **Section 8.2:** 6 items relating to knowledge of risk factors.
- **Section 8.3:** Sources of information on breast cancer.
- **Section 9:** 10 items assessing attitudes towards breast cancer.
- **Section 10:** 10 items relating to screening and prevention practices.

For sections 8.1 and 8.2, the answers were coded 1 (correct answer), 2 (incorrect answer) or 3 (don't know).

Measuring scores and defining thresholds

A knowledge score (CS) was calculated by counting the number of correct answers to the 16 items in section 8.1 (CS $\in$ [0–16]). A CS ≥ 8 (i.e., $\geq 50\%$) was used to define a “good level of knowledge.” Similar scores were calculated for attitudes and practices (threshold $\geq 5/10$). These thresholds were defined a priori based on the literature on KAP studies in sub-Saharan Africa.

Statistical analyses

The data was entered on a computer using Microsoft Excel

2021 software. Statistical data analysis was performed using R software version 4.3.0. Quantitative variables were described using the mean and standard deviation. Categorical variables were expressed as counts and proportions. Associations between knowledge level and sociodemographic variables were tested using Pearson's chi-squared test. Correlations between the CAP dimensions were assessed using Pearson's correlation coefficient. The statistical significance threshold was set at $p < 0.05$.

Ethical considerations

Informed consent was obtained from each participant before inclusion. Data confidentiality was ensured by anonymizing the questionnaires. Approval from the institutional ethics committee was obtained prior to data collection.

RESULTS

3.1 Sociodemographic characteristics

A total of 589 participants [Number of individuals] were included. The mean age was 23.0 ± 6.5 years (range: 16–57 years). The most represented age group was ≤ 19 years (39.1%), followed by 20–24 years (32.1%). The vast majority were single students (63.2%). Regarding educational level, 49.4% had a secondary education and 27.3% a university education. Female students constituted the main occupational category (66.9%). The predominant religion was Christianity (68.6%). Details are presented in Table I.

3.2 Prior exposure to breast cancer

Almost all the participants 88.3% of respondents reported never having heard of breast cancer before the survey. Only 8.1% ($n = 48$) reported prior exposure to information about the disease. The prevalence of a family history of breast cancer was very low (1.9%). Furthermore, 80.1% had never had a clinical breast exam and 81.8% had never had a mammogram.

3.3 Level of knowledge about breast cancer

The average knowledge score was 2.92 ± 3.32 out of 16 (18.3%). Only 10.7% of participants ($n = 63$) achieved a good level of knowledge (SC $\geq 8/16$). The item with the highest rate of correct answers was the general definition of breast cancer (46.2%), followed by the importance of early detection (27.4%). The least mastered items were age at risk (9.3%), surgery as a treatment (11.2%), and chemotherapy (11.6%). The proportion of participants the percentage of respondents saying “don't know” was uniformly high, exceeding 40% for most items (Table II).

3.3.1 Knowledge of risk factors

Risk factors were also poorly understood. Advanced age was the most frequently identified risk factor (33.5%), followed by nulliparity (29.9%) and family history (29.7%).

Obesity was the least recognized factor (23.1%). The proportion of participants who answered “don’t know” was between 34.5% and 44.2% for the six items evaluated (Table III).

Table I. Sociodemographic characteristics of participants (n = 589)

Characteristic	n	%
Age range		
≤ 19 years old	230	39.1
20–24 years old	189	32.1
25–29 years old	71	12.1
30–34 years old	47	8.0
≥ 35 years old	52	8.8
Marital status		
Single student	372	63.2
Bride)	153	26.0
Bachelor	47	8.0
Widow/Widower	15	2.5
Level of education		
Primary	104	17.7
Secondary	291	49.4
University	161	27.3
Other (A2/Patent)	32	5.4
Main occupation		
Student	394	66.9
Unemployed	75	12.7
Commerce / Liberal	66	11.2
Healthcare personnel	4	0.7
Others	50	8.5

Table II. Distribution of responses to knowledge items on breast cancer (n = 589)

Knowledge item (section 8.1)	Correct answer n (%)	Incorrect answer n (%)	Don't know n (%)
8.1.1 – General definition of breast cancer	272 (46.2%)	101 (17.1%)	198 (33.6%)
8.1.2 – Breast cancer in women	118 (20.0%)	204 (34.6%)	233 (39.6%)
8.1.3 – Breast cancer in men	105 (17.8%)	237 (40.2%)	219 (37.2%)
8.1.4 – Age at risk	55 (9.3%)	225 (38.2%)	263 (44.7%)
8.1.5 – Warning signs (pain)	105 (17.8%)	185 (31.4%)	273 (46.3%)
8.1.6 – Signs (skin changes)	111 (18.8%)	158 (26.8%)	285 (48.4%)

Table III: The percentage of respondents who answered “don’t know” was between 34.5% and 44.2% for the six items evaluated (Table III).

Risk factor (section 8.2)	Correct answer n (%)	Don't know n (%)
8.2.1 – Family history	175 (29.7%)	219 (37.2%)
8.2.2 – Advanced Age	197 (33.5%)	206 (35.0%)
8.2.3 – Nulliparity	176 (29.9%)	203 (34.5%)
8.2.4 – Alcohol Consumption	164 (28.0%)	221 (37.8%)
8.2.5 – Obesity	136 (23.1%)	260 (44.2%)
8.2.6 – Oral contraceptives	149 (25.3%)	232 (39.4%)

3.4 Attitudes and practices towards breast cancer

The mean attitude score was 2.66 ± 1.99 out of 10, and the mean practice score was 2.29 ± 2.23 out of 10. A good level of attitude was observed in 19.5% of participants (n = 115) and a good level of practice in 18.0% (n = 106). The most favorably rated attitude item was willingness to consult a doctor in case of suspicious symptoms (V9.5: 67.9% favorable responses), while willingness to undergo screening mammography (V9.7: 7.0%) and to recommend screening to those around them (V9.8: 9.2%) remained very low. The summary of scores is presented in Table IV.

Table IV. CAP score of participants (n = 589)

CAP dimension	Average score $\pm$ ET	Good level n (%)
Knowledge (score /16)	2.92 ± 3.32	63 (10.7%)
Attitudes (score /10)	2.66 ± 1.99	115 (19.5%)
Practices (score /10)	2.29 ± 2.23	106 (18.0%)

correlation was $r = 0.325$, the attitude-practice correlation was $r = 0.289$, and the knowledge-practice correlation was $r = 0.178$. These results suggest that a higher level of knowledge is associated with more favorable attitudes, which are themselves linked to more appropriate prevention practices.

Table V. Factors associated with the level of knowledge about breast cancer (n = 589)

Variable	Good level n (%)	Low level n (%)	p-value
Exposure (already heard about breast cancer)			
Yes	10 (20.8%)	38 (79.2%)	0.039*
No	52 (10.0%)	468 (90.0%)	
Level of education			
Primary	14 (13.5%)	90 (86.5%)	0.056
Secondary	38 (13.1%)	253 (86.9%)	
University	9 (5.6%)	152 (94.4%)	

the predominance of female students (66.9%). This profile is similar to that described in other KAP studies conducted in sub-Saharan Africa, particularly in Cameroon and Côte d'Ivoire, where female student populations constitute the main groups studied due to their accessibility and their potential role as information relays.

Level of knowledge

The level of knowledge observed in our study is particularly concerning. With an average score of $2.92/16$ (18.3%) and only 10.7% of participants reaching a good level, our results reveal significant cognitive gaps. These figures are lower than those reported in several comparable African studies; for example, studies in Nigeria and Ethiopia reported rates of good knowledge ranging from 30% to 55% depending on the populations and thresholds used.

3.5 Determinants of the level of knowledge

Bivariate analyses did not reveal any significant difference in knowledge level according to gender ($p = 1.00$) or educational level ($p = 0.056$, non-significant trend). However, the participants having been exposed Those with prior information about breast cancer were significantly more likely to have a good level of knowledge compared to those who had not had this exposure (20.8% vs 10.0%; $p = 0.039$). Detailed results are shown in Table V.

3.6 Correlations between CAP dimensions

Significant positive correlations were observed between the three CAP dimensions. The knowledge-attitude

DISCUSSION

Sociodemographic profile

Our study sample consisted primarily of young women (75.6%), with a mean age of 23, reflecting the young demographic structure of Lubumbashi's population and

The high proportion of "don't know" responses (exceeding 40% for the majority of items) indicates not an incorrect understanding but a complete lack of information on the subject. This observation is particularly marked for items relating to treatments (surgery, chemotherapy, radiotherapy) and screening methods (mammography, clinical examination), which is consistent with the low rate of recourse to these examinations reported in our sample (17.3% for clinical examination and 14.1% for mammography).

The best-known item was the general definition of breast cancer (46.2%), suggesting minimal awareness of the disease in the community, but not necessarily resulting in in-depth knowledge of its clinical characteristics or management.

Risk factors

Lack of awareness of risk factors is a major obstacle to adopting preventive behaviors. In our study, risk factor recognition rates ranged from 23.1% (obesity) to 33.5% (older age), significantly lower than data reported in studies conducted in North Africa or the Middle East (60–80%). This lack of awareness is particularly problematic for modifiable factors such as obesity and alcohol consumption, for which behavioral interventions would be possible if the population were adequately informed.

Attitudes and practices

Attitudes were generally unfavorable, with only 19.5% of participants reporting a good level of awareness. However, an encouraging point was the stated willingness to consult a doctor in case of suspicious symptoms (67.9%), which represents a positive factor in promoting early detection. On the other hand, the very low rates of willingness to have a mammogram (7.0%) and to recommend screening to those around them (9.2%) indicate an underestimation of the importance of active screening.

Screening practices were also inadequate (average score: 2.29/10; good level: 18.0%), which is consistent with prior exposure data: 80.1% of participants They had never had a clinical breast exam. These observations are consistent. With the results of similar studies in Senegal and the DRC, which describe breast self-examination rates of less than 20% in non-medical populations.

Determinants of the level of knowledge

Prior exposure to information about breast cancer was the only factor significantly associated with a higher level of knowledge ($p = 0.039$). This finding underscores the critical importance of access to information and confirms that awareness campaigns are the primary lever for action. The lack of association with educational level ($p = 0.056$), although close to the threshold, suggests that the content of the current academic curriculum does not adequately cover knowledge about breast cancer, regardless of educational level.

The lack of difference based on sex is consistent with the theory that knowledge about breast cancer is not innate and requires specific exposure to information, regardless of biological sex.

CAP Correlations and Implications

The positive correlations observed between the three CAP dimensions ($r = 0.18$ to 0.33) confirm the theoretical model in which knowledge influences attitudes, which in turn shape health behaviors. Although these correlations

are moderate, they indicate that improved knowledge could have a positive cascading effect on attitudes and practices. This finding supports comprehensive educational interventions that simultaneously target all three dimensions.

Limitations of the study

This study has several limitations. Convenience sampling does not allow for strict generalization to the entire population of Lubumbashi. Most participants Because the participants were students, the results may not be representative of older or less educated women. Furthermore, the data are self-reported, which exposes them to social desirability bias, particularly for items related to practices. Finally, the cross-sectional design does not allow for the establishment of causal relationships between variables.

CONCLUSION

This cross-sectional study of 589 participants in Lubumbashi reveals an overall insufficient level of knowledge, attitudes, and practices regarding breast cancer. The average knowledge score was less than 20% of the maximum possible, and only 10.7% of participants demonstrated this level of awareness. While reaching a good level, the results highlight significant cognitive gaps that hinder the adoption of early screening behaviors.

Knowledge of clinical signs, risk factors, screening methods, and treatment options is particularly lacking. Screening attitudes and practices are also insufficient, although the stated willingness to seek medical attention when symptoms appear is a positive factor. Prior exposure to information is the primary determinant of a good level of knowledge.

These findings call for the urgent implementation of targeted health education programs, integrated into school and university curricula and community communication strategies. Specific actions aimed at improving access to clinical breast examinations and screening mammography in Lubumbashi health facilities are also necessary to reduce breast cancer mortality in this region. Future longitudinal and larger-scale studies, including women of all ages and socioeconomic levels, will allow for a better characterization of the determinants of CAP level and an evaluation of the effectiveness of interventions implemented.

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