



Prevalence, risk factors and Mammographic Presentation of breast lesions among women with dense breast at “Les Promoteurs de la bonne sante Yaounde” Medical center

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Received: March 20, 2026; **Published:** March 24, 2026

Abstract

Objective: To assess the prevalence, risk factors, and mammographic presentation of breast lesions among women with dense breasts at “Les Promoteurs de la Bonne Santé” Yaoundé Medical Center.

Materials and Methods: An analytical cross-sectional study was carried out at “Les Promoteurs de la Bonne Santé” Yaoundé Medical Center among women with dense breasts who were willing and cooperative. Participants were sampled using a convenient sampling technique and a structured form. Data were saved on a USB drive and analyzed using SPSS version 27.0. Ethical clearance was obtained from the St. Louis University Institute in Yaoundé, the Delegation of Public Health, and the “Les Promoteurs de la Bonne Santé” Centre Médical. Patient information was kept confidential.

Results: A total of 80 participants were sampled, the majority of whom were 36 (45.0%) between the ages of 50 and 59. Forty (50%) were married, and 41 (51.2%) had a tertiary level of education. The prevalence of breast lesions was 45 (56.3%). There was a significant relationship between age and breast lesions ($p = 0.005$). Also, the relationships between marital status and educational level and breast lesions were statistically significant ($p = 0.007$ and $p = 0.029$, respectively). The majority, 42 (52.5%), were postmenopausal. A breast lesion was statistically associated with postmenopausal status ($p = 0.024$). Additionally, there was a statistically significant relationship between age at menarche and breast lesions ($p = 0.002$).

Conclusion: The majority of participants were in the 50-59 age range. There was a high prevalence of breast lesions in the study area. The most common risk factors were postmenopausal status and age at menarche. There was a significant relationship between sociodemographic characteristics, risk factors, and breast lesions.

Keywords: prevalence, risk factors, mammographic presentations, breast lesions, dense breast



Introduction

Breast lesion is frequently diagnosed among women worldwide with dense breast, accounting for a significant proportion of morbidity and mortality according to the WHO records 2025. In 2020, approximately 2.3 million new cases were reported globally, highlighting its significant impact on public health (Tagne Simo *et al.*, 2021). In sub-Saharan Africa, including Cameroon, the burden of breast lesions has been rising. In 2018, an estimated 168,690 new cases were diagnosed in Africa, resulting in 74,072 deaths (Tambe *et al.*, 2024). The age standardized incidence rate (ASIR) was 37.9 per 100,000 women, with mortality rates varying across regions. Specifically, in Cameroon as stated in a study carried out by Tambe *et al* in 2024, breast lesion constituted a significant portion of the health system burden with 2,625 new cases reported in 2018. By 2020, this number rose to 4,170 new cases and 2,108 deaths, highlighting an 18% increase in mortality compared to 2018

The development of breast lesions, including benign and malignant tumours, is influenced by a combination of modifiable and non-modifiable risk factors (Igbokwe, 2024). Some non-modifiable risk factors include; genetic mutations, family history, age, hormonal factors and breast Density (Rivard *et al.*, 2025) and modifiable risk factors like trauma or injury or surgery, infections, obesity, alcohol consumption, radiation exposure and reproductive history. (Tagne Simo *et al.*, 2021)

Ultrasonography is a complementary tool for mammographically suspicious lesions, in patients with breast disease and as guidance for reliable histological diagnosis with percutaneous biopsy. Dynamic enhanced magnetic resonance (MRM) has a high sensitivity for the detection of breast lesion, but also a high false positive diagnosis rate. Recently, other new modalities like positron emission tomography, ^{99m}Tc-sestamibi scinti-mammography, and electrical impedance tomography (EIT) are also being offered (Dołęga-Kozierowski *et al.*, 2022). Mammography is considered the “gold standard” in the evaluation of the breast from an imaging perspective due to its high sensitivity as it is able to detect small lesion that may not be palpable or visible on clinical examination. Also, it's able to visualize calcifications. (Prasad & Houserkova, 2020)

In Cameroon, as in many African countries, the challenges associated with breast lesions are complex in women with dense breast. Limited awareness, inadequate screening programs, and resource constraints contribute to late-stage presentations and high mortality rates (Emile *et al.*, 2025). For instance, a study carried out by Tagne Simo *et al* 2021 on the awareness of breast lesion, revealed that 90% of breast lesion cases in Cameroon are diagnosed at advanced stages, significantly diminishing survival prospects. However, there is insufficient of data examining how breast density influences breast lesion detection in Cameroon. Addressing the complexities of lesion detection in women with dense breast necessitates a comprehensive understanding. Thus, this study was to assess the prevalence, risk factors and mammographic presentations of breast lesions at “Les promoteurs de la bonne santé Yaoundé”

MATERIALS AND METHODS

This was an analytical cross-sectional study was carried out at “Les Promoteurs de la Bonne Santé” Yaoundé Medical Center among women of 40 years and above with dense breasts undergoing mammography who were willing and cooperative. Participants were sampled using a convenient sampling technique and a structured form. Data were saved on a USB drive and analyzed using SPSS version 27.0. Ethical clearance was obtained from the St. Louis University Institute in Yaoundé, the Delegation of Public Health, and the “Les Promoteurs de la Bonne Santé” Centre Médical. Patient information was kept confidential. In-

dependent variable such as risk factors and dependent variables were analysed, also socio-demographic characteristics and mammographic presentation of lesions. While inferential statistic, chi square test was used to bring out the associations between socio-demographic characteristics of participants and breast lesions, risk factors of participants and breast lesions with a P-value of 0.05. The results were presented using tables and pie chart.

Results

1. Socio-demographic characteristics of study participants

Variable	Category	Frequency (n)	Percentage (%)
Age	40-49	27	33.8
	50-59	36	45.0
	60-69	8	10.0
	≥70	9	11.3
	Total	80	100.0
Marital status	Married	40	50.0
	Unmarried	25	31.3
	Divorced	5	6.3
	Widowed	10	12.5
	Total	80	100.0
Educational level	Primary	10	12.5
	Secondary	29	36.3
	Tertiary	41	51.2
	Total	80	100.0

Table 2 : Socio-demographic characteristics of the respondents.

Table above shows that 36 (45.0%) were of age (50-59) and minority 8(10.0%) were aged (60-69). Most of them 40 (50%) were married and least of them 5 (6.3%) were divorced. (51.2%) of had tertiary level of education and 10 (12.5%) had primary level of education.

1. Prevalence of breast lesions among study participants

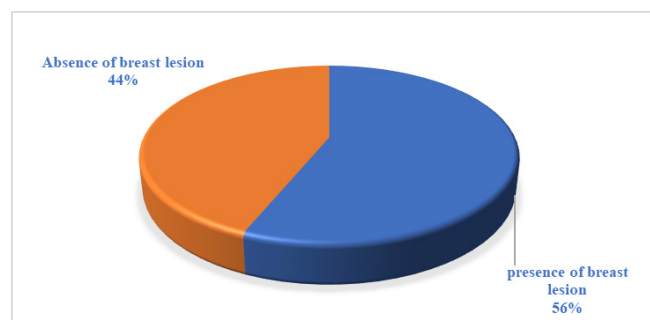


Figure 1: Prevalence of breast lesions.

With regard to prevalence 45 (56.3%) of the respondents had breast lesion.

1. Association between breast lesions and sociodemographic characteristics

Variable	Category	Presence	Absence	Chi square Test (X ²)	P value
Age	40-49	9	18	12.840 ^a	.005
	50-59	23	13		
	60-69	8	0		
	>70	5	4		
Marital status	Married	16	24	11.977 ^a	.007
	Unmarried	18	7		
	Divorced	2	3		
	Widowed	9	1		
Educational level	Primary	8	2	7.102 ^a	.029
	Secondary	11	18		
	Tertiary	26	15		

Table 2: Association between socio-demographic characteristics and breast lesions.

From the above table, there exists a relationship between age and presence of breast lesions. Also the relationship between marital status, educational level and breast lesion is statistically significant (P=0.007) and (P=0.029) respectively.

Risk factors of breast lesions

Variable	Category	Frequency (n)	Percentage (%)
Family History	Yes	16	20.0
	No	6	7.5
	Unknown	58	72.5
	Total	80	100.0
Hormone therapy	Yes	6	7.5
	No	74	92.5
	Total	80	100.0
Menopausal status	premenopausal	38	47.5
	postmenopausal	42	52.5
	Total	80	100.0
Parity	0	12	15.0
	1	19	23.8
	2	9	11.3
	3	10	12.5
	>3	30	37.5
	Total	80	100.0

Table 3 : Presentation of Risk factors of breast lesions

42 (52.5%) were post-menopausal and 6 (7.5%) were using hormone therapy.

Variable	Category	Frequency (n)	Percentage (%)
Alcohol Consumption	Yes	52	65.0
	No	28	35.0
	Total	80	100.0
Smoking	Yes	2	2.5
	No	78	97.5
	Total	80	100.0

<i>Age at menarche</i>	<11	10	12.5
	11-15	67	83.8
	>15	3	3.8
	<i>Total</i>	80	100.0

Table 4: Risk factors of respondents 1.

The most common risk factor 52 (65.0%) was alcohol consumption alcohol while the least common 2 (2.5%) was smoking.

1. Association between breast lesions and risk factors of study participants

Table 5 : Association between breast lesions and risk factors

<i>Variable</i>	<i>Category</i>	<i>Presence</i>	<i>Absence</i>	<i>Chi square Test (X2)</i>	<i>P value</i>
<i>Family history</i>	<i>Yes</i>	11	5	1.763a	.414
	<i>No</i>	4	2		
	3	30	28		
<i>Hormone therapy</i>	<i>Yes</i>	5	1	1.933a	.164
	<i>No</i>	40	34		
<i>Menopausal status</i>	<i>Pre-menopausal</i>	25	13	2.677a	.102
	<i>Post-menopausal</i>	20	22		
<i>Parity</i>	0	9	3	11.233a	.024.
	1	14	5		
	2	5	4		
	3	7	3		
	>3	10	20		
<i>Alcohol consumption</i>	<i>Yes</i>	23	29	8.721a	.003
	<i>No</i>	22	6		
<i>Smoking</i>	<i>Yes</i>	2	0	1.595a	.207
	<i>No</i>	43	35		
<i>Age at menarche</i>	<11	10	0	12.073	0.002
	11-15	32	35		
	>15	3	0		

There is a statistically significant association between alcohol consumption and the presence of breast lesions (P= 0.003). Also a statistically associated between post-menopausal (P=0.024) and menarche age and breast lesion (p=0.002).

2. Mammographic findings of breast lesions

Table 6 : Mammographic findings of breast lesions among study participants.

<i>Presentation</i>	<i>Frequency (n)</i>	<i>Percentage (%)</i>
<i>Microcalcification</i>	28	50%
<i>Macro calcification</i>	10	17.9
<i>Nodular opacity</i>	13	23.2
<i>Suspicious lesions</i>	5	8.9
<i>Total</i>	56	100.0

28(50%) of breast presented with microcalcifications while 5 (8.9%) presented with suspicious lesions.

<i>BIRADS Classification</i>	<i>Frequency (n)</i>	<i>Percentage (%)</i>
<i>BIRADS II</i>	26	46.4
<i>BIRADS III</i>	12	21.4
<i>BIRADS IV</i>	13	23.2
<i>BIRADS V</i>	5	8.9
	56	100.0

Table 7 : BIRADS classification of breast lesions.

26 (46.4%) of the breast were classified as BIRADS II while 5 (8.9%) fell under BIRADS V

Discussion

The findings from this study provide information on the prevalence, risk factors, and mammographic presentation of breast lesions among women with dense breasts at Les Promoteurs de la Bonne Santé in Yaoundé. Of the 89 submitted structured forms, only 80 met the inclusion criteria for further analysis, yielding a response rate of 90%.

1. Socio-Demographic characteristics of study participants

45% of participants were between 50 and 59 years old. This may be because this age range reflects the typical demographic profile of women undergoing breast screenings and aligns with a cross-sectional analytical study by Mukhtar et al. (2021) on the prevalence of various breast lesions in women in southern Punjab, Pakistan. In that study, 74.61% of participants were over 35 years old. The similarity may be due to the fact that the WHO also classifies women over 40 as a high-risk group for routine breast screenings.

In terms of marital status, 50% of them were married. This reflects the typical marital status of middle-aged women in the general population. However, this is in contrast to a case-control study by Ayda Hussain et al. on the impact of breast lesions on marital status in Sudan and Greece (2021), in which most participants (43.5%) were divorced. This discrepancy may be due to differences in study design and sampling methods, as well as cultural differences.

Regarding level of education, 51.2% of participants had a tertiary education. Women in this age range are more aware of the importance of mammography, and educational background may influence health-seeking behavior, especially for preventive screenings like mammography. This is consistent with an analytical cross-sectional study by Rioki et al. (2024) on factors associated with breast lesions among women attending select teaching and referral health facilities in Kenya, which found that the majority (58.2%) had a secondary education. This discrepancy may be attributed to differences in the study area because their study was public health centered, which may have attracted a broader population of women with lower education levels. Our study, however, was conducted in a more specialized private facility, so tertiary-educated women may have been overrepresented due to affordability.

2. Prevalence of breast lesion among study participants

The overall prevalence of breast lesions was 56.3%. This may be due to the age distribution, which included a large proportion of women between 50 and 59 years old. This reflects a population at increased risk for breast abnormalities. This contrasts with a descriptive, cross-sectional study conducted by Olu-Eddo & Ugiagbe (2015) on the prevalence of benign breast diseases and characterization of histologic patterns in the University of Benin Teaching Hospital in Benin City, Nigeria, in which 72.4% of all breast lesions were observed. This may be because both populations had similar age distributions.

Regarding the association Between Breast Lesions and Socio-Demographic Characteristics, there was a significant relationship was found between age and breast lesions ($p=0.005$). This finding is related to an analytical cross-sectional study carried out by Mukhtar et al. on the prevalence of different breast lesions in women of southern Punjab, Pakistan (2021). A statistical relationship was found between age and the presence of breast lesions ($p = 0.002$). This similarity may be due to the populations having similar age distributions.

Regarding educational level, a significant relationship was found between educational level and breast lesions ($p = 0.007$). This finding aligns with an analytical cross-sectional study by Rioki et al. on factors associated with breast lesions among women attending select teaching and referral health facilities in Kenya ($P = 0.005$, 2024). This may be due to a similarity in the study designs.

Marital status and breast lesions are statistically significant ($P=0.029$). This is in contrast to a case-control study carried out by Ayda Hussain et al. in 2021 on the impact of breast lesions on marital status in Sudan and Greece, where a significant relationship was found with a chi-square test

p-value of .047. This could be because marital status is associated with lifestyle factors, such as physical activity, diet, and stress levels, which impact breast health.

3. Association between risk factors and breast lesions

The most frequent risk factors were menarche at ages 11-15 (83.8%) and postmenopausal status (52.5%). This may be because both factors are associated with increased cumulative exposure to endogenous estrogen, which plays a role in breast tissue changes over time. This finding is consistent with a prospective cross-sectional study conducted by Mwakigonja et al. in Dar es Salaam, Tanzania, in 2016, which examined the patterns of prognostic and risk indicators among women with breast lesions. Most (89%) attained menarche after age 11. About 56% were postmenopausal. This consistency can be attributed to the fact that menarche within this age range is the biological norm for most women and that the majority of participants in breast lesion research are typically postmenopausal.

The study presents an association between risk factors and breast lesions. Participants diagnosed with a breast lesion were statistically associated with postmenopause ($p = 0.024$). Additionally, a statistical relationship was found between age at menarche and breast lesions ($P = 0.002$). These results contrast with those of a prospective cohort study conducted by Mariana Brandão et al. on risk factors for breast lesions among women in Mozambique, Sub-Saharan Africa (2021). The study found a higher risk of breast lesions among postmenopausal women (p value <0.05). This discrepancy can be attributed to the difference in study design.

4. Mammographic presentations of breast lesion

The majority of breast lesions (50%) presented with microcalcifications on mammography. This is in contrast to a descriptive, cross-sectional study conducted by Guena et al. on indications and outcomes of mammography at Douala General Hospital in Cameroon in 2018. Mammography revealed nodular opacities in 18.3% of cases. This difference could be due to the different study settings.

The majority (46.4%) of breasts were classified as BIRADS II, indicating that a substantial number of participants had benign breast abnormalities at the time of screening. This may be attributed to the inclusion of asymptomatic women undergoing routine or preventive mammography. This finding is consistent with a prospective cohort study carried out by Nwadike et al. in Enugu, southeastern Nigeria, in 2017, which examined the mammographic classification of breast lesions among women. Using the BI-RADS classification system, the mammographic report shows that 29.57% of the lesions were benign. This could be because the women were mostly asymptomatic and undergoing routine mammographic screening.

Conclusion

The majority of participants were between 50 and 59 years of age. There was a high prevalence of breast lesions in the study area. The most common risk factors were postmenopausal status and age at menarche. A significant relationship was found between sociodemographic characteristics and risk factors. Women should be educated about breast density, associated risks, and the importance of regular screening. Identifying women at higher risk and implementing effective screening and prevention strategies can improve patient outcomes.

Limitations

There are several limitations to our study some of which includes;

- Selection bias, this study focused only on women with dense breast
- The study population may not be representative of the larger population.
- Cross sectional study measured prevalence which may not accurately reflect the incidence of breast lesions.
- Information on risk factors may not be accurate as participant may not be honest.

Strengths:

This study's focus on dense breast tissue provides valuable insights into the characteristics of breast lesions in this population. Additionally, the findings can inform screening practices and diagnostic approaches for women with dense breasts. The study provides baseline data on the prevalence and characteristics of breast lesions in women with dense breasts. Furthermore, policymakers can use the findings to inform policy development related to breast lesions.

Conflict of Interest

None.

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