East African Scholars Journal of Medicine and Surgery
Abbreviated Key Title: EAS J Med Surg
ISSN: 2663-1857 (Print) & ISSN: 2663-7332 (Online)
Published By East African Scholars Publisher, Kenya

OPEN ACCESS

Volume-8 | Issue-5 | May-2026 | DOI: https://doi.org/10.36349/easjms.2026.v08i05.001

Original Research Article

Breast Cancer in Young Women (Aged 40 and Below): Histopathological Types, Grades, and Biological Characteristics in Three Hospitals in Yaoundé

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Article History
Received: 23.02.2026
Accepted: 17.04.2026
Published: 01.05.2026

Journal homepage:
https://www.easpublisher.com

Quick Response Code

Abstract: ***Background*:** Breast cancer (BC) in young women (aged 40 years and below) tends to have peculiar characteristics and is usually diagnosed at advanced stages. ***Objective*:** It's aimed to describe the clinical, histopathological and biological features of BC in young women in Yaoundé, Cameroon. ***Method*:** We conducted a cross-sectional study in three hospitals in Yaoundé (the General Hospital, the Gynaeco-Obstetric and Paediatric Hospital, and the Military Hospital), with data collection from February through July 2025, covering a 6-year period (January 2019 to December 2024). We included women aged 40 and below, who had BC confirmed by histopathology and excluded those with incomplete files. Data were collected using a standardized form and analysed with R statistical software version 4.5.0. ***Results*:** We recruited 93 cases of BC in young women with adequate records. The age range was 18 to 40 years with a median at 34.0 years. BC was by far more common in the left (71.9%). The most common type was invasive ductal carcinoma (78.5%), and grade, grade II of Scarff-Bloom-Richardson (57.0%). Locally advanced or Metastatic disease was predominant (75.3%), and tumour size was >2 cm in 67.7%. The proportion of the severe triple negative biological subtype was substantial (30% of 32% tested cases). ***Conclusion*:** From these findings, breast cancer in young women commonly occurred early in child-bearing age even though occurrence appeared to increase with age in our setting. The initial tumour was by far more common in the left breast. Large tumours were predominant, with advanced stage, high grade type and the most severe triple negative subtype being preponderant.

Keywords: Breast cancer, young women, biological subtypes, Yaoundé.

BACKGROUND

According to the World Health Organisation (WHO), breast cancer (BC) is the most common cancer and the first cause of cancer deaths among women in 157 countries out of 185, with about 2.3 million new cases and over 670,000 deaths globally, in 2022 [1, 2]. The three pillars of action of the Global Breast Cancer Initiative established in 2021 by WHO, with the shared goal of reducing the global BC mortality include health promotion (for early detection), timely diagnosis, and comprehensive case management [1].

Young women – aged 40 and below, as defined by the European Consensus Treatment Guidelines – represent an entity with increasingly recognized specificity, with respect to pathogenesis, molecular tumour characteristics, and prognosis of BC [3, 4]. The BC burden is growing, with an annual increase in incidence of about 1%, especially in transition countries, where incidence is rising rapidly, and mortality rates remain high [5]. However, the increase is even faster in women aged 40 and below. Notably, the incidence of BC in women aged <50 years increases by 1.4% annually, a rate double that of older women (0.7%) [6]. The reasons for this rise are complex and multifactorial. They include changing childbearing and breastfeeding patterns, increased alcohol use, excess body weight, genetics, and environmental exposures, among others [6]. The proportion of BC in young women, as reported in the

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literature, varies between 5.0% and 31.6% [7-11]. While the figures reported in France and Canada are as low as 7% and 5%, respectively, a figure of 14.8% was reported in India [8-10]. In 2017, a study in Yaoundé, Cameroon reported a proportion of 31.0% for BC cases in young women [7], while a study in Mali reported a proportion of 18.9 % [11].

Breast cancer is a spectrum of malignant tumours that vary considerably in histopathology, cell-surface receptors (immunohistochemistry), behaviour and response to treatments. With respect to histopathology, at least 18 different breast cancer types are recognized by WHO. However, invasive BC of No Special Type (NST), formally referred to as Invasive Ductal Carcinoma, is the most common subgroup with 40-80% prevalence [12, 13]. Special types (about 25%), show distinct cytological and architectural features and include invasive lobular carcinoma, tubular, mucinous A, mucinous B, and neuroendocrine cancers [14]. A related but independent feature in histopathological assessment of BC is tumour grade, a measure of the degree of differentiation and aggressiveness. The Scarff-Bloom-Richardson (SBR) classification combines extent of tubule (gland) formation, nuclear pleomorphism, and mitotic activity to categorise BC into 03 grades: grade I (well differentiated), grade II (moderately differentiated), and grade III (poorly differentiated and most aggressive).

Based on immunohistochemistry (IHC), invasive breast cancers can be distinguished, independently of histopathology, into five molecular subtypes: luminal A, luminal B, human epidermal growth factor receptor (HER) 2-enriched, basal-like, and Claudin-low [15]. These vary by oestrogen receptor, progesterone receptor, and HER2-receptor expression. Luminal A tumours, for example, are oestrogen-receptor positive (OR+) and HER2-receptor negative and their prognosis is relatively good. Triple Negative Breast Cancers (TNBCs), on the other hand, have a poor prognosis and are more common among women below age 40, or of African-American descend [6-15].

The optimum management of breast cancer requires a complex combination of different modalities including surgery, radiotherapy, chemotherapy, and biological (targeted) therapies. This requires a detailed assessment of tumour histopathology, biological receptor expression, clinical stage of disease, and the patient.

Knowing the prevailing types, grades, and biological subtypes of breast cancer in young women in a setting may help anticipate management plans and orient research with respect to risk factors, pathogenesis, management, and prognosis. This data in limited for our country. A smaller study reported 90.6% prevalence of invasive ductal carcinoma, 46.9% prevalence of grade II, and a predominance of the TNBC subtype (42.8%) [16]. Another report in 2024 revealed that women younger than 40 presented with more advanced stages of breast cancer, with a higher proportion of TNBCs [17]. The objectives of this study were, therefore, to describe the clinical, histopathological and biological features of breast cancer in young women in Yaoundé, Cameroon.

METHODOLOGY

Study Design

We carried out a cross-sectional study, for which participants were recruited from three hospitals in Yaoundé that manage breast cancer cases; the General Hospital (GHY), the Gynaeco-Obstetric and Paediatric Hospital (GOPHY), and the Military Hospital (MHY).

The study lasted 08 months (from November 2024 to June 2025), and the period of study was 6 years (January 2019 to December 2024). We included all young women (aged 40 years and below) received at the study hospitals during the study period with breast cancer confirmed by histopathology. We excluded women without complete files.

Procedure

We obtained ethical clearance from the Institutional Review Board (IRB) of the Faculty of Medicine and Biomedical Sciences (FMBS) of the University of Yaoundé I and research authorization from the management of each hospital concerned. We then began data collection by identifying and recording all cases of breast cancer admitted during the study period in the hand-written case registers of the Gynaecology-Obstetrics and the Oncology services. The cases with confirmed BC were sorted out, and we then proceeded to the archives department to identify case files and to collect data using a pre-established form.

Study variables included sociodemographic characteristics (age, profession, region of origin, type of residence, marital status, level of education, and religion), clinical characteristics (affected breast, tumour size, clinical stage), and tumour histopathology and biology. The data were analysed using R statistical software (version 4.5.0, R Foundation for Statistical Computing).

RESULTS

During the period 2019-2024, we identified 114 cases of breast cancer in young women managed at the three hospitals. Of these, 21 cases were excluded because their files were incomplete or missing, and 93 cases were retained for analysis. The distribution by health facility was 47 for GHY, 34 for GOPHY, and 12 for MHY.

Sociodemographic Characteristic of Young Women with BC

Even though more than half of cases (68.1%) were within the narrow upper age range of 30-40 years, the lower age extreme was 18 years, and the median age

34.0 years. The highest occupational representation was private sector workers (30.9%), while the unemployed and housewives constituted 48.9% of participants. The majority of women were single (42.6%), while 80.9% had at least secondary level of formal education. Catholics were by far the most represented religious group with a proportion of 61.7% (table I).

Table I: Sociodemographic characteristics of women with breast cancer at a young age in 03 hospitals in Yaoundé, from 2019 to 2024

Variable/categories	Number (N=93)	Proportion (%)
Age group		
<30	30	32.3
30-40	63	67.7
Occupation		
Private sector worker	29	31.2
Civil servant	19	20.4
Housewife	23	24.7
Unemployed	22	23.7
Marital status		
Married	36	38.7
Single	40	43.0
Cohabiting	12	12.9
Divorced/widow	5	5.4
Level of education		
None	3	3.2
Primary	15	16.1
Secondary	43	46.2
University	32	34.4
Religion		
Catholic	58	62.4
Protestant	22	23.7
Muslim	10	11.9
Pentecostal	2	2.2
Jehovah's witness	1	1.1
Dwelling type		
Urban	89	95.7
Rural	4	4.3

Clinical Characteristics of Breast Cancer in Young Women

In 03 cases, the cancer was bilateral, giving us a total of 96 tumours. The majority of primary tumours (71.9%) were in the left breast. In 67.7% of cases, tumour size was greater than 2.0 cm, and in 75.3% of cases the disease was locally advanced or metastatic (table II).

Table II: Clinical tumour characteristics of young women with breast cancer at 03 hospitals in Yaoundé between 2019 and 2024

Variable	Categories	Number	Proportion (%)
Affected breast (N=96)	Right	27	28.1
	Left	69	71.9
Tumour size (N=96)	1-2 cm	14	14.6
	>2-5 cm	49	51.0
	>5 cm	16	16.7
	Unspecified	17	17.7
Clinical stage (N=93)	Early stage	21	22.6
	Locally advanced	54	58.1
	Metastatic	16	17.2
	Unspecified	4	4.3

We had 93 cases (3 bilateral), and as such, 96 tumours

Histopathological Types and Grading of Breast Cancer in Young Women

The most common type of breast cancer in young women was invasive ductal carcinoma (NST) with a proportion of 78.5%, followed by invasive lobular carcinoma with 9.7%, and ductal carcinoma in-situ with 4.3% (figure 1).

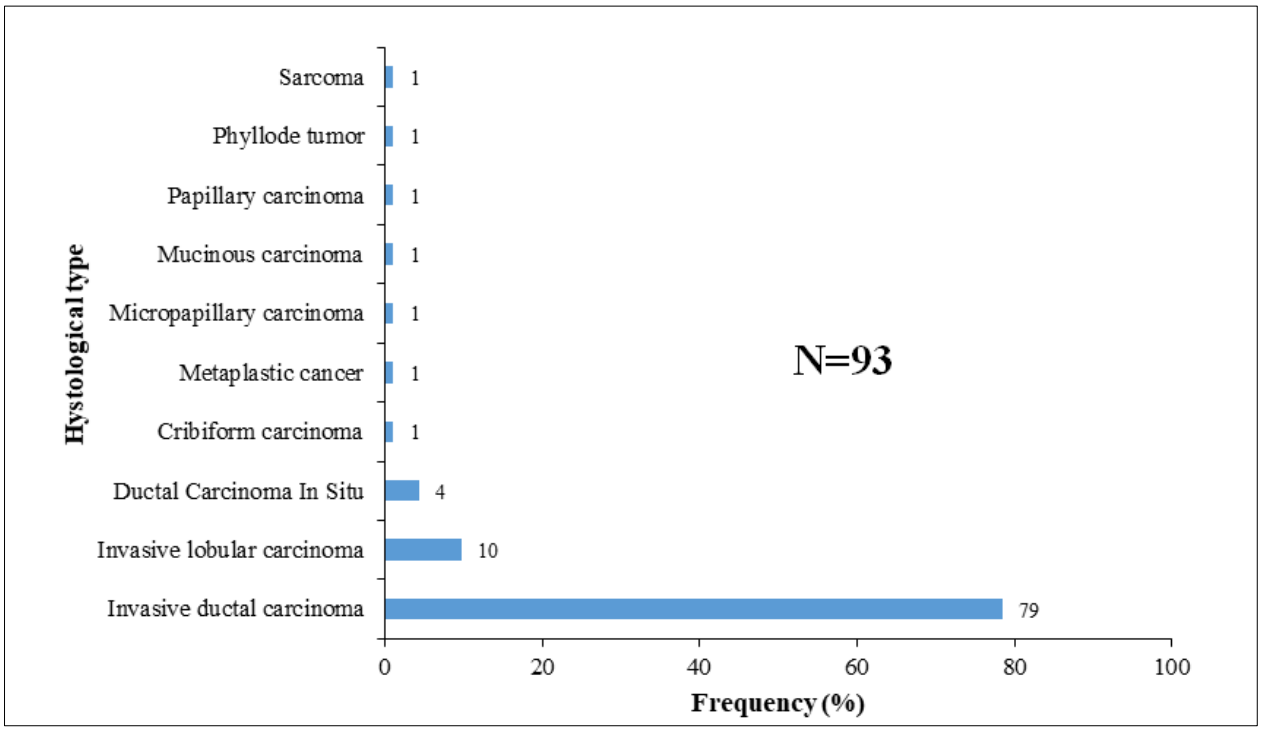

Figure 1: Prevalence of histopathological types of breast cancer in young women at 03 hospitals in Yaoundé, from 2019 to 2024

The most common grade of BC in young women (57.0%) was grade 2, according to the SBR classification; followed by grade 3 (21.5%) and then grade 1 (17.2%). In 4.3% the grade was unspecified (figure 2).

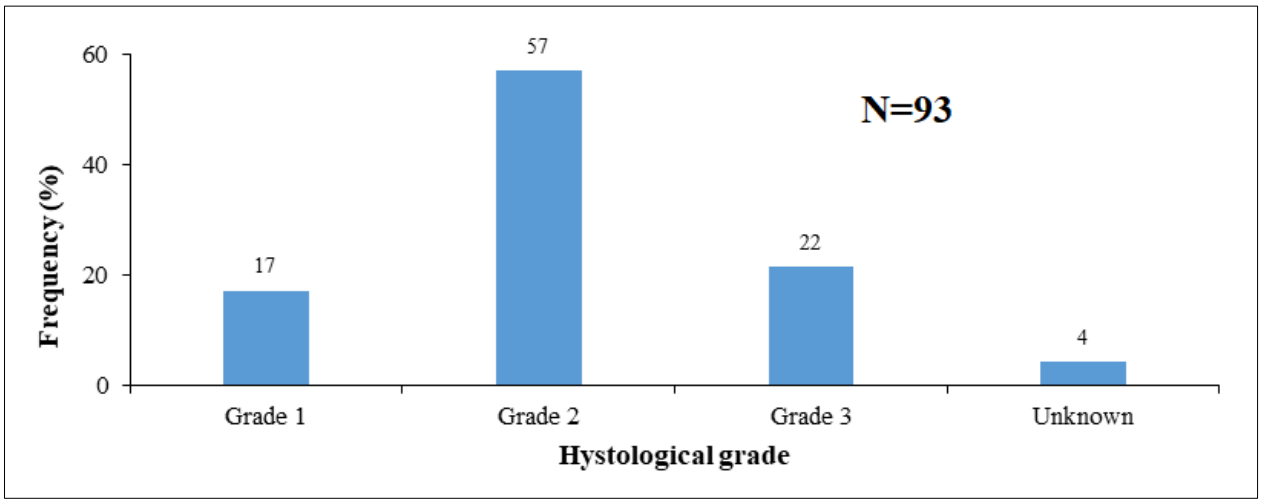

Figure 2: Grading of breast cancer in young women, according to the Scarff-Bloom-Richardson classification, at three hospitals in Yaoundé from 2019 to 2024

Immunohistochemistry of Breast Cancer in Young Women

Only 32.3% (30/93) of our sample underwent both hormone receptor and HER2 testing. Of 31 cases that did HER2, 7 (22.6%) were positive. Out of 30 who did oestrogen receptor (OR) and progesterone receptor (PR) activity testing, 17 (56.7%) and 19 (63.3%) were OR and PR positive, respectively. Two cases were PR+ and OR(-) and 02 cases (6.7%) were hormone receptor negative and HER2+. Nine cases (30.0%) were triple

negative, while 14 (46.7%) were classified luminal A, and 8 (26.7%) luminal B.

Table IV: Immunohistochemistry of young women with breast cancer at 03 hospitals in Yaoundé, from 2019 to 2024

Variable	Categories	Frequency	Proportion (%)
HER2 [N=93]	Positive	7	7.5
	Negative	24	25.8
	Not done	62	66.7
Oestrogen receptor [N=93]	Positive	17	18.3
	Negative	13	14.0
	Not done	63	67.7
Progesterone receptor [N=93]	Positive	19	20.4
	Negative	11	11.8
	Not done	63	67.7
Luminal A (HER2-, OR+, PR+) [N=30]	Yes	14	46.7
Luminal B (HER2+/OR+ or HER2-/OR+/PR- or HER2-/OR+/Ki-67 high) [N=30]	Yes	8	26.7

Triple negatives: 9
HER2: human epidermal growth factor receptor 2
OR: oestrogen receptor PR: progesterone receptor

DISCUSSION

Our study focused on identifying the prevalence of various types, grades, and biological subtypes of breast cancer occurring at a young age in women. It was done in three hospitals in Yaoundé and covered a six-year period from 2019 to 2024. We identified 114 cases and retained 94 for the study.

Limitations

Our study was retrospective and faced challenges with missing information, in relation to difficulties with archiving and the absence of electronic records. The study was hospital-based and limited to three hospitals of Yaoundé. Even though many hospitals refer cancer cases to Yaoundé, this may limit the generalizability of findings for Cameroon. Furthermore, the proportion of cases that did biological characterisation was very low, probably due to financial resource limitations.

Sociodemographic Characteristics of Young Women with Breast Cancer

In our study, cases of breast cancer are observed as early as 18 years. This is in line with reports that breast cancer is possible at any age after puberty [1]. The median age of 34.0 years, however, shows a data skew towards the upper age extreme of 40 for our sample, suggesting that risk still increases with age [1]. The data on occupation, marital status, level of education, and religion seem to reflect the expected tendencies in Yaoundé. By the way, analytical studies in Gaza and Yaoundé have shown no association between these characteristics and breast cancer [18-20].

Clinical Characteristics of Breast Cancer at the Three Hospitals of Study

By far the more common site of the primary tumour in our sample was the left breast with 71.9%, a call to action. A previous study reported a left predominance of 60.7% and 54.2% among young women and women aged above 40, respectively [17]. Left sided tumours are reported to be more prevalent from other studies – even though the differences are much smaller – with left to right ratios ranging between 1.05 and 1.26, and to be slightly more aggressive [21, 22]. Various hypotheses to explain the difference are still being evaluated.

The majority of tumours (67.7%) were more than 2 cm in diameter, and 16.7% were more than 5 cm in diameter. In the United States (USA), 12% of tumours among Black women and just 7% among White women are bigger than 5 cm [6]. With respect to BC stage, 75.3% presented with locally advanced disease or metastasis. Similarly, in an earlier 2017 study in the same setting, 46.1% of cases were staged as T4, implying the presence of localized spread, and 75% were at stages III and IV [7]. This contrasts with figures from the USA, where 66% of women with breast cancer are diagnosed with localized-stage disease (58% among Black women to 68% among White women) [6, 23]. The higher prevalence of advanced disease at presentation in our setting appears to be the result of late presentation [24]. This is likely exacerbated by socio-economic barriers and a lack of systematic screening programs, especially for young women.

Histological Type and Grading

The majority of young women presented with invasive ductal carcinoma with a proportion of 78.5%, which is similar to findings in young women in Morocco and Senegal, with proportions of 75.67% and 85.5%, respectively [25, 26]. A study done in Yaoundé earlier in 2017 for the same age group reported a slightly higher proportion of ductal carcinoma (87.4%) [7]. This histopathological type appears to be the most common in the general population given a prevalence of 79%

reported in 2021 at the GHY, in Cameroon [27]. This may suggest that it has no preference for young women.

The most common SBR grade in our study was grade II (57.0%), followed by grade III (21.5%). These figures are close to other prevalence reports of SBR II and SBR III in young women from Mali (59.0% and 29.5, respectively), and Tunisia (62.9% and 37%, respectively) [28, 29]. Similarly, a 2017 study of the same group and setting reported that grades SBR II and SBR III were predominant with 76.6% and 12.0%, respectively [7]. Another more recent study in Cameroon reported prevalence of 60% and 26%, respectively, for women of all ages [27]. In the USA, the prevalence of high grade disease among Black women with breast cancer is 38%, significantly higher than 24% among White women [6].

Biological Marker Characteristics and Prevalence of Subtypes of Breast Cancer

The prevalence of hormone-positive (luminal; OR+ and/or PR+) cancer, among the 30 who were tested was 63.3%; and 46.7% of the 30 were classified as luminal A, reputed for best prognosis. A meta-analysis of studies (all ages) from 24 African countries reported a close pooled prevalence of luminal BC of 56.3%, with extremes of 41.0% in West Africa and 81.9% in Central Africa [30]. Higher figures (80% hormone receptor positivity, and 70.4% luminal A) are reported for breast cancer – all ages combined – in the USA, for the period 2017-2021 [23].

The prevalence of luminal B was 26.7% (8/30), and that of HER2 was 22.6% (7/31). These figures are close to the prevalence of luminal B (28%) and of HER2 (16%) reported in 2025 for women of all ages from a reference laboratory in Yaoundé, while an African meta-analysis reported HER2-enriched prevalence of 12.6%, with extremes of 14.9% in West Africa and 8.1% in Central Africa [30, 31]. The prevalence of luminal B (11%) and of HER2-enriched (4%) are much lower in the USA [23].

The prevalence of the TNBC subtype (basal like; with poorest prognosis) was 30%. This figure is close to the 40% reported in 2025 for women of all ages from a reference laboratory in Yaoundé [31]. Its general prevalence in the USA is much smaller (10%), but with higher figures (20%) among black women [23].

CONCLUSION

The findings of this study show that breast cancer in young women occurred early in child-bearing age even though occurrence appeared to increase with age in our setting. The initial tumour was by far more common in the left breast and most cases presented with advanced disease and large tumours.

The most common histopathological type found was invasive ductal carcinoma and the most frequently observed grading was grade II according to SBR. However, the proportions of grade III cancers and of poor prognostic biological characteristics are relatively high in young women with breast cancer in our setting.

Recommendations

There is need for research to clarify the reasons for the high aggressiveness of breast cancer in black women aged 40 or less, as well as, to confirm and to elucidate the predominant location in the left breast.

The population and clinicians need to be sensitized on the possibility of breast cancer at any age after puberty, while strategies to promote access to screening, prompt diagnosis, biological studies, and optimum treatment should be implemented.

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Cite This Article: Ebong Cliford Ebontane, Bilkissou Garba, Atenguena Okobalemba Etienne, Véronique Sophie Mboua Batoum, Isidore Tompeen, Ngalame Alphonse Nyong, Mve Koh Valère Salomon (2026). Breast Cancer in Young Women (Aged 40 and Below): Histopathological Types, Grades, and Biological Characteristics in Three Hospitals in Yaoundé. *East African Scholars J Med Surg, 8*(5), 185-191.