

Retrospective Descriptive Study of 199 Cases of Breast Cancer Diagnosed at the Reproductive Health Reference Centre of Hay Mohammadi, Casablanca, between 2019 and 2023

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How to cite this paper: Ait Ikiss, J. and Meski, F.Z. (2026) Retrospective Descriptive Study of 199 Cases of Breast Cancer Diagnosed at the Reproductive Health Reference Centre of Hay Mohammadi, Casablanca, between 2019 and 2023. *Advances in Breast Cancer Research*, 15, 110-119. <https://doi.org/10.4236/abcr.2026.153009>

Received: May 24, 2026

Accepted: June 27, 2026

Published: June 30, 2026

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Abstract

Introduction: According to the Cancer Registry of the Greater Casablanca (RCGC) during the period 2018-2021, breast cancer represented the main cancerous disease in women in the region, with a total number of 4939 new cases. **Material and Methods:** This descriptive retrospective study covered a five-year period from January 2019 to December 2023, based on an analysis of records from women diagnosed with breast cancer at the reproductive health reference center in Hay Mohammadi, Casablanca, Morocco. **Results:** A total of 199 cases were collected during this period. The mean age was 53.5 years, and the 45 - 69 age group accounted for 72.9% of patients. Most patients (66.3%) originated from the Ain Sebaa-Hay Mohammadi district. Menopausal women represented 60.3% of the cohort. The mean age at menopause was 49.7 years and the mean age at menarche was 13.8 years. Nulliparous women accounted for 27.1% of cases, and 23.6% had a family history of breast cancer. The main presenting symptom was a palpable breast nodule in 92% of cases. The left breast was more frequently affected (50.3%), followed by the right breast (47.7%) and bilateral involvement (2%). The most frequent tumour location was the upper outer quadrant. The predominant histological type was invasive carcinoma of no special type (81%). Grade II according to the Scarff-Bloom-Richardson (SBR) classification was the most frequent (59.3%). Lymph node metastases were present in 19% of cases. A total of 71.9% of patients were referred to the Ibn Rochd University Hospital for adjuvant treatment. **Conclusion:** Breast cancer remains a major public health concern in our setting. Early detection plays a key role in improving patient outcomes, as supported by the literature. This study provides a descriptive overview of the clinical and pathological characteristics of breast cancer in our cohort.

Keywords

Cancer, Breast, Epidemiology

1. Introduction

Breast cancer is one of the major public health challenges globally. It represents the most common cancer in women across all countries, irrespective of their level of development. Approximately 2,295,686 cases of breast cancer were diagnosed in 2022 [1].

However, incidence rates are almost four times higher in developed countries (92 per 100,000 in North America) compared to developing countries (27 per 100,000 in Central Africa) [2].

Breast cancer affects all countries worldwide and occurs in women of all ages following puberty. It causes 666,103 deaths per year. In the most developed countries, improved patient survival has made it the second leading cause of cancer-related death after lung cancer [3].

Approximately half of all breast cancers occur in women with no specific risk factors other than sex and age.

Global estimates reveal striking inequalities in case management. For example, in countries with a very high Human Development Index (HDI), 1 in 12 women will be diagnosed with breast cancer during her lifetime and 1 in 71 will die from it. In contrast, in low-income countries, 1 in 27 women is diagnosed during her lifetime, and 1 in 48 will die from it [4].

In Morocco, the most frequent cancer, considering both sexes, was breast cancer, ranking first and accounting for 20.1%, followed by lung cancer (13.9%) and colorectal cancer (8.3%) [5]. Breast cancer represented 20% of all cancers recorded in both sexes and 35.8% of cases recorded in women. The vast majority of patients were female (99.1%), while males accounted for less than 1% of recorded cases [3].

During the period 2018-2021, a total of 22,149 new cancer cases were recorded in the Greater Casablanca region. Breast cancer accounted for 39.1%, representing the leading cancer with 4939 new cases, corresponding to 22.3% of all cancers across both sexes. The crude incidence was 52.6 per 100,000 women [5].

A number of risk factors have been identified in association with the development of breast cancer, including family history of breast cancer, advanced age, early puberty, late menopause, nulliparity, and obesity. However, no single factor has been directly implicated in its occurrence, with the exception of the hereditary transmission of the BRCA1 and BRCA2 genes, which are involved in 5% - 10% of breast cancer cases. Since Bittner's discovery, several viruses have also been suspected in the aetiology of breast cancer [4].

Morocco, aware of this issue, has had a National Cancer Prevention and Control Plan (PNPCC) since 2010, thanks to a partnership between the Lalla Salma Association for the Fight Against Cancer (ALSLCC) and the Ministry of Health

and Social Protection. Since 2010, they have established a breast cancer early detection programme offering free services in the public sector for detection and early diagnosis. A total of 39 Reproductive Health Reference Centres were built to fulfill these objectives, including the Reproductive Health Reference Centre of Hay Mohammadi in the Ain Sebaa-Hay Mohammadi prefecture. We noted in this prefecture that the participation rate in the early breast cancer detection programme for the period 2021-2023 did not exceed 25.04%, representing a 41.73% achievement rate relative to set objectives. The aim of this study was to highlight, through a retrospective study of 199 cases collected between 2019 and 2023 at the Reproductive Health Reference Centre Hay Mohammadi in Casablanca, the epidemiological, clinical, and histological characteristics of breast cancers.

2. Materials and Methods

This was a retrospective descriptive study conducted from January 2019 to December 2023, based on the analysis of medical records of women presenting with breast cancer diagnosed at the Reproductive Health Reference Centre for early detection of breast and cervical cancers at Hay Mohammadi, Casablanca in Morocco. The study population comprised all cases of breast cancer diagnosed at the centre between January 2019 and December 2023. All patients with breast cancer were included, and all histologically confirmed malignant breast tumours were included regardless of their histological type. Patients followed up before January 2019 or after December 2023, patients with breast tumours without histological confirmation, and those with incomplete medical records were excluded from the study. Data were collected through a review of hospital records from the archives using a pre-established data collection form. Data entry for text and tables was performed using Microsoft Excel (Windows XP). Statistical analysis was conducted according to person, time, and place characteristics, as well as disease-related variables, using JAMOV software (version 2.3.28). Graphs were generated using Microsoft Excel Office 2016.

The study was conducted in accordance with the ethical principles of the Declaration of Helsinki. Authorization from the Health and Social Protection Delegation of Ain Sebaa-Hay Mohammadi was obtained prior to data collection. Information extracted from medical records was strictly anonymised to ensure patient confidentiality and privacy. Each record was assigned an anonymous identification number, without recording patients' names, surnames, medical record numbers, or addresses. The data were used exclusively for scientific purposes, with no impact on patient management, and no individual identification is possible from the results presented.

3. Results

A total of 199 cases of breast cancer were diagnosed at the Reproductive Health Reference Centre Hay Mohammadi between January 2019 and December 2023. The annual distribution of cases was illustrated in **Figure 1**.

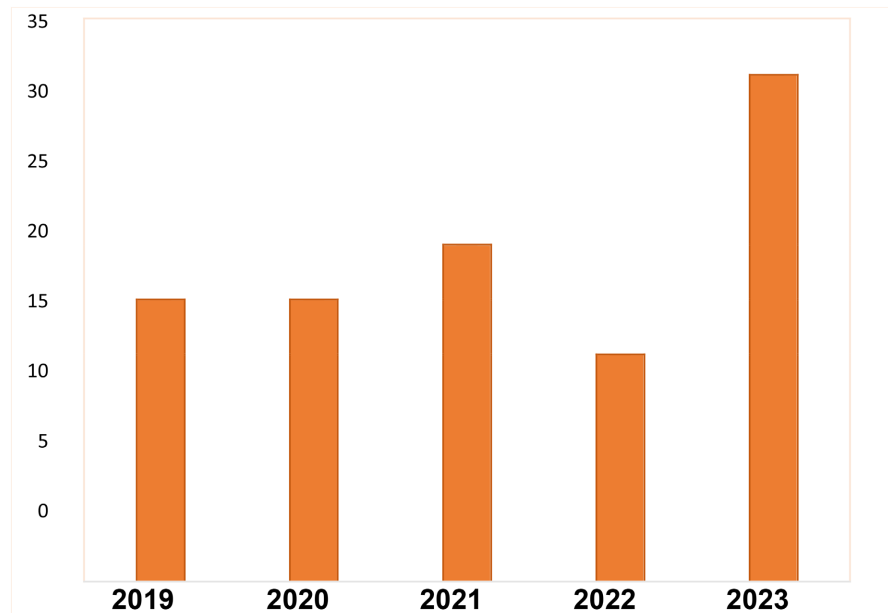


Figure 1. The annual distribution of cases of breast cancer at the reproductive health reference centre Hay Mohammadi between 2019-2023.

- **Sociodemographic Characteristics (Table 1):**

The mean age of women consulting at the CRSR was 53.5 years, with a range of 26 to 87 years and a mode of 59 years. The most represented age group was 49 to 69 years. Regarding marital status, 60.3% of patients were married. Additionally, 33.7% did not reside in the Ain Sebaa-Hay Mohammadi province. Concerning social coverage, 65.3% of women benefited from health insurance, of whom 23.6% were enrolled in the RAMED scheme.

Table 1. Sociodemographic characteristics of the study population.

	N	%
Age		
<45 years	41	20.6
45-69 years	145	72.9
>69 years	13	6.5
Marital status		
Single	34	17.1
Divorced	15	7.5
Married	120	60.3
Widowed	30	15.1
Area of origin		
Ain Sebaa	40	20.1
Roches Noires	9	4.5

Continued

Hay Mohammadi	83	41.7
Bernoussi-Sidi Moumen	59	29.7
Outside catchment area	8	4
Health coverage		
RAMED	47	23.6
CNSS	44	22.1
CNOPS	11	5.5
Another	28	14.1
None	69	34.7

- **Gynaeco-obstetric History (Table 2)**

Among the patients, 27.1% were nulliparous. The mean age at menopause was 49.7 years (range: 35 - 57 years), while the mean age at menarche was 13.8 years (range: 9 - 18 years). Hormonal contraception was used by 57.8% of women, whereas only 11.1% had used hormone replacement therapy. Regarding personal history, 94% of patients had no prior breast pathology; among those who did, 33.3% had cystic pathologies. Finally, 23.6% of women reported a family history of breast cancer (Table 2).

Table 2. Gynaeco-obstetric history of the study population.

	N	%
Age at menarch		
≥12 years	182	91.5
<12 years	17	8.5
Age at first pregnancy		
<30 years	105	52.8
≥30 years	47	23.6
Nulligravida	47	23.6
Parity		
Nulliparous	54	27.1
Primiparous	25	12.6
Peauciparous	73	36.7
Multiparous	47	23.6
Breastfeeding		
Yes	96	48.2
No	49	24.6
Nulliparous	54	27.2

Continued

Hormonal contraception		
Yes	115	57,8
No	84	42.2
Menopause		
Yes	120	60,3
No	79	39.7
Hormone replacement therapy		
Yes	22	11.1
No	177	88.9
History of breast disease		
Yes	12	6
No	187	94
Family history of de breast cancer		
Yes	47	23.6
No	152	76.4
TOTAL	199	100

- **Clinical and Paraclinical Data (Table 3):**

Clinically, 92% of patients presented with one or more nodules. The left breast was most frequently affected (50.3%), followed by the right breast (47.7%) and bilateral involvement (2%). The upper outer quadrant (UOQ) was the most common tumour location, accounting for 51.7% of cases. The predominant histological type was invasive carcinoma of non-specific type, found in 81% of cases. The Scarff-Bloom-Richardson (SBR) histoprognostic grade was predominantly grade II (59.3%). Additionally, 19% of patients presented with lymph node metastases at diagnosis. Finally, 71.9% of cases were referred to Ibn Rochd University Hospital for adjuvant management (Table 3).

Table 3. Clinical characteristics of the study population.

	N	%
Symptom		
Change in shape	9	4.5
Change in size	5	2.5
Mastalgia	1	0.5
Nodule	183	92
Nipple change	1	0.5
Side affected		

Continued

Left	100	50.3
Right	95	47.7
Bilateral	4	2
Quadrant		
Peri-areolar	30	15.1
Lower outer quadrant	22	11.1
Lower inner quadrant	12	6
Upper outer quadrant	103	51.7
Upper inner quadrant	24	12.1
All quadrants	8	4
Lymph node metastases		
No	134	67.4
Yes	38	19
No specified	27	13.6
Histological type		
Ductal Carcinoma <i>in situ</i>	8	4
Undifferentiated carcinoma	1	0.5
Invasive carcinoma of no specific type	161	81
Lobular carcinoma <i>in situ</i>	1	0.5
Invasive lobular carcinoma	14	7
Mixte carcinoma	2	1
Micropapillary carcinoma	1	0.5
Mucinous carcinoma	2	1
Papillary carcinoma	8	4
Carcinosarcoma	1	0.5
SBR grade		
I	6	3
II	118	59.3
III	54	27.1
Cannot be specified	21	10.6

4. Discussion

Over the five-year period (2018-2023), we recorded a total of 199 cases of breast cancer. In Morocco, breast cancer accounts for 19.2% of all diagnosed cancers. Several factors may explain this rising incidence in our country, including the widespread adoption of a Western lifestyle characterised by an unbalanced diet, seden-

tary behaviour, obesity, and smoking as well as genetic factors [4]. The most affected age group is women aged 45 to 69 years. The mean age at diagnosis is 53.5 years, which differs from data in France (mean age 61 years, age group 60 - 69) [4], but is closer to results from Algeria [6] (mean age 50 years, age group 50 - 54). These differences may reflect variations in demographic structure, life expectancy, and screening practices between populations.

The mean age at menopause in our study is 49.7 years and the mean age at menarche is 13.8 years, figures comparable to those reported in studies conducted at Ibn Rochd University Hospital between 2016 and 2020 [7]. Early menarche and late menopause are described in the literature as factors associated with increased lifetime oestrogen exposure and therefore a higher risk of breast cancer; however, in our study, these variables are reported as characteristics of the patient population rather than demonstrated risk associations. Regarding nulliparity, although its impact is moderate, 27.1% of our patients had never had children, a rate similar to those reported by Mesmoudi (20.5%), Benidar (17%), and Menikhar (29.6%) [4]. Although nulliparity has been described in the literature as a potential risk factor, our study design does not allow us to assess such an association [8].

A total of 60.3% of women were postmenopausal, with a mean age at menopause of 49.7 years. Late menopause has been reported as a risk factor in epidemiological studies, due to prolonged hormonal exposure; however, in this series, menopause status is presented as a descriptive variable of the population. Furthermore, 23.6% of patients had a family history of cancer. While hereditary breast cancer accounts for approximately 5% - 10% of cases in the literature, the presence of a family history in our cohort should be interpreted as a descriptive finding rather than evidence of causality, given the absence of a control group [4].

The majority of patients (92.2%) discovered their disease through self-palpation of a nodule. In 50.3% of cases, the tumour was located in the left breast. El Fouhi *et al.* reported in their 2020 study a predominance of cancer in the left breast compared to the right breast. This slight predominance has been described in the literature, although the underlying mechanisms remain unclear [4]. The literature confirms that breast cancer is generally unilateral, with a slight predominance on the left side [9]. Our study corroborates these data with 50.3% of cases involved the left breast, 47.7% the right, and only 2% were bilateral. The most common tumour location was the upper outer quadrant in 51.7% of cases, followed by the upper inner quadrant in 12.1%, regardless of the affected side. The peri-areolar region was involved in 15.1% of cases. The predominance of the upper outer quadrant is also reported in several studies [9], probably due to the higher density of glandular tissue in this area.

The proportion of young patients (10.1%) represents a relevant demographic feature of our series and may have therapeutic implications in clinical management. Several studies have reported that breast cancer in younger women is often associated with more aggressive pathological features, including higher histological grade and a greater frequency of hormone receptor-negative tumours [10].

However, these associations cannot be assessed in our study due to its descriptive design.

The predominant histological type in our sample is invasive carcinoma of non-specific type. Regarding the histoprognotic grade according to the Scarff-Bloom-Richardson (SBR) classification, Grade II was the most frequent (59.3%), followed by Grade III (27.1%), consistent with results from studies conducted at Ibn Rochd University Hospital in 2016 and 2020 [4]. Grade III is associated with a less favourable prognosis compared to Grades I and II.

This study has several limitations. Its retrospective design exposes it to the risk of missing or incomplete data, related to the quality of medical record documentation. In addition, the inclusion of patients followed in a single reference centre limits the representativeness and generalisability of the results. The absence of prospective follow-up does not allow for the assessment of long-term clinical outcomes. Finally, certain potentially relevant variables, such as lifestyle habits and socio-economic status, were not systematically available in the medical records.

5. Conclusion

Breast cancer remains a major public health problem in Morocco, as in many other countries, and is among the most common cancers affecting Moroccan women, with occasional cases in men. Various factors have been described in the literature in relation to its occurrence, including age, family history, lifestyle, and hormonal influences. Early detection remains an important strategy for improving patient outcomes, as reported in previous studies.

Conflicts of Interest

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

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