

Prevalence of Benign and Malignant Breast Tumors in Women at RSUD dr. R. Soetijono, Blora Regency: A Cross-Sectional Observational Study

Imba Wahyu Ginandra^{1*}, Tumpal Daniel Pangaribuan², Dyah Dwi Putri Anggraini³, Muhammad Fadhil Ilhami⁴

¹Ngawen Public Health Center, Blora, Central Java, Indonesia

²dr. R. Soetijono General Hospital, Blora Regency, Central Java, Indonesia

³Rowobungkul Public Health Center, Blora Regency, Central Java, Indonesia

⁴Permata Bunda General Hospital, Tasikmalaya City, West Java, Indonesia

^{*}imbawg@gmail.com, ²danielpangrib2@gmail.com, ³dr.dyahputri@gmail.com, ⁴dr.fadhil@pm.me

Article Info

Article history:

Received: April 7, 2026

Revised: June 24, 2026

Accepted: July 28, 2026

Published : July 31, 2026

Keyword:

Breast tumors; Breast cancer; Prevalence; Menopause; Blora Regency

How to cite:

Ginandra IW, Pangaribuan TD, Anggraini DDP, Ilhami MF. Prevalence of Benign and Malignant Breast Tumors in Women at RSUD dr. R. Soetijono, Blora Regency: A Cross-Sectional Observational Study. Jurnal Bedah PABI : The Indonesian Journal of Surgery. 2026;1(1):1-6

ABSTRACT

Breast tumors, both benign and malignant, represent a significant health problem among women. This study aimed to determine the prevalence and characteristics of breast tumors in women at dr. R. Soetijono General Hospital, Blora Regency. A descriptive cross-sectional observational study was conducted using secondary data from medical records of female patients diagnosed with benign neoplasm of the breast and malignant neoplasm of the breast, unspecified. Prevalence rates were calculated and presented per 100,000 women. Descriptive analysis was performed on age, menopausal status, management, and comorbidities. A total of 159 female patients were analyzed, comprising 99 cases of benign tumors and 60 cases of malignant tumors. The mean age of patients with benign tumors was 36.8 years, whereas patients with breast cancer had a mean age of 54.3 years. Menopausal status was significantly more common in breast cancer patients than in those with benign tumors (43.8% vs 17.8%; $p = 0.001$). The overall prevalence of breast tumors was 43.2 per 100,000 women, with benign tumors at 26.9 per 100,000 and malignant tumors at 16.3 per 100,000. Benign breast tumors were more frequently recorded overall, whereas breast cancer occurred in older women and was more common among postmenopausal patients. These findings highlight the importance of improving breast cancer screening and early detection, particularly among high-risk groups, and provide local epidemiological data to support health policy planning and strengthening oncology services at the regional level.



©2026 Ginandra, Pangaribuan, Anggraini, Ilhami. Published by Jurnal Bedah PABI : The Indonesian Journal of Surgery. This work is licensed under a Creative Commons Attribution-NonCommercial 4.0

INTRODUCTION

Breast cancer represents a major global health burden and remains one of the most frequently diagnosed malignancies among women. According to the World Health Organization, approximately 2.3 million women were diagnosed with breast cancer worldwide in 2022, and approximately 670,000 deaths were attributed to the disease.¹ The high number of cases and deaths indicates that breast cancer continues to be an important public health concern, particularly because delayed diagnosis and limited access to appropriate treatment may contribute to unfavorable clinical outcomes. Therefore, strengthening prevention, early detection, diagnostic services, referral systems, and treatment remains essential to reduce the burden of breast cancer among women.²

The burden of cancer is also substantial in Indonesia. According to GLOBOCAN 2022, Indonesia recorded 408,661 new cancer cases and 242,988 cancer-related deaths, with breast cancer being the most frequently diagnosed cancer, accounting for 66,271 cases or 16.2% of all new cancer cases.³ However, national estimates may not fully describe epidemiological conditions at the regional level. Previous research has demonstrated disparities in access to cancer diagnosis, treatment, and health outcomes among different population groups in Indonesia.⁴ Differences in healthcare accessibility, referral pathways, diagnostic capacity, socioeconomic conditions, and the availability of oncology services may influence the number and characteristics of breast tumor cases identified in

each region. Consequently, local epidemiological data are important for understanding regional patterns and supporting health policies that are appropriate to local healthcare needs.

Blora Regency had a population of 368,118 women aged over 15 years according to the 2025 publication of the Blora Regency Statistics Agency.⁵ Nevertheless, district-level information describing the prevalence and characteristics of benign breast tumors and breast cancer in this area remains limited. Hospital-based data may provide an initial description of the local disease burden, although such data do not necessarily represent all cases in the general population. Information regarding the distribution of benign and malignant breast tumors, patient age, menopausal status, occupation, comorbidities, and geographic origin may support the development of early-detection programs, referral planning, health-service improvement, and future population-based studies in Blora Regency. Therefore, this study aimed to determine the prevalence and describe the demographic and clinical characteristics of benign breast tumors and breast cancer among female patients treated at dr. R. Soetijono General Hospital, Blora Regency.

RESEARCH METHODS

This descriptive observational study used a cross-sectional design and secondary data obtained retrospectively from the medical records of dr. R. Soetijono General Hospital, Blora Regency. The study period was from 1 January to 31 December 2025.

The study population comprised all female patients diagnosed with benign neoplasm of the breast (ICD-10 code D24) or malignant neoplasm of the breast, unspecified (ICD-10 code C50.9; hereafter referred to as breast cancer) during the study period. Total sampling was applied, and all 159 eligible patient records were included in the analysis, consisting of 99 patients with benign breast tumors and 60 patients with breast cancer.

Data extracted from the medical records included age, age at diagnosis, menopausal status, occupation, comorbidities, management, and area of residence. Continuous variables were summarized using means and ranges, whereas categorical variables were presented as frequencies and percentages. Comparisons of categorical variables between the benign breast tumor and breast cancer groups were performed using Fisher's exact test when the expected cell counts were small. All statistical tests were two-sided, and a p-value of less than 0.05 was considered statistically significant.

The prevalence per 100,000 women was calculated by dividing the number of recorded cases by the female population aged over 15 years in Blora Regency in 2025, consisting of 368,118 women, and multiplying the result by 100,000. Statistical analyses were performed using IBM SPSS Statistics version 26.0.

Administrative permission to conduct the study and access the medical-record data was obtained from dr. R. Soetijono General Hospital, Blora Regency Letter No. 800.1.4.1/8/2026, following a research recommendation from the National Unity and Political Agency of Blora Regency Letter No. 070/015/I/2026.

RESULTS AND DISCUSSION

Result

This study described the differences in clinical characteristics, management, and comorbidities between patients with benign neoplasm of the breast (D24) and malignant neoplasm of the breast, unspecified (C50.9) in Blora Regency. The findings showed descriptive differences in age and menopausal status between the two diagnostic groups.

The mean age of patients with benign neoplasm of the breast (D24) was lower than that of patients with malignant neoplasm of the breast, unspecified (C50.9). Patients with D24 had a mean age of 36.80 years and a mean age at diagnosis of 36.33 years, whereas patients with C50.9 had a higher mean age of 54.33 years and a mean age at diagnosis of 53.53 years. These findings are consistent with literature reporting that benign breast tumors, such as fibroadenomas, are more

common in women of reproductive age, while malignant breast neoplasms are more prevalent in older women due to cumulative estrogen exposure and age-related biological changes in breast tissue.

In the comorbidity analysis, hypertension was found in 8.08% of D24 patients and 15% of C50.9 patients ($p = 0.99$), while diabetes mellitus was present in 6.06% of D24 patients and 5% of C50.9 patients ($p = 1$). The high p-values indicate no statistically significant differences between the two groups for these comorbidities.

Table 1. Demographic Characteristics of the Subjects

Variable	D24 (n = 99)	C50.9 (n = 60)	p-value
Age (years)	36.80	54.33	–
Age at diagnosis (years)	36.33	53.53	–
Comorbid			
Hypertension	8 (8.08%)	9 (15%)	0.99
Diabetes mellitus	6 (6.06%)	3 (5%)	1
Menopausal status	17.8%	43.8%	0.001*

This age difference also has implications for breast cancer screening and early detection. In younger age groups, breast abnormalities are often considered benign, which may delay further examination, whereas in older age groups, vigilance for malignancy tends to be higher.

Table 2. Occupational Distribution of Subjects

Occupation	Total (n = 159)	D24 (n = 99)	C50.9 (n = 60)
Civil Servants / Military / Police	9	6	3
Employees	2	1	1
Others	14	10	4
Traders	1	1	0
Students	17	17	0
Retirees	1	0	1
Farmers	40	17	23
Housewives	46	29	17
Private Sector / Laborers	14	12	2
Entrepreneurs	15	6	9

Based on the occupational distribution, the highest numbers of cases were observed among housewives (46 cases) and farmers (40 cases). Among housewives, benign breast tumors were more frequent than breast cancer, with 29 and 17 cases, respectively. Among farmers, 23 of the 40 recorded cases were breast cancer. However, these findings are descriptive and should not be interpreted as evidence of an association between occupation and breast tumors. The present study did not directly assess hormonal factors, pesticide exposure, chemical exposure, duration of occupational exposure, lifestyle factors, or other potential confounding variables. Among students, all 17 recorded cases were benign breast tumors, which may reflect the younger age distribution of this occupational group. Overall, benign breast tumors were more frequently recorded than breast cancer across most occupational categories. Further analytical studies are required to investigate the occupational patterns observed in this study.

Table 3. Age Range of Subjects

Variable	Benign neoplasm of the breast (D24)	Malignant neoplasm of the breast, unspecified (C50.9)
Youngest age at diagnosis (years)	15	21
Oldest age at diagnosis	67	74

(years)

In the benign neoplasm of the breast (D24) group, the youngest age at diagnosis was 15 years, while the oldest age was 67 years. In the malignant neoplasm of the breast, unspecified (C50.9) group, the youngest age at diagnosis was 21 years, and the oldest age reached 74 years.

Table 4. Number of Cases and Prevalence per 100,000 Women

Diagnosis	n	Population proportion	Prevalence per 100,000 women
Benign breast tumor (D24)	99	0.000269	26.9
Breast cancer (C50.9)	60	0.000163	16.3
Total breast tumors	159	0.000432	43.2

Based on the analysis of 159 female patients diagnosed with breast tumors in Blora Regency in 2025 and a population of 368,118 women aged over 15 years from the 2025 published data of the Blora Regency Statistics Agency, the overall prevalence of breast tumors was 43.2 per 100,000 population.⁵ Among these cases, benign neoplasm of the breast (D24) had a prevalence of 26.9 per 100,000 population, whereas malignant neoplasm of the breast, unspecified (C50.9) showed a lower prevalence of 16.3 per 100,000 population.

The corresponding population proportions were 0.000269 for benign breast tumors, 0.000163 for breast cancer, and 0.000432 for all breast tumors. These findings indicate that benign neoplasm of the breast is the more dominant form of breast tumor compared to malignant lesions within the study population.

Table 5. Geographic Distribution of Cases

Region	D24 (n = 99)	C50.9 (n = 60)
Banjarejo	12	3
Blora	30	16
Bogorejo	1	4
Genuk	1	0
Japah	7	3
Jepon	6	4
Jiken	1	0
Kedungtuban	0	1
Kenduruan	0	1
Kunduran	14	7
Manokwari Selatan	1	0
Ngawen	10	8
Ngombol	1	1
Randublatung	5	3
Sambong	0	1
Todanan	1	0
Tunjungan	9	8

Based on the geographic distribution of patients, the majority were from Blora District, with 46 cases. A considerable number of patients also came from Kunduran (21 cases), Ngawen (18 cases), and Tunjungan (17 cases). Meanwhile, Banjarejo contributed 15 cases, followed by Japah and Jepon with 10 cases each, and Randublatung with 8 cases.

Relatively fewer cases were observed in Bogorejo (5 cases) and Ngombol (2 cases). Several other districts, including Genuk, Jiken, Kedungtuban, Kenduruan, Sambong, Todanan, and Manokwari Selatan, each contributed only 1 case.

Discussion

The age distribution observed in this study is consistent with previously published findings. Patients with benign breast tumors had a lower mean age than patients with breast cancer, at 36.8 and

54.3 years, respectively. Gultom et al. reported that benign breast tumors were predominantly identified among women aged 20–39 years, whereas malignant breast tumors were more frequently found among women aged 40–59 years.⁶ Similarly, international literature indicates that fibroadenoma commonly occurs during the reproductive years, whereas the risk of breast cancer increases with advancing age.^{7,8} These findings demonstrate a comparable age-related pattern, in which benign breast tumors are more frequently found in younger women, while breast cancer is more commonly identified in older women.

In this study, menopausal age was set at 52 years.⁹ Menopausal status was more common among patients with breast cancer (43.8%) compared to those with benign tumors (17.8%, $p = 0.001$). A prospective observational study by Surakasula et al. involving 100 patients with breast cancer reported that 52% were postmenopausal and 48% were premenopausal.¹⁰

Hypertension and diabetes mellitus did not show significant differences between benign and malignant groups in our study, consistent with evidence that the relationship between metabolic comorbidities and breast cancer is complex. Xue Fei et al. (2007) reported that type 2 diabetes confers only a modest risk for breast cancer, particularly in postmenopausal women.¹¹

The overall prevalence of breast tumors in this hospital-based study was 43.2 per 100,000 women, comprising 26.9 per 100,000 women for benign breast tumors and 16.3 per 100,000 women for breast cancer. The breast cancer prevalence observed in this study was lower than the national breast cancer incidence estimate of approximately 42 per 100,000 women.^{3,12} However, these figures should be compared cautiously because the national estimate represents population-based incidence, whereas the present study calculated the number of cases recorded at a single hospital relative to the female population of Blora Regency. Therefore, the present estimate may not include women who were undiagnosed, treated at other healthcare facilities, referred outside the regency, or not recorded in the hospital database.

The epidemiological implications of these findings emphasize the importance of strengthening breast cancer screening and early detection programs, particularly among high-risk groups such as older and postmenopausal women. These efforts are expected to reduce the proportion of cases diagnosed at advanced stages, which remains prevalent in Indonesia.

This study has several limitations. First, the retrospective design relied on the completeness and accuracy of existing medical records, and some potentially important clinical and behavioral variables could not be evaluated. Second, the study was conducted at a single referral hospital; therefore, the findings may not represent all women with breast tumors in Blora Regency. Patients who were undiagnosed, treated at other healthcare facilities, referred outside the regency, or did not seek medical care were not captured in the hospital database. Third, the use of the total female population aged over 15 years as the denominator may not fully reflect the hospital's actual catchment population. Fourth, information regarding histopathological subtypes, cancer stages, reproductive factors, family history, lifestyle factors, and individual occupational exposures was not consistently available. Therefore, the occupational and geographic findings should be interpreted as descriptive rather than causal. Future multicenter or population-based prospective studies are required to obtain more representative epidemiological estimates and evaluate potential risk factors.

CONCLUSION

This study demonstrates that breast tumors represent a significant health concern in Blora Regency, with an overall prevalence of 43.2 per 100,000 women aged over 15 years. Malignant neoplasm of the breast, unspecified (C50.9), had a lower prevalence compared to benign neoplasm of the breast (D24), indicating that benign lesions are the more dominant form of breast tumor in the study population.

The implications of these findings underscore the importance of strengthening breast cancer screening and early detection programs, particularly among high-risk women, to reduce the proportion of cases diagnosed at advanced stages.

REFERENCES

1. World Health Organization. Breast cancer [Internet]. Geneva: World Health Organization; 2026 Apr 16 [cited 2026 Jun 23]. Available from: <https://www.who.int/news-room/factsheets/detail/breast-cancer>
2. Ministry of Health of the Republic of Indonesia. National Cancer Plan 2024–2034: Indonesia’s strategy to fight against cancer. Executive summary [Internet]. Jakarta: Ministry of Health of the Republic of Indonesia; 2024 Sep [cited 2026 Jun 23]. Available from: https://www.iccp-portal.org/sites/default/files/plans/Executive_Summary_National_Cancer_Plan_2024-2034.pdf
3. International Agency for Research on Cancer. Indonesia fact sheet: GLOBOCAN 2022 [Internet]. Lyon: International Agency for Research on Cancer; 2024 [cited 2026 Jun 23]. Available from: <https://gco.iarc.who.int/media/globocan/factsheets/populations/360-indonesia-fact-sheet.pdf>
4. Darmawan ES, Hasibuan SR, Permanasari VY, Kusuma D. Disparities in cancer care and outcomes by insurance membership type in Indonesia: a retrospective cross-sectional analysis of national health insurance claims, 2017–2022. *BMJ Open*. 2025;15(7):e096486. doi:10.1136/bmjopen-2024-096486.
5. Badan Pusat Statistik Kabupaten Blora. Kabupaten Blora dalam angka 2025 [Internet]. Blora: Badan Pusat Statistik Kabupaten Blora; 2025 [cited 2026 Jun 23]. Available from: <https://blorakab.bps.go.id/id/publication/2025/02/28/0bde16efad61f2545729a0ad/kabupaten-blora-dalam-angka-2025.html>
6. Gultom FL, Widyadhari G, Gogy YN. Profil penderita dengan tumor payudara yang dibiopsi di Rumah Sakit Siloam MRCCC Semanggi pada tahun 2017–2018. *J Kedokt Univ Palangka Raya*. 2021;9(2):1342–6. doi:10.37304/jkupr.v9i2.3525.
7. Ramala SR Jr, Chandak S, Chandak MS, Annareddy S. A comprehensive review of breast fibroadenoma: correlating clinical and pathological findings. *Cureus*. 2023;15(12):e49948. doi:10.7759/cureus.49948.
8. Ajmal M, Khan M, Van Fossen K. Breast fibroadenoma. 2022 Oct 6. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2026 Jan– [cited 2026 Jun 23]. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK535345/>
9. Agrawal PK, Varshney A, Dev S, Garg R, Gautam A, Pursnani N, et al. Menopause across Asia: a comprehensive meta-analysis of age and influencing factors. *J Midlife Health*. 2025;16(3):257–66. doi:10.4103/jmh.jmh_118_25.
10. Surakasula A, Nagarjunapu GC, Raghavaiah KV. A comparative study of pre- and post-menopausal breast cancer: risk factors, presentation, characteristics and management. *J Res Pharm Pract*. 2014;3(1):12–8. doi:10.4103/2279-042X.132704.
11. Xue F, Michels KB. Diabetes, metabolic syndrome, and breast cancer: a review of the current evidence. *Am J Clin Nutr*. 2007;86(3):823S–35S. doi:10.1093/ajcn/86.3.823S.
12. Osborne A, Adnani QES, Ahinkorah BO. Breast cancer incidence in Indonesia: a sex-disaggregated analysis using WHO Health Equity Assessment Toolkit data. *BMC Cancer*. 2025;25(1):986. doi:10.1186/s12885-025-14332-4.