# **Original Article**

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# Histomorphological Study of Benign Breast Disease Cases Attending a Tertiary Care Hospital in North-East of India: A Baseline Observation

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#### ABSTRACT

**Background**: Benign breast diseases (BBD) are a diverse set of lesions affecting many women worldwide, often presenting with pain, lumps, or discharge. The study aims to analyze the histomorphological patterns of benign breast diseases among patients attending a tertiary care hospital in North-East India, emphasizing the significance of early diagnosis and management.

**Methods**: This cross-sectional observational study was conducted at AGMC & GBP Hospital from December 2022 to April 2024. A total of 120 participants, aged 18 and above with clinically detected breast lumps, were recruited using a structured questionnaire. Those with cytologically diagnosed benign conditions underwent triple assessment, including cytology, ultrasonography, and biopsies for histopathological evaluation.

**Results**: The study of 120 patients with palpable breast lumps found that the majority were aged 21-30 years (40%), followed by 11-20 years (27.5%), with fibroadenoma being the most common benign breast disease. Fine needle aspiration cytology (FNAC) was performed on 118 patients, and histopathological examination confirmed the diagnosis in 111 cases, highlighting the strong correlation between clinical assessments and histopathological findings.

**Conclusion**: The study highlights the substantial prevalence of benign breast diseases among younger women, underscoring the necessity for enhanced public awareness and improved diagnostic protocols. The results advocate for early intervention strategies to manage these conditions effectively, thereby maintaining breast tissue integrity and alleviating patient anxiety regarding potential malignancy.

Key-words: Benign breast diseases, Breast lumps, Fibroadenoma, Histopathological evaluation, Malignancy

# INTRODUCTION

Benign breast disorders (BBD) are more common than breast cancer. BBD are a diverse set of breast lesions,

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Access this article online https://iijls.com/ including developmental abnormalities, inflammatory and granulomatous lesions, epithelial and stromal proliferation, and benign neoplasms. Patients frequently present with pain, lumps, or nipple discharge. 30% of women who suffer from BBDs require therapy at some point in their lifetime. There is a growing public awareness of general health and breast disorders. Healthcare systems and infrastructure have also been enhanced in India. Rural populations, particularly females, suffer from a variety of benign ailments. However, there have been relatively few investigations to determine if advances in understanding of BBD have any consequences for the clinical range and profile of BBD in rural populations <sup>[1]</sup>.

BBD are the most common diseases affecting women, causing significant morbidity and concern. The majority of those afflicted are premenopausal women. The breast has always been a representation of femininity and ultimate fertility. So, both sickness and breast surgery instill anxiety of mutilation and loss of felinity. BBD has gained prominence in recent years as a result of increased public awareness of cancer. The most prevalent symptoms are pain and edema. BBDs were characterized as non-proliferative breast lesions, proliferative breast lesions without atypia, and proliferative breast lesions with atypia <sup>[2]</sup>.

The triple assessment, which combines clinical examination, imaging, cytology, and histopathology, is currently regarded as the gold standard way to diagnose breast lumps. Early identification and treatment will prevent unneeded surgery and alleviate the patient's fear of having a breast lump due to cancer. The incidence of benign breast lesions begins to climb around the second decade of life and peaks in the fourth and fifth decades, whereas the incidence of malignant diseases continues to rise after menopause, albeit at a slower rate. With the increased emphasis on early diagnosis and identification of breast cancer by both the patient and her physician, more benign conditions are likely to be found than in the past, as has been demonstrated in industrialized countries. The study's goal is to look at the patterns of benign breast illnesses, as well as their method of presentation and care in this region. It also aids in determining the risk factor for the condition <sup>[3]</sup>.

BBD encompass a variety of conditions, with fibroadenoma being the most prevalent, accounting for approximately 55% to 62% of cases in various studies <sup>[4]</sup>. Other common conditions include mastalgia, fibrocystic disease, and gynecomastia, with mastalgia reported as the most frequent symptom <sup>[3, 5]</sup>. Treatment strategies vary based on the specific condition; for instance, fibroadenomas typically require excision or enucleation, while phyllodes tumors necessitate wide local excision <sup>[6]</sup>. Acute abscesses are managed through incision and drainage (I&D), and granulomatous mastitis may require excision combined with steroid therapy. Additionally, cysts can be treated with ultrasound-guided aspiration,

and galactoceles often require needle aspiration followed by excision. Understanding these conditions and their management is crucial for alleviating patient anxiety regarding potential malignancy <sup>[7,8]</sup>.

Benign breast lesions require study because of their great occurrence, influence on women's lives, and possibility for malignancy in some histological kinds. In contrast to traumatizing mutilating procedures in breast cancer, BBDS treatment aims to preserve breast tissue to the greatest extent possible. As a result, the general public and professionals should be informed of the various benign breast disorders and their terminology. Thus, histopathology is vital in the management of breast disorders<sup>[7]</sup>.

Despite their high occurrence, benign breast neoplasms have not been properly described. Several studies have shown that oral contraception has a preventive effect, while others have found no correlation; however, the limited number of patients and matching methodologies used in those studies make it difficult to determine the relationship of other factors to benign breast disease <sup>[9]</sup>. This study will help in finding out the different clinicocyto-histomorphological patterns of benign breast diseases who are attending the OPD under the jurisdiction of this tertiary level health care centre and to categorize the appropriate management as per the convenience of the patient.

#### MATERIALS AND METHODS

The study employed a cross-sectional and observational design, conducted in the Department of General Surgery and Pathology at AGMC & GBP Hospital from December 2022 to April 2024. The sample size was determined using a calculated formula, with 'n' representing the required sample size. It utilized a z-value of 1.96 for a 5% confidence level and a prevalence rate of benign breast disease in India set at 77.63%, leading to a corresponding q-value of 22.37%. By applying a margin of error of 10% of the prevalence (7.76), the calculated sample size came to approximately 110.73. To account for potential loss to follow-up, the final sample size was adjusted to a total of 120 participants.

**Inclusion criteria-** The patients with clinically detected breast lumps and those aged 18 years and above were included in the study.

**Exclusion criteria-** The patients diagnosed with malignant breast lumps or those who had previously received treatment for breast cancer, women who expressed unwillingness to participate or provide consent for the study and patients with breast conditions that did not meet the criteria for benign breast disease, as determined through clinical and cytopathological evaluation were excluded from the study.

Research Design- Data was collected in a pretested structured interview proforma. All eligible participants were recruited conveniently. Considering the exclusion criteria, patients with breast lesions were sent for triple assessment and patients who were cytologically diagnosed with benign breast disease were selected for the study. Triple assessment is helpful in early and rapid diagnosis of breast cancer hence it makes it easier to exclude malignant breast lesions. After detailed clinical examination, all patients were sent for FNAC, ultrasonography, mammography, core needle biopsy and excisional biopsy depending upon the cytohistomorphological pattern.

**Statistical analysis-** Significant values were calculated manually, and the results were presented as distinct entities and proportions. This analysis provided insight into the clinical associations with cytological and histopathological findings.

**Ethical approval-** The study was undertaken with prior approval from the Institutional Ethics Committee, AGMC & GBP Hospital, Agartala, Tripura.

#### RESULTS

In this study, a total of 120 patients presenting with palpable breast lumps were subjected to а comprehensive clinical examination. Out of these, only 6 patients underwent mammography, while the majority, comprising 112 patients, received ultrasound (USG) breast examinations. Additionally, fine needle aspiration cytology (FNAC) was performed on 118 patients to obtain cellular samples for further analysis. Following this, histopathological examination was conducted on the specimens from 111 patients to provide definitive diagnoses based on tissue analysis.

The findings of the age distribution of patients revealed that many patients were in the age group of 21-30 years accounting total of 48 patients out of 120 total patients, which constitutes 40% of the sample. This was followed by the 11-20 years group at 27.5%, indicating a significant prevalence of BBD in younger women. As age increases, the number of patients diagnosed with BBD decreases, with the 41-50 years and 51-60 years age groups representing only 10% and 1.67%, respectively. This trend highlights that BBD is less common in older women, suggesting age-related factors may influence the occurrence of these conditions.

Fig. 1 outlined the age-wise distribution of different types of BBD among 120 patients. It revealed that Fibroadenoma was the most common BBD, accounting for 66.67% (80 cases) of the total. The highest incidence of BBD was observed in the 21-30 years age group, with 40% of cases, followed by the 11-20 years group at 27.5%. Other BBD types included fibrocystic disease (15%), lactating adenoma (1.66%), and several others with very few cases. The data indicated a significant prevalence of BBD in younger populations, particularly in their twenties, while fewer cases were seen in older age groups.

In this study majority were married women, with 73 patients (60.83%) identified as married and 47 patients (39.17%) as unmarried. The demographic breakdown revealed that the largest group was nulliparous, comprising 50 patients (41.67%), followed by those who had given birth once (para 1) at 30 patients (25%), two times (para 2) at 23 patients (19.17%), three times (para 3) at 13 patients (10.83%), and more than three times at four patients (3.33%). The age at first childbirth showed that most patients had their first child between the ages of 22-23 years, totaling 19 patients (30.16%), closely followed by those who had their first child at ages 20-21 years, which included 18 patients (28.57%) (Fig. 2). Additionally, the study indicated that a significant majority of the participants were premenopausal, with 108 patients (90%) in this category compared to only 12 patients (10%) who were postmenopausal. Furthermore, it was noted that most of the participants attained menarche before the age of 13 years, with this group consisting of 64 patients (53.33%).

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Fig. 1: Age-wise distribution of different types of benign breast.



Fig. 2: Age of patients at first childbirth.

The duration of breast lumps among patients with benign BBD indicated that 50% of patients reported a duration of symptoms lasting between 3 to 5 months, while 34.17% experienced lumps for 6 to 9 months. Fewer patients had lumps for shorter durations, with only 6.66% under 3 months, and the minority had lumps lasting over 9 months, including 4.17% between 9 to 12 months, and 5% for more than 12 months. This distribution highlighted that most patients experienced lumps for a duration of 3 to 9 months before seeking medical attention (Table 1).

Duration (in months)	No. of patients	Percentage (%)		
<3	8	6.66		
3-5	60	50		
6-9	41	34.17		
9-12	5	4.17		
>12	6	05		

Table 1: Duration of a breast lump (n =120).

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The association of pain with BBD showed that a significant majority of patients, 70.83% (85 cases), presented with painless breast lumps, while 29.17% (35 cases) had painful lumps. This finding suggests that most patients diagnosed with BBD do not experience pain associated with their breast lumps, which is important for clinical assessment and diagnosis. Also, it has been observed that many of the patients had their left breast affected, 58 (48.33%), right-sided breast affected in 54 (45%) patients and 8 patients (6.67%), both the breasts were affected.

The distribution of breast lumps based on their anatomical location within the breast showed that the

upper outer quadrant (UOQ) of the breast was the most common site for lumps, with 61.67% (74 cases) of the total. The lower outer quadrant followed at 21.67% (26 cases), while the upper inner quadrant had 11.66% (14 cases). The lower inner quadrant had only 1.67% (2 cases), and central lumps were present in 2.5% (3 cases) (Fig. 3). This distribution suggests that the upper outer quadrant is particularly prone to developing lumps in benign breast disease, which may have implications for clinical examination and imaging practices when assessing breast health.



Fig. 3: Location of breast lump.

Table 2 compares the outcomes of clinical diagnosis with radiological diagnosis for various types of benign breast diseases. It shows that out of 120 patients, the clinical diagnosis of fibroadenoma was confirmed radiologically in 80 cases out of 88, reflecting a strong agreement. All cases of fibrocystic disease (18) were correctly identified through imaging. However, there were discrepancies in other conditions; for example, while 2 breast cysts were clinically diagnosed, imaging revealed 4 cases, suggesting some cysts may go undetected clinically. Additionally, 3 cases of papilloma were only identified clinically but not through radiology, highlighting potential limitations of imaging in certain diagnoses. The association between clinical diagnosis and cytohistological diagnosis for various BBD among the studied patients are presented in Table 3. Results revealed that for fibroadenoma, out of 88 clinically diagnosed cases, 79 confirmed through FNAC and 80 were by histopathological examination (HPE), indicating a strong correlation between clinical findings and laboratory results. For fibrocystic disease, all 18 clinical diagnoses matched FNAC findings, though only 13 were confirmed by HPE. The accuracy was variable for other conditions, with breast cysts being diagnosed in 3 cases via FNAC, which perfectly aligned with HPE results. Discrepancies were observed in conditions like sebaceous cysts and papillomas, where clinical diagnoses did not always correlate with cytological or histological findings.

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Diagnosis	Clinically (No. of patients)	Radiologically (No. of patients)			
Fibroadenoma	88	80			
Fibrocystic disease	18	18			
Breast cyst	2	4			
Mastitis	7	7			
Sebaceous cyst	1	0			
Papilloma	3	0			
Duct ectesia	1	2			
Cystic lesion	0	6			

# **Table 2:** Comparison between clinical diagnosis and radiological diagnosis.

Table 3: Association between clinical diagnosis and Cyto-histological diagnosis in patients with benign breast disease.

	No. of patients			
Type of BBD	Diagnosed clinically	Diagnose d by FNAC	Diagnosed by HPE	
Fibroadenoma	88	79	80	
Fibrocystic disease	18	18	13	
Breast cyst	2	3	2	
Mastitis	7	5	4	
Sebaceous cyst	1	0	0	
Papilloma	3	2	3	
Duct ectasia	1	2	2	
Breast abscess	0	1	1	
Calcified cyst	0	2	0	
Chr. Mastitis	0	1	1	
Epi. Incl. cyst	0	1	1	
Galactocele	0	1	1	
Haemangioma	0	1	1	
Lactating adenoma	0	2	2	

#### DISCUSSION

The histomorphological study of BBDs reveals a prevalence and variety significant of lesions, predominantly affecting young females. Fibroadenoma emerges as the most common lesion, accounting for 54.2% to 66% of cases across various studies, with a notable occurrence in the age group of 21-30 years <sup>[10]</sup>. Other prevalent conditions include fibrocystic disease and benign phyllodes tumors, with the latter being less common <sup>[11]</sup>. The studies emphasize the importance of histopathological examination in accurately diagnosing BBDs, as clinical assessments often correlate well with histopathological findings <sup>[12]</sup>. Additionally, the potential for certain benign lesions to progress to malignancy necessitates vigilant monitoring, particularly in patients over 40 years presenting with palpable lumps <sup>[13]</sup>. Overall, the findings underscore the need for comprehensive diagnostic approaches, including clinical evaluation, imaging, and histopathology, to effectively manage BBDs <sup>[14]</sup>.

In the present study, the most common age group affected was 21-30 years, comprising 40% of the cases, followed by the 11–20 years group, a finding that aligns with several previous studies; for example, Vimal and Chitra <sup>[2]</sup> reported a 50% prevalence in a similar age range, while Hatim et al. [3] observed a 43% rate and Chaudhary et al. <sup>[9]</sup> noted 56%, with Gargade et al. <sup>[15]</sup> reporting 38.27%. Further evidence from Jawade and Bande indicated that 20-30 years was the predominant age group with 50% of cases [7], and studies by Karki et al. and Bagale et al. extended this trend by reporting that individuals aged 21–40 years accounted for 67% of cases <sup>[16, 17]</sup>. In contrast, research by Selvakumaran and Sangma demonstrated a slightly different pattern, with most of their patients belonging to the 15-25 years group followed by 31–40 years <sup>[1]</sup>.

90% of the participants in the present study were in the premenopausal age while 10% group, were postmenopausal. This aligns with findings from Jawade and Bande <sup>[7]</sup>, where fibroadenoma predominantly occurred in premenopausal women, except for one case noted in a premenarchal girl aged 12 years. Additionally, the current study revealed that 50% of patients reported a history of a lump lasting between 3 to 5 months before their hospital presentation, followed by 34.17% who had experienced symptoms for 6 to 9 months. In contrast, Chaudhary et al. reported an average duration of symptoms at around 5 months <sup>[9]</sup>, while Jawade and Bande indicated that over 62.6% of their subjects had symptoms persisting for more than two months <sup>[7]</sup>. Furthermore, regarding the nature of breast-related symptoms, our study found that 70.83% of patients experienced painless breast conditions (BBD), whereas 29.17% reported pain. These findings are consistent with those from Karki *et al.* (45% painful cases) <sup>[16]</sup>, Chaudhary *et al.* (74% painless) <sup>[9]</sup>, Hatim *et al.* (76.2% painless) <sup>[3]</sup>, Vimal *et al.* (33.78% painful) <sup>[2]</sup>, and Selvakumaran *et al.* (48.80% painful) <sup>[1]</sup>.

In maximum cases (61.67%) the upper outer quadrant of the breast was involved in the present study which is like studies by Chaudhary *et al.* <sup>[9]</sup> (52%), Jawade and Bande <sup>[7]</sup> (35.2%) and Hatim *et al.* <sup>[3]</sup>. The next quadrant to be affected in the present study was the lower outer quadrant (21.67%) which is like that by Jawade and Bande <sup>[7]</sup> (20.4%). In a study by Chaudhary *et al.* the second most affected quadrant was the upper inner quadrant (26%) which contrasts with the present study <sup>[9]</sup>.

In the present study, fibroadenoma was the most observed lesion, accounting for 38.75% of cases, predominantly affecting the 21-30-year-old age group. This finding aligns with previous research by Hatim *et al.* and Gargade *et al.*, which also reported similar trends <sup>[3, 15]</sup>. Conversely, Selvakumaran *et al.* identified the most affected age group as 15-25 years <sup>[1]</sup>, while Bagale *et al.* noted a higher prevalence in the 31-40 years age group <sup>[17]</sup>. The second most common lesion identified in this study was fibrocystic disease, which constituted 15% of cases. This result is consistent with studies conducted by Vimal *et al.* (27%), Hatim *et al.* (4.2%), Jawade and Bande (17.1%), Chaudhary *et al.* (20%), Bagale *et al.* (14.32%), and Gargade *et al.* (8.64%) <sup>[2,3,7,9,15,17]</sup>.

However, this contrasts with Karki *et al.* findings, where fibroadenoma was reported as the second most common lesion at 27% <sup>[16]</sup>, and Selvakumaran *et al.*'s study highlighted fibroadenosis at 21% <sup>[1]</sup>. Notably, fibrocystic disease was found to be most prevalent in the 21-30 years age group within this study, while other studies indicated that the 20-40 years age range was more commonly affected according to Hatim *et al.* <sup>[3]</sup>, and ages 31-40 were emphasized by Bagale *et al.* <sup>[17]</sup> and Gargade *et al.* <sup>[15]</sup>.

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#### LIMITATIONS

This study has several limitations that affect the validity and generalizability of its findings. Firstly, male patients were excluded from the study, which hinders a proper comparison of BBD across genders, unlike in previous studies where both sexes were included. Secondly, the research was conducted at a single center, raising concerns about whether the cases examined can accurately represent the broader population within the entire state. Finally, due to social and cultural stigma surrounding breast diseases, there is likely an underreporting of such conditions, further complicating the understanding and analysis of BBD prevalence and characteristics.

## CONCLUSIONS

The study on BBD underscores the significant prevalence and varied presentation of these conditions within the population, emphasizing the importance of early diagnosis and management to maintain breast tissue integrity and prevent potential complications. Findings demonstrate that clinical evaluations, supported by FNAC and histopathological examinations, provide a reliable framework for accurate diagnosis, although discrepancies remain in certain cases. The data reveal that fibroadenomas are the most common benign lesions, with implications for patient management and awareness initiatives. The study advocates for improved diagnostic protocols and increased public awareness to promote early detection and treatment, ultimately enhancing patient care in this domain. Prospects involve multicentric studies for better epidemiological understanding of benign breast diseases and community awareness programs for breast health education.

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