



## Original Article



## Frequency of Fibroadenoma in Patients Presenting with Palpable Breast Lumps: A Cross-sectional Study

Saira Aijaz Soomro<sup>1</sup>, Yahya Riaz<sup>1</sup>, Dua Aijaz Soomro<sup>2</sup>, Afzal Junejo<sup>1</sup>, Ahsan Jabbar<sup>2</sup> and Bushra Aijaz<sup>2</sup><sup>1</sup>Department of Surgery, Bilawal Medical College, Hyderabad, Pakistan<sup>2</sup>Department of Surgery, Liaquat University of Medical and Health Sciences, Jamshoro, Pakistan

## ARTICLE INFO

**Keywords:**

Adolescent, Breast Neoplasms, Body Mass Index, Fibroadenoma, Risk Factors

**How to Cite:**Soomro, S. A., Riaz, Y., Soomro, D. A., Junejo, A., Jabbar, A., & Aijaz, B. (2026). Frequency of Fibroadenoma in Patients Presenting with Palpable Breast Lumps: A Cross-sectional Study: Fibroadenoma in Patients Presenting with Palpable Breast Lumps. *Pakistan Journal of Health Sciences*, 7(4), 16–20. <https://doi.org/10.54393/pjhs.v7i4.3648>**\*Corresponding Author:**Saira Aijaz Soomro  
Department of Surgery, Bilawal Medical College,  
Hyderabad, Pakistan  
[drsairasoomro123@gmail.com](mailto:drsairasoomro123@gmail.com)Received Date: 1<sup>st</sup> December, 2025Revised Date: 23<sup>rd</sup> January, 2026Acceptance Date: 10<sup>th</sup> February, 2026Published Date: 30<sup>th</sup> April, 2026

## ABSTRACT

Palpable breast lumps are a common presentation in surgical practice, particularly among young women, and encompass a wide range of benign and malignant conditions. Fibroadenoma is the most frequently encountered benign breast tumor in this age group; however, local hospital-based data on its frequency with statistical precision remain limited. **Objectives:** To estimate the proportion of fibroadenoma among female patients presenting with palpable breast lumps at a tertiary care hospital. **Methods:** This descriptive cross-sectional study was conducted at the Department of General Surgery, Bilawal Medical College, Liaquat University of Medical and Health Sciences (LUMHS), Hyderabad, from January 2025 to June 2025. A total of 60 female patients aged 15–35 years with clinically palpable breast lumps were enrolled using non-probability consecutive sampling. All patients underwent triple assessment, including clinical evaluation, imaging (ultrasound ± mammography), and Tru-Cut biopsy with histopathological examination. Data were analyzed using SPSS version 23.0. Frequencies were reported with 95% confidence intervals (CIs). **Results:** The mean age was  $24.6 \pm 4.8$  years. Fibroadenoma was diagnosed in 22 patients, yielding a frequency of 36.7% (95% CI: 25.0–49.3%). The superolateral quadrant was the most commonly involved site. The proportion of fibroadenoma was consistent across age groups, BMI categories, marital status, breast laterality, and lump duration. **Conclusions:** Fibroadenoma constitutes over one-third of palpable breast lumps in young women presenting to a tertiary care hospital. These findings highlight the importance of structured diagnostic evaluation to guide appropriate management and avoid unnecessary surgical intervention.

## INTRODUCTION

Breast lumps are one of the most frequent presenting complaints in the outpatient surgery departments, and they form a broad range of benign and malignant breast pathologies. Even though most palpable breast lumps in young women are harmless, the clinical dilemma is how to distinguish between harmless lesions and those that may result in serious consequences, which may cause major psychological stress and negative consequences, especially in resource-limited environments where delay in diagnosis may cause severe consequences [1]. The most common benign breast tumor that is commonly diagnosed, particularly among adolescents and young females, is fibroadenoma, which is hormonally reactive and has a

generally favorable prognosis [2]. Fibroadenoma constitutes a variable proportion of palpable breast lumps that have been recorded in different populations with wide ranges of prevalence of one-third to over half of all of the benign breast lesions [3–6]. This heterogeneity is attributed to variations in age distribution, healthcare-seeking behavior, diagnostic facilities, and sociocultural factors. The age-related trends of fibroadenoma have been described by a number of regional and international studies that have uniformly shown a greater prevalence in women whose age is below 35 years [4–6]. Nevertheless, most of these are high-income country-based studies or selected tertiary centers, and their findings cannot be generalized



to the population of South Asian countries. The hospital-based statistics on the prevalence of fibroadenoma in patients presenting with palpable breast lumps are few in Pakistan and other low- and middle-income nations. Local research has concentrated on major trends in breast disease or heterogeneous groups that span extensive age groups without necessarily highlighting fibroadenoma as a preeminent result [6]. Further, most articles have reported associations with demographic and clinical factors without presenting accurate estimates, including confidence intervals, hence making their results less comprehensible and applicable in daily clinical practice. The correct estimation of the prevalence of fibroadenoma within a specified population of a hospital is necessary to inform the diagnostic strategy, maximize the use of imaging and biopsy, and educate patients about the prognosis and treatment choices [7]. This is especially crucial in younger women, where the unnecessary surgical intervention can be prevented in evidence-based decision-making. Also, insight into the local burden of fibroadenoma will help differentiate it more effectively against malignant and borderline fibroepithelial lesions, which could share similar clinical presentations, but would need very different management strategies [8-10].

This study is expected to add locally relevant evidence to inform clinical decisions and enhance the existing body of literature on the patterns of benign breast disease in South Asian contexts by presenting hospital-based prevalence data with an adequate level of statistical accuracy and stratification. Based on these gaps, the current study aimed to ascertain the prevalence of fibroadenoma among young female individuals between the ages of 15 and 35 years who presented with palpable breast masses in a tertiary care teaching hospital in Hyderabad, Pakistan.

## METHODS

It was a descriptive cross-sectional study that was carried out at the Department of General Surgery, Bilawal Medical College, Liaquat University of Medical and Health Sciences (LUMHS), Hyderabad, between January 2025 and June 2025. That study was carried out following the synopsis approval of the LUMHS and the ethical clearance given by the LUMHS Research Ethics Committee (Approval No: LUMHS/REC/-580). The WHO sample size calculator was used to compute the sample size of 60 patients at a 95% level of confidence, 12% margin of error, and an expected prevalence of fibroadenoma of 33.3% among patients with breast lumps. The sampling was the non-probability consecutive sampling [11]. The inclusion criteria were to be female patients aged 15 to 35 years with clinically palpable breast lumps and the readiness to sign an informed consent. The exclusion criteria consisted of patients who had a prior history of fibroadenoma, lumps due to trauma,

recurrent or ulcerated lumps, lumps that occurred during the menstrual cycle, male patients, metastatic breast cancer diagnosed during breast surgery, post-operative breast lump, or post-surgery breast cancer. Informed consent was signed by patients presenting to the General Surgery Outpatient Department after they had been given an elaborate explanation about the aim and advantage of the study. A detailed clinical test was performed in which the lump location, its size, shape, consistency, pain, swelling, nipple discharge, and its relation to the menstrual cycles were recorded. The preliminary lab tests consisted of a complete blood count and urinalysis. All patients received triple assessment, which included: Clinical (history and physical examination), Imaging studies such as ultrasound on all patients and mammography on patients above 30 years old, and Tru-Cut biopsy histopathological examination. A consultant general surgeon with more than five years of experience performed biopsies in aseptic conditions under local anesthesia. At least two samples of core tissues were taken in each lesion, labeled instantly, and stored in the histopathology lab. The samples were handled following standard procedures, and the histopathologist was blinded to the clinical information of the patients to minimize bias. Diagnosis was done through histopathological examination. The information was documented in the form of a structured proforma, which consisted of age, height, weight, BMI, marital status, breast site/ quadrant, lump duration, and the presence or absence of fibroadenoma. Selection bias and confounding were minimized by adhering to inclusion and exclusion criteria. Data were entered and statistically analyzed using SPSS version 23.0. The Shapiro-Wilk test was used to test the normality of the quantitative variables (age, BMI, and duration of breast lump). The summative statistics of normally distributed variables were reported as mean and standard deviation, whereas skewed variables were reported as median and interquartile range (IQR). Categorical variables such as marital status, location of breast involvement, and distribution by quadrant have been stated in frequencies and percentages. The main aim of the research was to establish the prevalence of fibroadenoma in patients who present with palpable lumps of the breast. To this end, results were provided in terms of 95% confidence interval estimates, which were made using the Wilson method to enhance accuracy. The stratification was done according to effect modifiers, which were set and included age, BMI, length of lump, marital status, location of breast involvement, and quadrant.

## RESULTS

A total of 60 patients presenting with palpable breast lumps were included in the study. The mean age of the participants was  $24.6 \pm 4.8$  years. The median duration of the breast lump at presentation was 3 months with an interquartile range (IQR) of 2–6 months. The mean height and weight were  $159.2 \pm 6.1$  cm and  $62.1 \pm 8.0$  kg, respectively, yielding a mean body mass index (BMI) of  $24.5 \pm 3.2$  kg/m<sup>2</sup>. Detailed demographic characteristics are summarized in table 1.

**Table 1:** Demographic Characteristics of Patients (n=60)

Variables	Mean $\pm$ SD / Median (IQR)
Age (years)	24.6 $\pm$ 4.8
Height (cm)	159.2 $\pm$ 6.1
Weight (kg)	62.1 $\pm$ 8.0
BMI (kg/m <sup>2</sup> )	24.5 $\pm$ 3.2
Duration of Lump (months)	3 (2–6)

Most participants were married (38; 63.3%, 95% CI: 50.4–74.7). Right-sided breast involvement was observed slightly more frequently (32; 53.3%, 95% CI: 40.1–66.3) compared with the left breast (28; 46.7%, 95% CI: 33.7–59.9). With respect to anatomical distribution, the superolateral quadrant was the most commonly involved (26; 43.3%), followed by the superomedial (12; 20.0%), inferolateral (12; 20.0%), and inferomedial quadrants (10; 16.7%). Clinical characteristics are detailed in table 2.

Stratified analysis of fibroadenoma frequency was performed according to age group, BMI, duration of lump, marital status, site of breast involvement, and quadrant. The proportion of fibroadenoma remained relatively consistent across all subgroups. As the primary objective of the study was estimation of frequency, interpretation focused on proportions and confidence intervals rather than hypothesis testing. Subgroup-specific estimates with 95% CIs are presented in table 4.

**Table 4:** Stratification of Fibroadenoma by Effect Modifiers (n=60)

Effect Modifier	Categories	Fibroadenoma, n (%)	95% CI	Other lesions, n (%)	95% CI
Age Group	15–25 Years	14 (40.0%)	27.0–54.1	21 (60.0%)	45.9–73.0
	26–35 Years	8 (32.0%)	17.9–50.1	17 (68.0%)	49.9–82.1
BMI	<25 kg/m <sup>2</sup>	10 (33.3%)	18.6–51.0	20 (66.7%)	49.0–81.4
	$\geq$ 25 kg/m <sup>2</sup>	12 (40.0%)	25.7–55.8	18 (60.0%)	44.2–74.3
Duration of Lump	<3 Months	9 (34.6%)	18.9–53.0	17 (65.4%)	47.0–81.1
	$\geq$ 3 Months	13 (38.2%)	24.0–54.3	21 (61.8%)	45.7–76.0
Marital Status	Married	14 (36.8%)	22.7–52.3	24 (63.2%)	47.7–77.3
	Unmarried	8 (36.4%)	18.0–57.5	14 (63.6%)	42.5–82.0
Site of Breast	Right	12 (37.5%)	22.7–54.2	20 (62.5%)	45.8–77.3
	Left	10 (35.7%)	21.1–53.1	18 (64.3%)	46.9–78.9
Quadrant	Superomedial + Superolateral	14 (36.8%)	22.7–52.3	24 (63.2%)	47.7–77.3
	Inferomedial + Inferolateral	8 (36.4%)	18.0–57.5	14 (63.6%)	42.5–82.0

## DISCUSSION

The overall percentage of fibroadenoma patients in this hospital-based study involving 60 cases of patients with palpable breast lumps was 36.7% (95% CI: 25.0–49.3%). The majority of the affected patients were young (15–25 years old), in line with the demographic profile of fibroadenoma,

**Table 2:** Clinical Characteristics of Patients (n=60)

Variables	Category	n (%)	95% CI
Marital Status	Married	38 (63.3%)	50.4–74.7
	Unmarried	22 (36.7%)	25.3–49.6
Site of Breast	Right	32 (53.3%)	40.1–66.3
	Left	28 (46.7%)	33.7–59.9
Quadrant of Breast	Superomedial	12 (20.0%)	11.0–32.4
	Superolateral	26 (43.3%)	30.8–56.5
	Inferomedial	10 (16.7%)	8.9–28.6
	Inferolateral	12 (20.0%)	11.0–32.4

Among the 60 patients, 22 (36.7%) were diagnosed with fibroadenoma, while 38 (63.3%) had other benign or malignant breast lesions. The 95% confidence interval (CI) for the frequency of fibroadenoma was 25.0–49.3%, calculated using the Wilson method. The assumed prevalence of 33.3% used for sample size estimation was derived from previous hospital-based studies of patients presenting with palpable breast lumps. The outcome distribution is shown in table 3.

**Table 3:** Frequency of Fibroadenoma in Patients with Palpable Breast Lumps (n=60)

Outcomes	n (%)	95% CI
Fibroadenoma	22 (36.7%)	25.0–49.3
Other benign/malignant lesions	38 (63.3%)	50.7–75.0

which is usually reported in previous hospital-based studies. Its distribution in both BMI groups, marital status, breast laterality, and quadrant involvement was quite balanced, indicating that these variables might not significantly affect the prevalence of fibroadenoma among

this group of patients [12, 13]. The frequency observed is quite consistent with that of other studies on hospitals that state the prevalence of fibroadenoma is between 30 and 40 percent in patients with palpable breast lumps [15]. In our cohort, histopathological analysis also revealed that fibroadenoma was the most frequent benign lesion of the breast, as it corresponded to the results of a study in Saudi Arabia and Nigeria [12-16]. Other rare presentations, including fibroadenoma in axillary accessory breast tissue, have also been reported, which underscores the value of careful clinical and imaging evaluation [11, 17]. To distinguish fibroadenoma among other fibroepithelial lesions and malignancies, imaging and radiologic-pathologic correlation are necessary [18]. The results are indicative of the greater global patterns of benign and malignant breast disease, with low- and middle-income countries showing the same epidemiologic patterns [19, 20]. Most of the patients in our study group were below the age of 35, and this age corresponded with the established age difference between benign lesions and carcinoma, affecting older women [20]. The stratification analysis did not demonstrate any significant relationship between fibroadenoma and BMI, marital status, breast laterality, or the involvement of the quadrant. Though other studies indicate these variables as possible modifiers, the non-significant differences in our study can indicate either the small sample size or the comparatively homogenous demographic population of the hospital patients [11, 17]. These results underscore the fact that the fibroadenoma is mostly associated with a young age but not lifestyle or demographic factors. The study supports the significance of early detection and proper diagnosis of fibroadenoma in younger women who show signs of palpable breast lumps. In areas with low breast cancer awareness, ultrasound and histopathology will continue to play a critical role in the differentiation between fibroadenoma and other benign and malignant lesions [18]. Clinicians must pay attention to risk stratification according to age and possibly conservative treatment or minimally invasive surgeries instead of surgical removal in the case of fibroadenoma, and they should reserve surgical intervention for cases that have symptoms or atypical.

The study has limitations, such as a single-center, hospital-based study design, which might be a limitation to generalizing. The size of the sample used is relatively small, which decreases the accuracy of subgroup analyses, as indicated in broad confidence intervals of certain categories. Also, the cross-sectional design does not permit the evaluation of longitudinal outcomes or risk of recurrence. In spite of these shortcomings, the study gives a good estimate of the prevalence of fibroadenoma among a hospital population and can inform future studies in similar contexts.

## CONCLUSIONS

Fibroadenoma was found in 36.7% of patients with palpable breast lumps in the hospital, with the highest rates observed in younger women between the ages of 15 and 25 years. There were no significant associations between the BMI, marital status, laterality of the breast, and quadrant involvement and fibroadenoma occurrence. The above findings underscore the fact that the age factor is still the major predictor of fibroadenoma, and the need to detect it early, have the right imaging, and conduct a histopathological study in order to have it managed properly. Such hospital-based data can be used to inform clinicians in risk stratification, patient counseling, and in making decisions regarding conservative versus surgical intervention, and to serve as a reference to future epidemiologic studies within such settings.

## Authors' Contribution

Conceptualization: SAS

Methodology: SAS, YR, DAS, AJ<sup>2</sup>

Formal analysis: SAS, DAS, AJ<sup>2</sup>

Writing and Drafting: SAS, YR, AJ<sup>1</sup>, BA

Review and Editing: SAS, YR, DAS, AJ<sup>1</sup>, AJ<sup>2</sup>, BA

All authors approved the final manuscript and take responsibility for the integrity of the work.

## Conflicts of Interest

All the authors declare no conflict of interest.

## Source of Funding

The author received no financial support for the research, authorship and/or publication of this article.

## REFERENCES

- [1] Sharma R. Global, Regional, National Burden of Breast Cancer in 185 Countries: Evidence from GLOBOCAN 2018. *Breast Cancer Research and Treatment*. 2021 Jun; 187(2): 557-67. doi: 10.1007/s10549-020-06083-6.
- [2] Chinnaiah E and Nagireddy TV. A Clinical Study of Benign Breast Diseases. *International Journal of Surgery Science*. 2020; 4: 287-90. doi: 10.33545/surgery.2020.v4.i1f.350.
- [3] Hendrick RE, Monticciolo DL, Biggs KW, Malak SF. Age Distributions of Breast Cancer Diagnosis and Mortality by Race and Ethnicity in US Women. *Cancer*. 2021 Dec; 127(23): 4384-92. doi: 10.1002/cncr.33846.
- [4] Ogochukwu AG, Bolaji G, Ndidi IM. Age Prevalence and Management of Breast Fibroadenoma at a Nigerian Tertiary Hospital: A Five-year (2016-2020) Analytical Review. *Japan Journal of Medical Science*. 2023 Nov; 1(1): 11-7. doi: 10.33140/JJMS.01.01.01.
- [5] Abd Ellatif Mohamed MA. Comparison between Fibroadenoma as a Clinical Presentation in Females

- under 30 and Post 30 Years Old. *Egyptian Journal of Hospital Medicine*. 2025 Jul; 1(100). doi: 10.21608/ejhm.2025.447687.
- [6] Hassan MM, Ahamad FU, Khan MA, Fatema MB, Kamal MM, Azam AN et al. Clinicopathological Evaluation of Breast Lump in Different Age Groups. *Journal of Dhaka Medical College*. 2022; 31(1): 107-13. doi: 10.3329/jdmc.v31i1.65476.
- [7] Aguilar DS, Guachichulca JS, Calderón AE, Sisalima DZ, Granda AS, Granda IV. Fibroadenoma and Breast Cancer. *Ginecología y Obstetricia de México*. 2025 May; 93(3): 103-13.
- [8] Łukasiewicz S, Czezelewski M, Forma A, Baj J, Sitarz R, Stanisławek A. Breast Cancer—Epidemiology, Risk Factors, Classification, Prognostic Markers, and Current Treatment Strategies—An Updated Review. *Cancers*. 2021 Aug; 13(17): 4287. doi: 10.3390/cancers13174287.
- [9] Gauhar TM, Mahmud T, Khanum R, Khan SU, Ahmed W, Jutt N. Breast Lump Patterns Across Different Age Groups Among Female Patients Presenting to Surgical Outpatient Department of a Tertiary Care Hospital in District Malir Karachi: Breast Lump Patterns across Different Age Groups Among Female Patients. *Pakistan Journal of Health Sciences*. 2025 Mar; 78-84. doi: 10.54393/pjhs.v6i3.2797.
- [10] Figueroa JD, Gierach GL, Duggan MA, Fan S, Pfeiffer RM, Wang Y et al. Risk Factors for Breast Cancer Development by Tumor Characteristics among Women with Benign Breast Disease. *Breast Cancer Research*. 2021 Mar; 23(1): 34. doi: 10.1186/s13058-021-01410-1.
- [11] Kalim M, Ullah H, Ahmad S, Shah FO, Yosaf M. Frequency of Fibroadenoma in Patients Presenting with Breast Lump. *Journal of Postgraduate Medical Institute*. 2018 Mar; 32(1).
- [12] Sherman ME, Vierkant RA, Winham SJ, Vachon CM, Carter JM, Pacheco-Spann L et al. Benign Breast Disease and Breast Cancer Risk in the Percutaneous Biopsy Era. *Journal of the American Medical Association Surgery*. 2024 Feb; 159(2): 193-201. doi: 10.1001/jamasurg.2023.6382.
- [13] Almatrafi MI, Almalki MA, Althagafi JA, AlSindi TS, Masarit RM, Almatrafi RM et al. Benign Breast Disease in Makkah, Saudi Arabia: A Retrospective Analytical Cross-Sectional Study. *Cureus*. 2022 Nov; 14(11). doi: 10.7759/cureus.31174.
- [14] Shah M, Hadi A, Iftikhar M, Khan I, Zeb M, Khan SA. Evaluation of Benign Breast Diseases. *The Professional Medical Journal*. 2023 Mar; 30(04): 432-6. doi: 10.29309/TPMJ/2023.30.04.7391.
- [15] Edegbe FO, Uzoigwe JC, Ndukwe CO, Nwachukwu AA, Ugwu NI, Nnachi OC et al. Pattern of Benign Breast Diseases in Abakaliki, South Eastern Nigeria, A 5 Year Retrospective Study. *Nigerian Journal of Medicine*. 2022 Sep; 31(5): 540-3. doi: 10.4103/NJM.NJM\_60\_22
- [16] Qadri SK, Sejwal P, Priyadarshni R, Jaiswal M, Khandewal R, Khanna M et al. Spectrum of Breast Diseases: Histopathological and Immunohistochemical Study from North India. *The Gulf Journal of Oncology*. 2019 Jan; 1(29): 6-13.
- [17] Yadav S and Jaiswal Y. A Clinicopathological Study of Non-Neoplastic and Neoplastic Lesions of Breast in Rural Hospital. *International Journal of Clinical and Diagnostic Pathology*. 2020; 3(1): 25-9. doi: 10.33545/pathol.2020.v3.i1a.149.
- [18] Al-Basha S, Buni H, Elhamadi M, Abusnena O. Breast Lumps Patterns among Young Libyan Females Attending Breast Clinic at Tripoli Central Hospital. *International Journal of Multidisciplinary Sciences and Advanced Technology*. 2020; 1(11): 45-53.
- [19] Gao M, Wik SL, Yu Q, Xue F, Chan SC, Chow SH et al. Disease Burden, Risk Factors, and Temporal Trends in Breast Cancer in Low-and Middle-Income Countries: A Global Study. *Public Health Challenges*. 2024 Sep; 3(3): e223. doi: 10.1002/puh2.223.
- [20] Ahmed F, Safer A, Shams-ul-Hassan S, Ch SU, Sabir M, Akhtar N. Frequency of Carcinoma Breast in Palpable Breast Lumps in Females Above 30 Years of Age in South Punjab. *Professional Medical Journal*. 2022 Dec; 29(12). doi: 10.29309/TPMJ/2022.29.12.6033.