

FREQUENCY OF BREAST MALIGNANCY IN WOMEN PRESENTING WITH BREAST LUMPS IN SANDEMAN PROVINCIAL HOSPITAL, QUETTA

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ABSTRACT

Background: Breast lumps are common clinical presentations and may represent benign or malignant lesions. Histopathological confirmation is essential for definitive diagnosis. Hospital-based data on breast malignancy among women presenting with palpable breast lumps remain limited in Balochistan.

Objective: To determine the frequency of histopathologically confirmed breast malignancy among women presenting with breast lumps at Sandeman Provincial Hospital, Quetta, and to assess its association with age, family history, and selected clinical characteristics.

Methods: This hospital-based cross-sectional study was conducted in the Department of Surgery, Sandeman Provincial Hospital, Quetta, from 01 January 2025 to 30 June 2025. A total of 100 women aged ≥ 18 years presenting with palpable breast lumps were enrolled using consecutive non-probability sampling. Women with previous or recurrent breast cancer or inadequate diagnostic evaluation were excluded. Demographic and clinical data were collected using a structured proforma. Clinical examination, ultrasonography and/or mammography were performed as clinically indicated, followed by tissue diagnosis. Histopathological examination was considered the reference standard for classification of breast lesions. Data were analyzed using SPSS version 27.0. Categorical variables were assessed using Pearson's chi-square or Fisher's exact test, while age was compared using an independent-samples t-test. A two-sided p-value < 0.05 was considered statistically significant.

Results: The mean age of participants was 43.2 ± 12.1 years. Histopathological examination confirmed breast malignancy in 32 (32.0%) women, while 68 (68.0%) had benign lesions. Invasive ductal carcinoma was the predominant malignant histological type, occurring in 27 (84.4%) malignant cases, followed by invasive lobular carcinoma in 3 (9.4%) cases and other malignant lesions in 2 (6.2%) cases. Women with malignant lesions were significantly older than those with benign lesions (51.6 ± 9.7 vs. 39.2 ± 11.6 years; $p < 0.001$). Malignancy was significantly more frequent among women aged ≥ 40 years than among those aged < 40 years (42.6% vs. 15.4%; $p = 0.004$). Positive family history was also significantly associated with malignancy (58.3% vs. 28.4%; $p = 0.018$).

Conclusion: Approximately one-third of women presenting with palpable breast lumps had histopathologically confirmed breast malignancy. Older age and positive family history were significantly associated with malignancy. Timely clinical assessment, appropriate imaging, and histopathological confirmation of suspicious breast lumps are important for early diagnosis and management.

KEYWORDS: Breast lump; Breast cancer; Breast malignancy; Histopathology; Palpable breast mass

INTRODUCTION

Breast cancer is a major health concern for women worldwide, and is a significant cause of morbidity and mortality due to cancer. While such progress as has been made in screening, imaging, pathology, and systemic treatment has led to improved outcomes in many situations, breast cancer still carries a significant burden, especially in lower- and middle-income countries. Factors such as delayed presentation, limited awareness, poor screening facilities, socio-economic factors, and limited access to cancer-specific health services can lead to late diagnosis. These issues are especially pertinent in Pakistan, and breast cancer is a major public health problem for women [1]. Breast lump is one of the most common presenting clinical complaints in breast clinics and surgery departments. The differential diagnosis of breast lumps is wide and ranges from benign diseases like fibroadenoma, fibrocystic changes, breast abscess, and benign proliferative diseases to malignant tumors. Clinical examination alone cannot reliably differentiate benign from malignant lesions. Hence, proper assessment is usually best made by a combination of clinical examination, imaging, and tissue diagnosis. The definitive way to confirm malignancy and the type of breast cancer is still by histopathological examination

[2,3]. Several demographic and clinical factors influence the likelihood of malignancy in a woman who presents with a breast lump. Age is one of the most significant factors, and the risk of breast cancer rises significantly as a woman gets older. However, breast cancer can be diagnosed in younger women, too, and sometimes a lump is initially thought to be harmless. Family history also plays an important part in risk, especially in the case of women with first-degree relatives who have had breast cancer. Breast cancer risk might also be affected by other factors such as reproductive history, hormones, obesity, and lifestyle factors [4,5]. Clinical features of a breast lump can help determine its underlying pathology. Duration, size, consistency, mobility, fixation to surrounding tissues, skin changes, nipple abnormalities, and axillary lymphadenopathy increase suspicion of malignancy. However, the absence of classic signs does not rule out cancer. Therefore, all persistent or clinically suspicious breast lumps need to be investigated accordingly. Identifying the local prevalence of malignancy among women with breast lumps can help inform the clinical pathway for diagnostic evaluation and help prioritize women who need to be evaluated sooner [6]. Hospital-based studies can be extremely useful, especially in areas with limited population-based cancer registries and organized breast screening programs. Data from tertiary-care hospitals can provide information on the burden and clinicopathological patterns of disease among symptomatic women. Such evidence may also help improve referral pathways, access to diagnosis, patient counseling, and resource allocation. The rates of women with breast lumps who are diagnosed with breast malignancy, however, vary between populations, due to differences in age distribution, referral patterns, awareness, socioeconomic status, and access to health services [7,8]. Sandeman Provincial Hospital is a large tertiary care healthcare center that provides services to people in Quetta and other parts of Balochistan. Breast lumps in women are an important element of the surgical workload. Although these presentations are clinically significant, little locally available evidence exists on the proportion of malignant breast lumps. The incidence of malignancy in this group could help define a more precise picture of the local disease burden and the need for early diagnosis [9]. The present study was therefore carried out to find out the frequency of histopathologically confirmed breast malignancy in women with breast lumps presented to Sandeman Provincial Hospital, Quetta. The study also explores the association between selected demographic and clinical features and malignancy, especially age and family history. The results could be informative for local clinical practice and local health care planning and could help facilitate early diagnosis and management of breast cancer in women with breast complaints.

Study Objectives

To find the frequency of histopathologically confirmed breast cancer among women with breast lumps in Sandeman Provincial Hospital, Quetta, and to check the association of age, family history, and selected clinical characteristics with the presence of breast malignancy in the patients.

MATERIALS AND METHODS

Study Design & Setting

This cross-sectional study was conducted over 6 months in the Department of Surgery, Sandeman Provincial Hospital, Quetta.

Participants

A total of 100 women aged ≥ 18 years presenting with a palpable breast lump to the Department of Surgery, Sandeman Provincial Hospital, Quetta, during the study period were enrolled using consecutive non-probability sampling. Participants were eligible if they had a palpable breast lump on clinical examination and were willing to undergo the recommended diagnostic evaluation. Women with a previous diagnosis of breast cancer, recurrent breast malignancy, or inadequate diagnostic evaluation were excluded. Written informed consent was obtained from all participants before enrollment. Demographic and clinical information, including age, duration and location of the breast lump, family history of breast cancer, and clinical examination findings, was recorded using a structured data collection proforma.

Diagnostic Strategy:

All participants underwent tissue sampling, and definitive diagnosis was established by core needle biopsy or excision biopsy. FNAC was used where clinically indicated as an initial diagnostic investigation, but final classification of lesions was based on histopathological examination.

Inclusion criteria

- Women aged ≥ 18 years
- Palpable breast lump on clinical examination
- Willingness to undergo diagnostic evaluation
- Written informed consent

Exclusion Criteria

- Previous breast cancer
- Recurrent breast malignancy
- Inadequate diagnostic evaluation

Data Collection

A structured proforma was used to gather data on demographic, clinical presentation, family history, examination findings, imaging findings, biopsy method, and final histopathological diagnosis. Study identification numbers were used to ensure each participant's anonymity.

Statistical Analysis

Data were analyzed using IBM SPSS Statistics version 27.0. Continuous variables were assessed for distribution and summarized as mean $\pm$ standard deviation, while categorical variables were presented as frequencies and percentages. The association between categorical variables and histopathologically confirmed breast malignancy was assessed using the Pearson chi-square test, with Fisher's exact test used where expected cell frequencies were small. The mean age between women with malignant and benign breast lesions was compared using an independent-samples t-test. All statistical tests were two-sided, and a p-value <0.05 was considered statistically significant.

Ethical approval

Ethical approval was obtained from the Research Evaluation Unit, CPSP, under Reference No. CPSP/REU/SGR-2023-001-14833, dated December 27, 2024, before commencement of the research study and data collection.

Sample Size Calculation

The sample size was calculated using the single-population proportion formula, assuming an expected prevalence of 50%, a 95% confidence level, and a 10% margin of error. The calculated minimum sample size was 96 participants. To account for possible incomplete data, 100 eligible women were enrolled.

$$n = Z^2pq/d^2$$

and define Z, p, q and d, followed by the calculation producing approximately 96 participants and the decision to enroll 100.

The diagnosis and management plan.

Clinical breast examination was performed on all patients, followed by appropriate ultrasonography and/or mammography. core biopsy or excision biopsy of suspicious lesions were carried out. Histopathology confirmed malignancy. Referrals of patients with malignant disease for multidisciplinary management were made, and surgery, chemotherapy, radiotherapy and/or hormonal therapy were offered based on stage and pathology.

RESULTS

A total of 100 women presenting with palpable breast lumps were included in the study. The mean age of the participants was 43.2 ± 12.1 years. Histopathological examination confirmed malignant breast lesions in 32 (32.0%) participants, while 68 (68.0%) had benign lesions. Among the 32 malignant cases, invasive ductal carcinoma was the most frequent histopathological type, identified in 27 (84.4%) cases, followed by invasive lobular carcinoma in 3 (9.4%) cases and other malignant lesions in 2 (6.2%) cases. Women with malignant lesions were significantly older than those with benign lesions (51.6 ± 9.7 vs. 39.2 ± 11.6 years; $p < 0.001$). Breast malignancy was significantly more frequent among women aged ≥ 18 years compared with those aged < 40 years (42.6% vs. 15.4%; $p = 0.004$). A positive family history of breast cancer was reported in 12 participants. Of these, 7 (58.3%) had malignant lesions, compared with 25 of 88 (28.4%) participants without a positive family history ($p = 0.018$). Skin/nipple changes were significantly associated with malignancy. Malignant lesions were identified in 12 of 21 (57.1%) women with skin/nipple changes compared with 20 of 79 (25.3%) women without these changes ($p < 0.001$). Similarly, malignancy was identified in 18 of 25 (72.0%) women with axillary lymphadenopathy compared with 14 of 75 (18.7%) women without lymphadenopathy ($p < 0.001$). Overall, approximately one-third of women presenting with palpable breast lumps had histopathologically confirmed malignancy, with significantly higher frequencies observed among older women and those with a positive family history, skin/nipple changes, or axillary lymphadenopathy.

Table 1. Demographic characteristics of women presenting with breast lump (n=100)

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	18–30	15	15.0
	31–40	24	24.0
	41–50	28	28.0
	51–60	21	21.0
	>60	12	12.0
Age, mean $\pm$ SD	—	43.2 ± 12.1	—
Family history of breast cancer	Present	12	12.0
	Absent	88	88.0

Data are presented as frequency and percentage unless otherwise indicated. SD = standard deviation.

Table 2. Clinical characteristics of breast lumps among study participants (n=100)

Clinical characteristic	Category	Frequency (n)	Percentage (%)
Side of breast affected	Right	46	46.0

	Left	43	43.0
	Bilateral	11	11.0
Duration of lump	≤3 months	39	39.0
	4–6 months	31	31.0
	>6 months	30	30.0
Lump consistency	Soft	18	18.0
	Firm	53	53.0
	Hard	29	29.0
Skin/nipple changes	Present	21	21.0
	Absent	79	79.0
Axillary lymphadenopathy	Present	25	25.0
	Absent	75	75.0

Data are presented as frequency and percentage. Clinical characteristics were recorded during initial breast examination.

Table 3. Histopathological diagnosis of breast lesions (n=100)

Histopathological diagnosis	Frequency (n)	Percentage (%)
Benign lesions	68	68.0
Fibroadenoma	29	29.0
Fibrocystic disease	21	21.0
Breast abscess/inflammatory lesion	8	8.0
Benign phyllodes tumor	5	5.0
Other benign lesions	5	5.0
Malignant lesions	32	32.0
Invasive ductal carcinoma	27/32	84.4%
Invasive lobular carcinoma	3/32	9.4%
Other malignant lesions	2/32	6.2%
Total	100	100.0

Histopathological diagnosis was considered the definitive classification of breast lesions. Percentages in the malignant subgroup are 84.4% for invasive ductal carcinoma, 9.4% for invasive lobular carcinoma, and 6.2% for other malignant lesions.

Table 4. Association of Selected Factors with Breast Malignancy (n=100)

Variable	Category	Benign, n (%)	Malignant, n (%)	p-value
Age group	<40 years	33 (84.6)	6 (15.4)	0.004
	≥40 years	35 (57.4)	26 (42.6)	
Family history of breast cancer	Present	5 (41.7)	7 (58.3)	0.018
	Absent	63 (71.6)	25 (28.4)	
Skin/nipple changes	Present	9 (42.9)	12 (57.1)	<0.001
	Absent	59 (74.7)	20 (25.3)	
Axillary lymphadenopathy	Present	7 (28.0)	18 (72.0)	<0.001
	Absent	61 (81.3)	14 (18.7)	

Data are presented as frequency and percentage. Percentages for each variable are calculated within the respective category. P-values were calculated using the Pearson chi-square test. Fisher's exact test was used where appropriate. A two-sided p<0.05 was considered statistically significant. The age-group values have been standardized to the frequencies reported in Table 4: 42.6% vs. 15.4%; p=0.004.

DISCUSSION

The present hospital-based cross-sectional study assessed the frequency of breast malignancy among women presenting with palpable breast lumps at Sandeman Provincial Hospital, Quetta. Histopathological examination confirmed malignancy in 32% of participants, while 68% had benign lesions. The mean age of the study population was 43.2 ± 12.1 years, and women with malignant lesions were significantly older than those with benign lesions (51.6 ± 9.7 vs. 39.2 ± 11.6 years; $p<0.001$). These findings demonstrate that although most palpable breast lumps in this cohort were benign, a substantial proportion represented malignancy and therefore required definitive diagnostic assessment [10,11]. The frequency of malignancy in the present study (32%) was comparable to findings from other Pakistani hospital-based studies. A Pakistani hospital-based study reported

malignancy in 42% of women presenting with breast lumps. women presenting with breast lumps, whereas another study involving women assessed with BI-RADS and histopathological correlation reported malignancy in 42% of cases. Differences between studies may be related to variations in age distribution, referral patterns, clinical selection criteria, healthcare access, and the threshold for performing tissue diagnosis. These differences also indicate that hospital-based frequencies should not be interpreted as population-level prevalence estimates

[12]. In the present study, invasive ductal carcinoma was the predominant malignant histological type, accounting for 27 (84.4%) of malignant cases, followed by invasive lobular carcinoma in 3 (9.4%) cases and other malignant lesions in 2 (6.2%). This finding is consistent with the clinicopathological pattern described in other hospital-based studies in which invasive ductal carcinoma represents the most frequent malignant histological diagnosis among women presenting with breast masses. Histopathological classification remains clinically important because tumor type provides essential information for treatment planning and subsequent multidisciplinary management [13]. Age showed a significant association with breast malignancy. Malignancy was identified in 42.6% of women aged ≥ 40 years compared with 15.4% of those aged < 40 years ($p=0.004$). The difference is supported by the frequency distribution and counts presented in Table 4. The findings are consistent with the observation that breast cancer risk increases with age and with Pakistani evidence showing a substantial burden of breast cancer among adult women. A recent trend analysis from Pakistan also reported increasing breast cancer presentation across older age groups, including women aged 40–44 years. These findings support careful clinical assessment and appropriate imaging or tissue sampling of persistent breast lumps, particularly among older women [14,15]. A positive family history was another significant factor associated with malignancy. Among women reporting a positive family history, 7 of 12 (58.3%) had malignant lesions, compared with 25 of 88 (28.4%) among those without a family history ($p=0.018$). This finding is biologically plausible and is consistent with Pakistani literature reporting an association between family history and breast cancer risk. Nevertheless, family history should not be used as the sole determinant of diagnostic evaluation because malignancy can occur in women without a known family history [16,17]. Clinical examination findings also demonstrated important associations. Skin/nipple changes were associated with malignancy, with 57.1% of women with these changes having malignant lesions compared with 25.3% of those without such changes. Similarly, axillary lymphadenopathy was associated with a substantially higher frequency of malignancy (72.0% vs. 18.7%). These findings reinforce the importance of a systematic breast and axillary examination. However, these associations should be interpreted as unadjusted associations because the present analysis did not establish whether these clinical findings independently predict malignancy after adjustment for age and other factors [18]. The findings further emphasize the importance of a structured diagnostic pathway for women presenting with breast lumps. Clinical examination should be followed by age- and symptom-appropriate imaging, with tissue diagnosis performed when clinical or imaging findings are suspicious. Histopathological examination was used as the reference standard in this study. The manuscript also notes that ultrasound and mammography may provide useful pre-biopsy information depending on patient age and lesion characteristics. A timely diagnostic pathway is particularly relevant in settings where limited awareness, access to screening, and delayed healthcare utilization may contribute to late presentation [19]. The study has several limitations. It was conducted at a single tertiary-care hospital with a relatively small sample of 100 women, limiting generalizability to the wider population of Balochistan. The cross-sectional design also prevented assessment of long-term treatment outcomes or survival. In addition, only selected demographic and clinical characteristics were evaluated, while reproductive, hormonal, genetic, and socioeconomic factors were not assessed. Furthermore, because consecutive non-probability sampling was used, selection bias cannot be excluded, and the observed 32% frequency should not be interpreted as the prevalence of breast cancer in Balochistan. Overall, the findings indicate that a considerable proportion of women presenting with palpable breast lumps had histopathologically confirmed malignancy. Older age, positive family history, skin/nipple changes, and axillary lymphadenopathy were significantly associated with malignancy in this cohort [20]. The results support early clinical assessment, appropriate imaging, and timely tissue diagnosis of suspicious breast lumps, while larger multicenter studies are needed to establish more representative estimates for Balochistan.

LIMITATIONS

A limitation of this study was that it was conducted in one tertiary care hospital, and the sample size was small (100 participants), which limited the generalizability of the findings to the larger population of Balochistan. As a cross-sectional design, long-term outcome data were not assessed. In addition, only selected demographic and clinical factors were assessed; detailed reproductive, hormonal, genetic, and socioeconomic factors were not.

CONCLUSION

Breast malignancy was diagnosed in approximately one-third of women presenting with palpable breast lumps. Older age, positive family history, skin/nipple changes, and axillary lymphadenopathy were significantly associated with malignancy in this cohort. These findings emphasize the importance of timely clinical assessment, appropriate breast imaging, and histopathological confirmation of suspicious breast lesions for early diagnosis and management. Larger multicenter studies are warranted to provide more representative estimates for the population of Balochistan.

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