RESEARCH ARTICLE

SONOGRAPHIC FREQUENCY AND DISTRIBUTION OF BREAST LESIONS IN WOMEN OF LAHORE: A CROSS-SECTIONAL STUDY

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Manuscript Info

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Abstract

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Background and Aims: Breast cancer is a significant health issue worldwide, and early detection is crucial for effective treatment and management. In Pakistan, breast cancer incidence rates are increasing, and late-stage diagnoses are common. Therefore, it is essential to understand the frequency and types of breast lesions to achieve early detection and management. The primary objective of this study was to find out the sonographic frequency of breast lesions in females of Lahore city.

Methods: A cross sectional study was conducted at Gilani Ultrasound Center Lahore, 185 females of different age groups were enrolled in this study with Non-probability convenient sampling. All asymptomatic and symptomatic females come for breast Ultrasound were included in this study and females with breast cancer were excluded.Ultrasound Machine Xario Z-3272 with a linear probe of high frequency 7-12 MHz was used.

Results: In the study of 185 female patients in Lahore city, 59 (31.9%) had breast lesions. The lesions were most commonly found on the left side (24.3%) and in the upper outer quadrant of the breast (11.4%). Out of 145 married patients, 48 (33.1%) had breast lesions. The majority of patients (70.8%) reported experiencing breast pain, and of these, 39 (29.8%) had breast lesions. Of the 34 patients who were in menopause, 9 (26.5%) had breast lesions. A small number of patients (1.6%) showed dimpling of the breast skin. The results showed that 126 (68.1%) patients had BI-Rads-I findings and 59 (31.9%) had BI-Rads-II findings. The average age of the patients was 34.3568 years with a standard deviation of 11.69830.

Conclusion: This study reveals a high frequency of breast lesions among women in Lahore, with 31.9% of participants presenting with sonographic abnormalities. The majority of lesions were seen on the left side and in the upper outer quadrant, highlighting the importance of comprehensive imaging methods in these areas.The connection of breast lesions with discomfort and menopausal status emphasises the significance of clinical examination in addition to imaging. These

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findings highlight the importance of early detection with routine breast ultrasonography in lowering the burden of breast illnesses.

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Introduction:-

Breast lesions are a broad spectrum of abnormalities that can occur in the mammary gland, including benign and malignant tumors, cysts, and other conditions. They may arise in the epithelial or other tissues of the breast, and can also be associated with vascular, inflammatory, or traumatic pathologies. In 2020, about 2.3 Million women were diagnosed with breast cancer worldwide. Breast masses are a common occurrence, with prevalence rates ranging from 40% to 70% among women[1, 2].Breast cysts are the commonest cause of breast lumps in women between 35 and 50 years of age [3, 4]. Fibrocystic changes is the term used to designate a variety of clinical and histopathological changes of the female mammary gland[5]. The breast tissue hormonal monthly changes of estrogen and progesterone levels are probably associated with fibrocystic breast changes pathogenesis[6]. Fibrocystic changes (FCC) are a common finding, affecting over half of women between 20 and 50 yearsold. Pakistan has the highest incidence of breast cancer among the Asian countries, with 69 cases per 100,000 women[7]. A common cause of benign-related mortality in females is late-stage presentations. Poverty, lack of education, unhygienic practices, and poor diagnostic facilities are major hurdles in this regard[8]. Cysts are fluid-filled, round to ovoid structures lined by a single layer of cuboidal to columnar epithelium[9-11].Ultrasound is the best radiological tool to assess fibrocystic changes and clinically benign breast lumps and has been shown to have significantly better accuracy, sensitivity, and negative predictive values[12, 13].

The aim of our study was to investigate the frequency of breast lesions for early detection, so that the policy makers take appropriate steps to reduce the risk of malignancy in females with breast diseases. Despite advances in medical imaging and breast disease management, a sizable segment of the female population in underdeveloped countries such as Pakistan is still underserved due to financial hurdles and a lack of awareness. This study emphasises the necessity of studying the prevalence and distribution of breast lesions in order to improve health policies and boost early detection efforts. The findings will help to improve diagnostic procedures and patient outcomes in rural healthcare settings.

Material and Methods:-

This cross-sectional investigation was carried out at the Gilani Ultrasound Centre in Lahore over a nine-month period from August 2022 to April 2023. Ethical approval for the study was obtained from the institutional review board of The University of Lahore, Pakistan (Reference Number: REC-UOL-156-8-2022) on August 6, 2022, ensuring that all procedures adhered to the Declaration of Helsinki. Informed written consent was obtained from all participants prior to their inclusion in the study. A total of 185 patients of various ages were registered by non-probability convenient sampling. The study included all females who presented for breast ultrasound, both asymptomatic and symptomatic, with the exception of those with breast cancer or inflammatory or neuromuscular upper limb diseases. Breast imaging was carried out utilising a Xario Z-3272 ultrasound machine with a high-frequency linear probe (7-12 MHz). Data collection included reviewing the patient's history, clinical symptoms, and sonographic findings, with a focus on the BI-RADS categorisation and lesion features. The primary goal was to investigate the prevalence, location, and related variables of breast lesions in this population.

Data collection comprised a complete patient history as well as clinical data such as age, breast discomfort existence, menopausal status, and physical examination results. The sonographic characteristics of each lesion, including size, location, and BI-RADS category, were painstakingly documented. The results were classified according to lesion laterality (right or left breast), quadrant location, and associated clinical complaints. Continuous variables like patient age were summarised using descriptive statistics, such as means and standard deviations. Categorical data, such as BI-RADS classifications and lesion distribution, were shown in frequencies and percentages. Cross-tabulations were used to investigate the correlations between clinical characteristics and sonographic data. The data analysis was conducted using SPSS software version 25.0, ensuring rigorous statistical evaluation and accurate reporting of results.

This study aims to give a solid understanding of the frequency and features of breast lesions in the local community by combining a thorough ultrasound technique, complete data collection, and ethical adherence. The findings are expected to provide important insights into improving diagnostic procedures and healthcare outcomes for women in the region.

Results:-

The investigation of 185 female participants yielded useful information about the prevalence and features of breast lesions in the study population. The findings revealed that 31.9% of individuals had sonographically detectable breast lesions, the majority of which were on the left side and mostly in the upper outer quadrant of the breast. The study also looked at the relationship between breast lesions and clinical characteristics such pain, menopausal status, and BI-RADS classifications, providing a full picture of the distribution and potential risk factors in this population. The findings highlight the significance of routine breast imaging and focused treatments in enhancing early detection and management outcomes. Figures 1 to 4 illustrate representative sonographic findings of breast lesions, including cysts and abscesses, with detailed measurements and locations specified. For example, Figure 1 shows cysts in the left breast at 8 o'clock (8.6×8.4 mm and 5.9×5.4 mm), while Figure 4 depicts a larger abscess in the left breast at 2 o'clock (26.7×20.9 mm).

Table 1:- Frequency distribution of clinical features and breast lesions.

	Breast pain	Menopause	Dimpling of skin	Lesion
No	54(29.2%)	151(81.6%)	182(98.4%)	126(68.1%)
Yes	131(70.8%)	34(18.4%)	3(1.6%)	59(31.9%)
Total	185	185	185	185

Table 1 Shows that out of 185 patients 54 (29.2%) were with no pain in breast and 131 (70.8%) were with breast pain. Out of 185 patients 34(18.4%) were menopause and 151 (81.6%) were premenopause. Out of 185 patients 182 (98.4%) show normal skin and 3 (1.6%) shows dimpling of skin. Out of 185 patients 126 (68.1%) shows no lesions and 59 (31.9%) shows breast lesions.

Table 2:- Frequency distribution of Breast Lesion Rt/Lt.

		Frequency	Percent
	Lt	45	24.3
	Normal	126	68.1
	Rt	14	7.6
	Total	185	100.0

Table 2 Shows that out of 185 patients there were 45 (24.3%) breast lesions were on Lt side and 14 (7.6%) were on Rt side.

Table 3:- Frequency distribution of Quadrant.

		Frequency	Percent
	LIQ	10	5.4
	LOQ	11	5.9
	Normal	126	68.1
	UIQ	17	9.2
	UOQ	21	11.4
	Total	185	100.0

Table 3 Shows that out of 185 patients 10 (5.4%) lesions were in lower inner quadrant 11 (5.9%) were in lower upper quadrant 17 (9.2%) were in upper inner quadrant and 21 (11.4%) were in upper outer quadrant .

Table 4:- Descriptive Statistics of age.

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Age	185	44.00	14.00	58.00	34.3568	11.69830

Table 4 Shows that the mean value of age was 34.3568 ±11.69830.

Table 5:-Menopause * Lesion Crosstabulation.

Menopause	Lesions		Total
	Absent	Present	

No	101(66.9%)	50(33.1%)	151(100%)
Yes	25(73.5%)	9(26.5%)	34(100%)
Total	126(68.1%)	59(31.9%)	185(100%)

Table 5 Shows that out of 185 patients 34(18.4%) were menopause, out of them 9 (26.5%) had breast lesions.

Table 6:- Breast pain * Lesion Crosstabulation.

Breast pain	Lesions		Total
	Absent	**Present**	
No	34(63.0%)	20(37.0%)	54(100.0%)
Yes	92(70.2%)	39(29.8%)	131(100.0%)
Total	126(68.1%)	59(31.9%)	185(100.0%)

Table 6 Shows that out of 185 patients 54 (29.2%) were with no pain in breast, out of them 20 (37.0%) had breast lesions and 131 (70.8%) were with breast pain out of them 39 (29.8%) had breast lesions.

Discussion:-

Breast lesions are a common health concern in women, and ultrasound detection is crucial for early diagnosis and treatment. The outcomes of this study revealed that 31.9% of the individuals had breast lesions, which is consistent with other studies conducted in comparable circumstances. The prevalence of lesions on the left side and in the upper outer quadrant corresponds to established patterns of breast tissue density and hormonal impacts. These findings emphasise the significance of routine breast imaging and public health activities in addressing the growing burden of breast illnesses among disadvantaged communities.

Rubina and Lucien etal., conducted different studies in which 6850 and 1110 patients enrolled in their study,respectively[14, 15]. In both studies, the majority of patients were reported as normal, and around 30% of patients were found to have different types of breast lesions, such as small cysts or mastopathy. In our study 85 patients 126 (68.1%) shows no lesions and 59 (31.9%) shows breast lesions which is almost similar with previous study.Emmanuel and Uchechukwu's studies conducted from 2017 to 2019 revealed that the most recurrent BI-RADS score wasII, accounting for 27.99% and 29.57%, respectively[16, 17]. The most common imaging feature in BI-RADS II was noted in their studies. In contrast, our study found that 59 (31.9%) showed BI-RADS II findings.

Zahid etal., stated that the majority of cases, the lump was present in upper outer quadrant 41.9% (n=44) in their study where sample size was 105.[18] As compared to previous study our results show that 21 (11.4%) patients had lesions in upper outer quadrant.Kidane etal., conducted a study, in their study, the age range of patients was from 13 to 93 years with mean and standard deviation of 33 ± 14.9 years.[19] The age range of patients was from 14 to 58 years mean value of age was 34.35 ± 11.69 in our study.

The study's findings show the high prevalence of breast lesions in the sample group, particularly among younger women. These findings highlight the importance of increasing awareness campaigns, improving access to diagnostic tools, and incorporating frequent screening programs into primary healthcare systems. Future study should include longitudinal studies to better understand the evolution of benign lesions and their potential risk factors for cancer. This method will help to design targeted interventions and reduce the regional burden of breast illnesses. The findings of this study call for quick action by policymakers to combat the increased prevalence of breast lesions in the female population. Efforts should be directed towards increasing access to cheap breast imaging services and launching widespread awareness programs to educate women on the need of early detection and regular screening. Investments in training healthcare personnel, equipping diagnostic centres with modern imaging equipment, and incorporating breast cancer screening into primary care programs can considerably reduce morbidity and death from breast illnesses. These initiatives will not only improve early detection, but will also reduce the socioeconomic impact of advanced-stage breast cancer on families and healthcare systems.

The study has multiple limitations. For starters, non-probability convenient sampling may create selection bias, limiting the findings' applicability to a larger population. Second, the cross-sectional design limits establishing causal linkages or tracking the course of lesions over time. Third, cultural and societal constraints, such as unwillingness to

engage in medical imaging investigations and limited access to healthcare facilities, may have contributed to the under-representation of specific groups. Finally, the study relied solely on ultrasonic imaging, with no other diagnostic procedures such as mammography or biopsy, which may have influenced the comprehensive assessment of breast abnormalities. Addressing these constraints in future research is critical for obtaining more reliable and generalisable results.
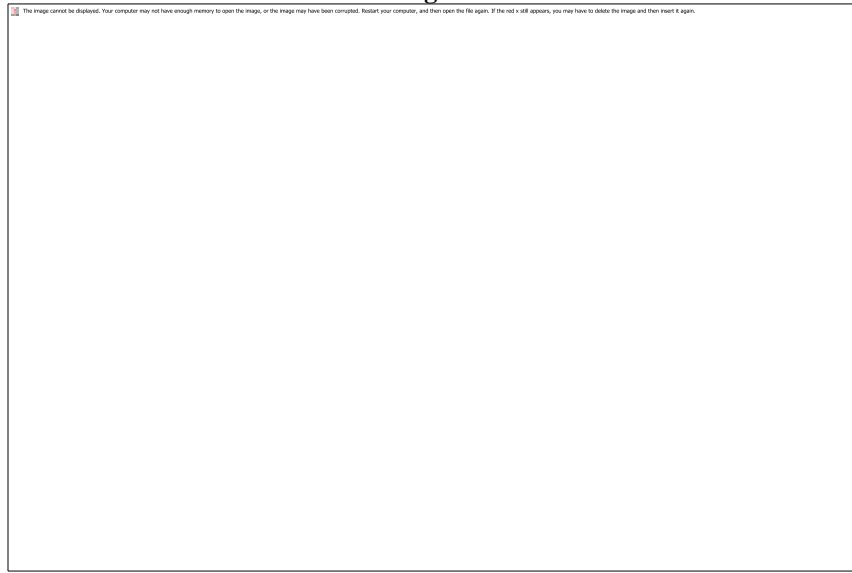
Fig 1:-

In figure 1 the image shows cysts in the Lt Breast at 8-O clock. The size of cysts are 8.6x8.4mm and 5.9x5.4mm.
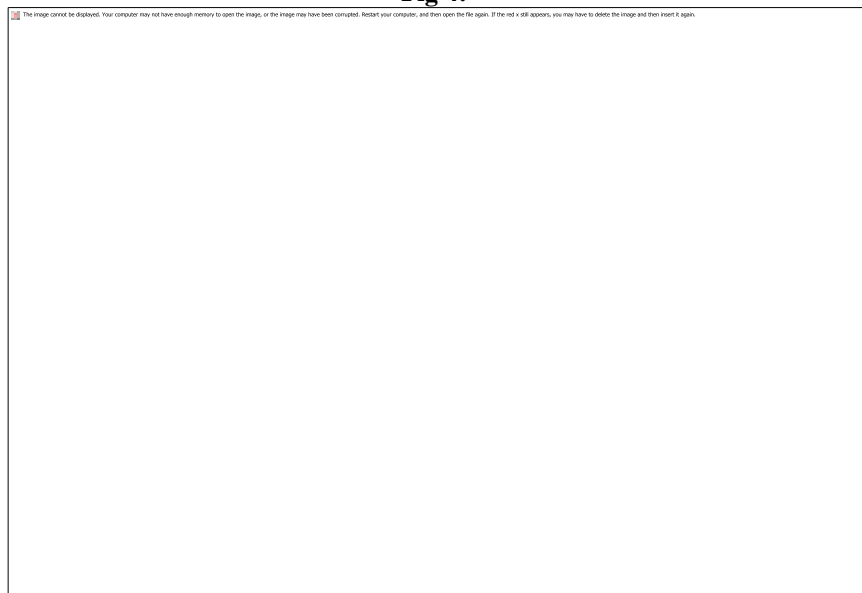
Fig 2:
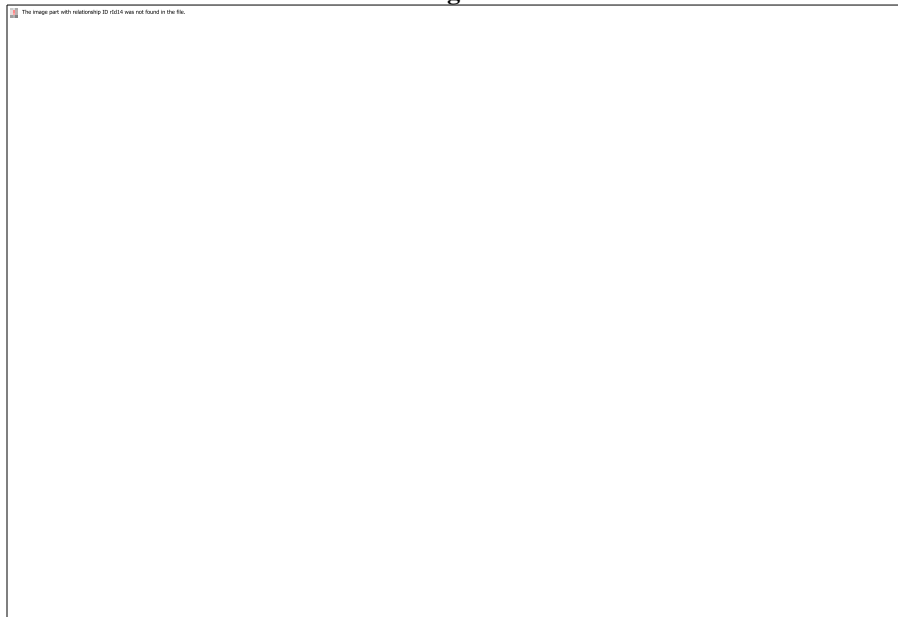
In figure 2 the image shows that abscess in the Lt Breast at 9-O clock. The size of abscess is 14.4x4.2mm.

Fig 3:

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In figure 3 the image shows cysts in the RT Breast at 11, 12-O clock. The size of cysts are 3.4x5.0 mm and 4.2mm.

Fig 4:-

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In figure 4 the image shows that abscess in the Lt Breast at 2-O clock. The size of abscess is 26.7x20.9mm.

Conclusion:-
This study reveals a high frequency of breast lesions among women in Lahore, with 31.9% of participants presenting with sonographic abnormalities. The majority of lesions were seen on the left side and in the upper outer quadrant, highlighting the importance of comprehensive imaging methods in these areas. The connection of breast lesions with discomfort and menopausal status emphasises the significance of clinical examination in addition to imaging. These findings highlight the importance of early detection with routine breast ultrasonography in lowering the burden of breast illnesses. Policymakers and healthcare professionals must prioritise awareness campaigns, improve diagnostic access, and establish effective screening programs in order to improve early detection, timely intervention, and patient outcomes.

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