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# Rate of Positive Family History in Iraqi Patients with Breast Cancer

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**Abstract**

**Objective:** The objective of this study was to understand the effect of positive family history as a risk factor between breast cancer patients depending on clinical and patiological features.

**Methods:** This is a clinical survey study contained 507 Iraqi breast cancer patients from July 2022 to May 2023. The assessment of patients performed using histopathological examination of tissue samples from breast biopsy or surgical excision. Family history interviews recorded. Participants were recruited from various healthcare facilities. The questionnaire covered age, residency, family history, metastasis, and the specific site of breast cancer. A signed informed consent process ensured patient confidentiality.

**Results:** This study examined the characteristics of breast cancer patients, including sex, age group, geographic distribution, and laterality. The sample consisted of 507 confirmed cases, 99.8% of which were females. Most patients were diagnosed on the left side, with 253 (49.9%) and 227 (44.77%) diagnosed on the right side. Unilateral breast cancer was predominant, with 53% of patients having bilateral breast cancer. Among the 507 patients, 31.76% had a positive family history of breast cancer, whereas 68% had a negative family history. Most patients had a first-degree relative to positive cancer, with 58 (36.02%) having a first-degree relative to positive cancer. The majority of cases did not show metastatic features, with the most metastatic cases being spread to the lymph nodes (6.7%).

**Conclusion:** The majority of breast cancer cases were left-sided, with 31.7% having a positive family history and 68% having a negative one. Most cases had a second-degree relative to a positive cancer history, with most cases spreading to the lymph nodes.

**Keywords:** Breast, cancer, family history, Iraqi patient

## Introduction

Breast cancer is a significant worldwide health issue that impacts many people around the globe. It is the most common cancer in women and accounts for a substantial number of cancer-related deaths each year. Many risk factors, including behavioural, environmental, and genetic variables, have been identified. A positive family history of breast cancer has consistently been recognised as a substantial risk factor among these individuals.[1–3]

Many different variables, both genetic and otherwise, may cause breast cancer, making it a very diverse illness with a complex etiology.[4–6] With 11.7% of all new cancer cases in 2020 attributable to breast cancer, the disease has just overtaken lung cancer as the most commonly diagnosed cancer globally.[7,8] Therefore, despite rapid advancements in this area, breast cancer is still a major concern for world health. Over the years, researchers have diligently studied the breast cancer epidemic.[9,10] It is necessary to understand the epidemiological features of breast cancer, such as its incidence, prevalence, and mortality across various demographic and geographic elements, to design effective public health strategies.

Additionally, by identifying the risk factors for early-stage breast cancer and significantly reducing the associated mortality, screening is an essential component of the overall care of breast cancer patients.[11,12] The new detection methods require more individualised choices for weighing the benefits and drawbacks of screening.[13]

The existence of breast cancer instances among close relatives, such as mothers, sisters, or daughters, is referred to as a positive family history of the disease. This raises the possibility of a hereditary predisposition that increases a person's risk of contracting the illness. According to previous studies, people who have a first-degree relative who has been diagnosed with breast cancer are at greater risk than people who do not have such a family history. The risk further increases if multiple relatives are affected or if the cancer diagnosis occurs at a younger age.[14–16] Few studies have been conducted, particularly on Iraqi patients, although positive family history and breast cancer risk have been widely investigated in a variety of populations. Iraq is a country with a varied population and distinct genetic heritage. It is important to understand the relationship between favourable family history and breast cancer in Iraq for several reasons. First, an understanding of the genetic components influencing this population's susceptibility to breast cancer can be established by researching the associations between positive family history and breast cancer in Iraq. Because Iraqis have a unique genetic makeup resulting from historical and geographic circumstances, examining the influence of family history on breast cancer risk within this particular population may help identify specific genetic variations or mutations linked to an increased risk of breast cancer among Iraqi women.[17,18] Additionally, understanding the prevalence and characteristics of breast cancer patients with a positive family history in Iraq is essential for effective prevention strategies and early detection programs. Targeted screening efforts can be implemented to improve early detection rates and overall outcomes by identifying individuals at higher risk on the basis of their family history. Additionally, knowledge of family history can guide genetic counselling services, enabling individuals and families to make informed decisions regarding screening, prevention, and potential interventions.[19]

Furthermore, investigating the relationship between positive family history and breast cancer among Iraqis can provide insights into the clinical features and treatment outcomes associated with familial cases. It may help determine whether

breast cancers with a positive family history exhibit specific tumor characteristics, such as hormone receptor status, tumor grade, or molecular subtype. Such information can aid in tailoring treatment approaches and optimising personalised care for patients with familial breast cancer.[20] This study aimed to investigate the relationship between breast cancer incidence and family history in major Iraqi hospitals.

## Patients and Methods

### *Study Design and Population*

This cross-sectional study was conducted from July 2022 to May 2023 with Iraqi patients who were previously diagnosed with breast cancer. The total number of participants in this study was 507, of which 506 were females and one was male. Participants were recruited from different places, such as hospitals, clinics, and specialised cancer centers, and through collaboration with local healthcare providers. The diagnosis of breast cancer was established through histopathological examination of tissue samples obtained from breast biopsy or surgical excision. Confirmation of malignant cells in the breast tissue served as the diagnostic criterion.

### *Sampling Procedure*

The sampling method was a "family history interview", which involved self-interviewing patients. Permissions were obtained through written consent. The questionnaire included inquiries about age, residency, family history, and positive or negative status, and if positive, we asked if it was first- or second-degree or both, metastasis, and finally, the specific site of breast cancer, if it was right or left. A comprehensive sampling strategy was utilised to reach a sample size of 507, ensuring the diversity and generalizability of the findings. Before the interviews, a signed informed consent process was conducted to ensure the confidentiality of patient names.

The data collection involved self-interviews with patients via a questionnaire. The questionnaire covered essential aspects such as age, residency, family history of breast cancer, metastasis, and the site of breast cancer (right, left, or bilateral). The study adopted a descriptive approach, and data analysis was performed via SPSS Statistics, IBM version 28.

## Results

The characteristics of the breast cancer patients included in this study were sex, age group, geographic distribution, and laterality. The total number of patients in our study sample was 507 confirmed cases of breast cancer, 506 (99.8%) of which were females, and only one was male (0.2%), as shown in Figure 1. The patients in our study were between 20 and 90 years old, as shown in Table 1. The most frequent cases were observed at ages 45–50 years (19.72%), as shown in Figure 2. The geographical distribution according to governorates is shown in Table 2. Most of the cases were observed from the Baghdad governorate, accounting for 360 (71.01%) of all the cases.

Most of the breast cancer patients included in this study were diagnosed on the left side (253 (49.9%)), followed by those who were diagnosed on the right side (227 (44.77%)). Only 27 (5.33) patients were found to have bilateral breast cancer, as shown in Figure 3. Unilibration, especially on the left side, was predominant (50%).

Regarding family history, 161 (31.76%) of the 507 breast cancer patients had a positive family history of breast cancer, whereas the remaining patients (68%) had a negative family history, as shown in Figure 4. With respect to the degree of relatives' family history of positive breast cancer cases, which was 161, 58 (36.02%) of the 161 cases had a first-degree relative to positive cancer history, whereas 81.02 (50.31%) of them had a second-degree relative. A percentage of 22 (13.66%) were

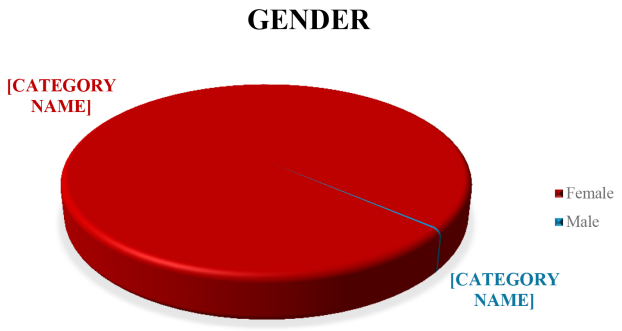


Fig. 1 **Gender distribution of breast cancer patients.**

Table 1. **Number of cases by age group**

| Age group | No. | % |
|---|---|---|
| 20 – <25 | 3 | 0.59 |
| 25 – <30 | 11 | 2.17 |
| 30 – <35 | 28 | 5.52 |
| 35 – <40 | 23 | 4.54 |
| 40 – <45 | 68 | 13.41 |
| 45 – <50 | 100 | 19.72 |
| 50 – <55 | 78 | 15.38 |
| 55 - <60 | 83 | 16.37 |
| 60 - <65 | 57 | 11.24 |
| 65 - <70 | 36 | 7.10 |
| 70 - <75 | 10 | 1.97 |
| 75 - <80 | 6 | 1.18 |
| 80 - <85 | 3 | 0.59 |
| 85 - <90 | 1 | 0.20 |
| Total | 507 | 100 |

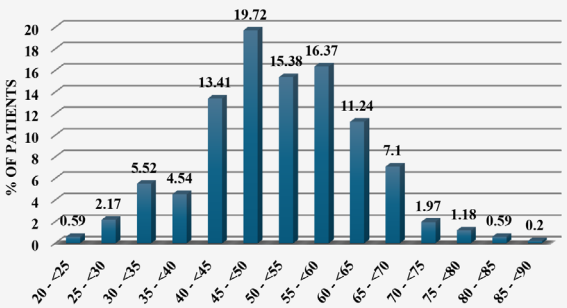


Fig. 2 **Age group distribution of breast cancer patients.**

Table 2. **Number and percentage of cases by governorates**

| Governorates | Number of patients | % of patients |
|---|---|---|
| Baghdad | 360 | 71.01 |
| Al-Anbar | 48 | 9.47 |
| Diyala | 42 | 8.28 |
| Wasit | 23 | 4.54 |
| Salah Al-Deen | 13 | 2.56 |
| Nineveh | 5 | 0.99 |
| Babil | 4 | 0.79 |
| Thi-Qar | 3 | 0.59 |
| Kirkuk | 2 | 0.39 |
| Misan | 2 | 0.39 |
| Al-Basra | 1 | 0.20 |
| Al-Sulaymaniyah | 1 | 0.20 |
| Al-Muthana | 1 | 0.20 |
| Karbala | 1 | 0.20 |
| Al-Najaf | 1 | 0.20 |

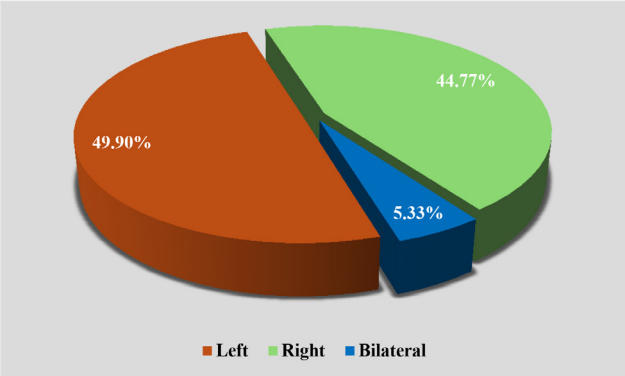


Fig. 3 **Number and percentage of cases by laterality.**

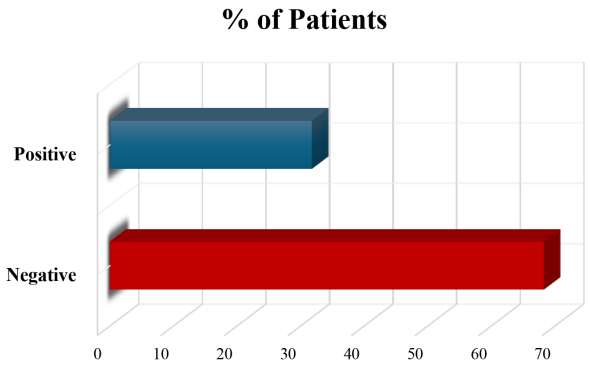


Fig. 4 **Percentage of cases by family history.**

detected for those who had both first- and second-degree relatives with a history of breast cancer, as shown in Figure 5.

The distribution of all breast cancer patients whose tumors metastasised to other organs is shown in Table 3. Most patients did not present with metastatic features (76.53%). Most metastatic cases spread to the lymph nodes (6.7%). The other cases are spread to various organs, as shown in Figure 6.

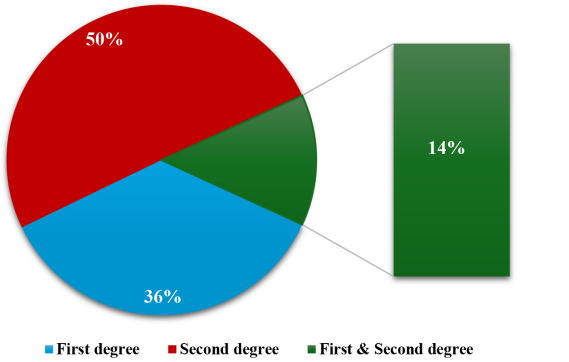


Fig. 5 **Percentage of cases by family history degree.**

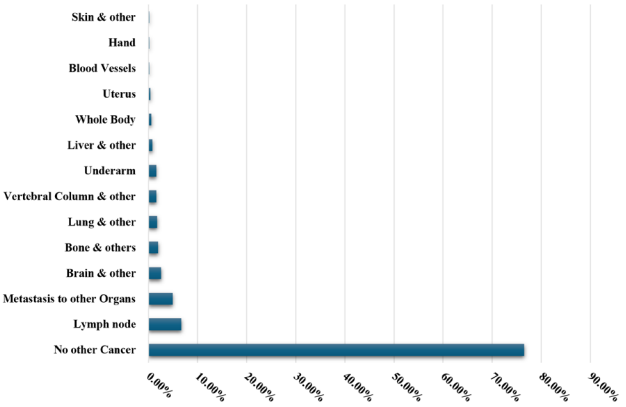


Fig. 6 **Percentage of Metastasised Patients with Breast Cancer.**

Table 3. **Number and Figure 6: percentage of metastasised cases from breast cancer cas**

| Other cancer | Number of patients | % of patients |
|---|---|---|
| No other Cancer | 388 | 76.53% |
| Lymph node | 34 | 6.71% |
| Metastasis to other Organs | 25 | 4.93% |
| Brain & other | 13 | 2.56% |
| Bone & others | 10 | 1.98% |
| Lung & other | 9 | 1.78% |
| Vertebral Column & other | 8 | 1.57% |
| Underarm | 8 | 1.57% |
| Liver & other | 4 | 0.79% |
| Whole Body | 3 | 0.59% |
| Uterus | 2 | 0.39% |
| Blood Vessels | 1 | 0.20% |
| Hand | 1 | 0.20% |
| Skin & other | 1 | 0.20% |

## Discussion

Research has revealed a correlation between the risk factors for a family history of breast cancer and the development of breast cancer. Thirty-one percent of individuals had a positive family history, with 36% having a first-degree relative, 50% having a second-degree relative, and 13% having both

a first- and second-degree relative. This research included 507 patients, with 506 females and just one male. The most prevalent age group was 45–50 years, accounting for 19.7% of the patients, whereas the least common age group was 85–90 years, accounting for only 0.2% of the patients. The cancer site consisted of 235 cases on the left breast (49.9%), 227 cases on the right breast (44.7%), and 27 cases of bilateral breast cancer (5.3%). The majority of these cases are from Baghdad. Breast cancer in families is related to gene mutations or alterations, specifically in the BRCA1 or BRCA2 genes, which are passed down from parent to child. These genes synthesise proteins that facilitate DNA repair in healthy cells. Genetic mutations may result in aberrant cell proliferation, ultimately leading to the development of cancer.[21,22]

The International Agency for Research on Cancer states that women who have a family history of the illness, with or without a documented genetic predisposition, are at greater risk. As a result, they may benefit from more frequent and earlier screening than those with an average risk.[23]

A study conducted in the United Kingdom involving the general population revealed a risk range of 3.5 times (with a 95% confidence interval of 2.56–4.79) between individuals with the lowest and highest family history. In the case of women who had two or more relatives with breast cancer, which is considered the most significant conventional familial risk factor, there was a 2.5-fold increase in risk (with a confidence interval of 1.83–3.47). The optimal model for assessing the risk of breast cancer on the basis of family history was determined via likelihood ratio tests, which revealed that the most effective approach included considering both the family history and the age of the relative at the time of diagnosis.[16,24–26]

The results provide preliminary support for the idea that education and early detection should be the primary focus of any comprehensive breast cancer control program in Iraq. The alarming trends in breast cancer rates among local women underscore the critical need to make early diagnosis a top priority.

## Conclusion

We conclude that the majority of breast cancer patients are diagnosed on the left side. Among the 507 patients, 31.7% had a positive family history of breast cancer, whereas 68% had a negative family history. The majority of patients had a second-degree relative to positive cancer history, with 58 (36.02%) having a first-degree relative to positive cancer history. The highest percentage of positive family history cases was having a second-degree relative. Fewer than 13.66% had both first- and second-degree relatives with a history of breast cancer. Most cases do not show metastatic features, with most metastatic cases being spread to the lymph nodes. Our study highlights the prevalence and characteristics of breast cancer patients with a positive family history in Iraq. The insights gained can inform prevention strategies, early detection programs, and personalised care for individuals with familial breast cancer, ultimately contributing to more effective healthcare interventions.

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## Conflicts of Interest

The authors declare that they have no conflicts of interest in this research.

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