# Factors Associated with Delay in CA Breast Diagnosis in Mayo Hospital, Lahore

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**Abstract**

**Objective:** This study was designed to determine the frequency and factors responsible for delayed diagnosis of breast cancer at tertiary care hospital, Lahore.

**Material and Methods:** This was a cross-sectional study with non-probability purposive sampling conducted at the Oncology department of tertiary care hospital, Lahore, among 200 adult women (>18 years) with confirmed breast cancer through biopsy technique. Data was gathered through a pre-tested questionnaire and analyzed using the SPSS version 23, p-value <0.05 was taken as significant.

**Results:** Delay can be categorized into two broad categories, i.e. delay in consultation (patient delay) and diagnosis delay (system delay).Only seven patients reported in time. Patient delay was observed in 12(6.2%) cases, system delay was reported by 4(2.1%) patients and combined delay (patient and system) was 177(91.7%). The most frequent reasons for the delay in a patient's diagnosis were embarrassment to conduct a breast examination (74%) and lack of information (73%). Other factors included: not interested in treatment (59%), financial limitations (53.5%), competing life priorities (48%), fear of cancer diagnosis/treatment (45%), fear of cancer (45%), appointment delay (20%), fear of medication (10%) and false negative diagnostic test (2.5%). Financial limitations, competing life priorities, no interest in treatment, skin changes, and family history of Breast cancer were significantly related to delays.

**Conclusion:** Delayed presentation was observed in 193 (96.5%) of patients, which is quite high. Health education sessions and health system improvement are required to address significant factors.

**Keywords:** Diagnosis delay, System delay, Patient delay, breast cancer.

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## Introduction

Cancer is a cluster of diseases that can occur in any organ or tissue, characterized by aberrant growth of cells exceeding the usual boundaries and invading adjacent tissues. Cancer is the second chief cause of demise worldwide.[1]

Breast cancer has become an important health challenge.

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The topmost type of cancer in females is breast cancer. The number of Brest Cancer cases in females is far more than Lung Cancer in males. Approximately, 2.26 million cases were reported in the year 2020. Although it is perceived as a disease of the developed world, but more than half of diagnosed cancer cases and two thirds of death claims due to cancer are from the underdeveloped countries.[2,3]

The prevalence of Breast Cancer (BC) is on the rise in Pakistan, and it is expected that one in nine women has a chance to develop it. According to a prediction model across 42 low- and middle-income countries (LMIC) in a recent study, age-standardized breast cancer incidence, mortality and disability adjusted life years DALYs rate will be 76, 52 and 1679 per 100,000 population from 2020-2050 which will be the highest in Asia.[4,5] High

mortality due to breast cancer can be reduced through early diagnosis and prompt treatment. However, delayed presentation to health care and delayed initiation of treatment has been observed in LMIC. Delays have been observed from the appearance of symptoms to medical consultation to disease diagnosis and treatment. Early diagnosis is directly associated with a better prognosis.[5,6,7]

Scientific studies have proved that global delay more than three months leads towards shorter survival. Global delay for breast cancer can be divided into two categories:

**(1) Patient delay (PD):** Time period between symptom onset to first medical checkup

**(2) System delay (SD):** Time period between first medical checkup to treatment

About 69.9% of Pakistani women present at a medical facility with stage III or IV disease and delay of approximately 6 months have been observed.[6-8] For patient delay, old age, low education, marital status, socioeconomic conditions, other life priorities, lack of awareness, cancer stigma, history of benign cancer disease were found significant factors in different studies. Denial, search of alternate medications and fear are also associated factors.[4,6,8,9]

Poor health care system, health care assessment, long waiting queues for appointments, lack of diagnostic facilities, false negative biopsies and lack of screening through mammograms, rural residence, old age and illiteracy are main factors for system delay.[4,6,7,9] According to literature search, System delay has not been well elaborated, especially in Pakistan.[9,10]

Hence, this study has been formulated to find out the frequency and factors of various types of delays in Breast Cancer diagnosis at tertiary care hospital, Lahore. This insight will provide information to policymakers, Government officials and Health care providers to provide better access to screening programs, health care delivery services and patient awareness for better outcomes.

## Material & Methods

It was a cross-sectional study using non-probability purposive sampling conducted among women presenting in Oncology department of a teriary care hospital, Lahore, for Breast Cancer. The sample size was 200 women, by taking an expected percentage of delayed presentation of breast cancer patients as 39.01%[11]. After permission from the ethical review committee of the Institute of Public Health, Lahore through letter No. 53/ERC/IPH and informed consent from partici-pants, a semi-structure questionnaire was utilized for data collection. All women age > 18 years and confirmed breast cancer through biopsy (reports were available with her) presenting at the oncology department for Breast Cancer at tertiary care hospital, Lahore were included except women who refused to consent, women with no histological evidence of invasive breast cancer, noncancerous lumps, women with psychiatric illness or amnesia and critically ill women who were unable to communicate. The first part of the questionnaire consisted of socioeconomic characteristics such as age, education, marital status, employment, family income and residential location (rural-urban). The second part comprised of disease related information such as breast cancer detection method, family history of breast cancer and first clinical presentation (Lump, breast pain, nipple discharge, skin changes, bone pain, backache, ulcer over breast, weight loss and change in breast shape). The third part included delay or in time arrival at hospital, if delay then type of delay (Patient delay/System delay/ both) and details of factors resulting in delayed presentation of patient. Patient delay factors were lack of information, embarrassment, no interest in treatment due to poor prognosis, competing life priorities, financial constrains and use of alternative medications. System delay factors were appointment delay, fear of medication, false negative diagnostic test and negative physical beast examination Data was entered and analyzed using SPSS version 23 and p-value $\leq 0.05$ was taken as statistically significant.

## Results

Among 200 participants, only 7(3.5%) patients presented on time and 193 (96.5%) reported late. The mean age of the patients was 48.95±10.68 years; the minimum age was 22 years and the maximum was 77 years. About 98(49%) of patients were from urban areas and 102(51%) were from rural areas. A major proportion of participants, 151(75.5%) were illiterate whereas 138(69%) patients had monthly family income less than twenty thousand. About 148(74%) women were married, 13(6.5%) were unmarried and 39 (19.5%) were widows; 183(91.5%) were unemployed. Breast cancer was 100% self-detected through self breast examination. As far as medical history was concerned, 197 (98.5%) had lumps, 167 (83.5%) observed skin changes, 170 (85%) had breast ulcer, 160(80%) had breast pain and only 81(40.5%) had nipple discharge. Bone pain and arm pain were observed

in 29 (14.5%) and 75 (37.5%) women, respectively. About 48 (24%) women had a history of hormonal contraception, and 14(7%) women had a history of using HRT. Approximately 169 (84.5%) women had a history of breastfeeding and 127 (63.5%) women had a family history of breast cancer.

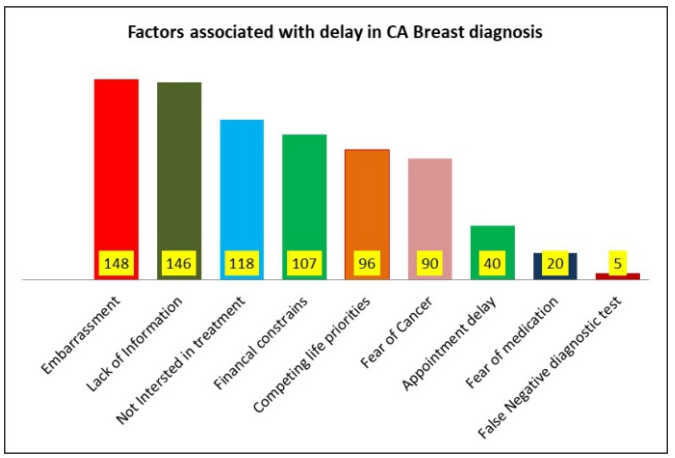


**Fig 1:** *Factors associated with delay in Breast Cancer*

**Table 1:** *Inferential statistics regarding patient presentation*

| Variable | Within Time | Delay | p-value |
|---|---|---|---|
| | Mean±SD | Mean±SD | |
| Consultation time in months (Patient related) | 2.77±0.66 | 13.79±9.49 | 0.000* |
| Diagnosis time in months (System related) | 3.44±2.55 | 11.17±7.70 | 0.003* |
| Total Delay in months | 6.22±1.92 | 24.97±16.54 | 0.000* |

| Variables | | Mean | SD | p-Value |
|---|---|---|---|---|
| **Patient Related** | | | | |
| Financial Constraints | Yes | 15.4 | 11.66 | 0.000* |
| | No | 10.88 | 5.45 | |
| Competing life priorities | Yes | 11.36 | 9.19 | 0.006* |
| | No | 15.0 | 9.58 | |
| Not interested in Treatment | | 11.35 | 7.65 | 0.000* |
| | | 16.09 | 11.24 | |
| **System Related** | | | | |
| Financial Constraints | Yes | 12.69 | 9.47 | 0.000* |
| | No | 8.68 | 4.08 | |

**P-value <0.05 significant: Test Applied: t-test*

*Diagnosis*

**Table 2:** *Patient delay in relation to various variables (n=200)*

| Variable | | Patient presentation | | | | p-value | Remarks |
|---|---|---|---|---|---|---|---|
| | | Within Time | | Delayed | | | |
| Financial Constraints | Yes | 2 | 1.87% | 105 | 98.13% | 0.05 | Significant |
| | No | 7 | 7.53% | 86 | 92.47% | | |
| Skin Change | Yes | 5 | 2.99% | 162 | 97.01% | 0.02 | Significant |
| | No | 4 | 12.12% | 29 | 87.88% | | |
| Breastfeeding | Yes | 5 | 3% | 164 | 97% | 0.331 | Insignificant |
| | No | 2 | 6.5% | 29 | 93.5% | | |
| Family history of Breast Cancer | Yes | 2 | 1.57% | 125 | 98.43% | 0.00 | Significant |
| | *No* | 7 | 9.59% | 66 | 90.41% | | |

**P-value <0.05 significant. : Test Applied: chi-square*

## Discussion

Breast cancer is the most prevalent malignancy among females worldwide. In Asia, Pakistan is among the top countries with the highest incidence and mortality associated with it.High mortality is directly linked with delayed presentation by patient or by health care services. Various factors are responsible for it. Hence, this study has been formulated.[4,5,6]

Among 200 participants, only 7(3.5%) patients presented on time and 193(96.5%) reported late. Late presentation was patient delay, system delay or both, while the cut-off value was marked for ≥ 3 months. A study suggested a cut-off value of 3 months for patient delay and 1 month for system delay, however research reported that for developed countries, the median delay was 9-61 days, but it is more in under-developed and developing countries such as it was observed 7.5 months and 13 months for Libya and Uganda respectively. An average of 11.6 months delay was observed in Tunisia. In different Pakistani studies, delay more than three months and up to 12 months have been reported. System delay has not been much investigated in the Asian context.[6,12,13] A delay of > 3 months was observed in 88.8%, 50.5% in Pakistan and Ethiopia respectively. In the current study, if the cut-off value is lowered to one month, then there would be 100% delay as no patient reported or diagnosed at a health care facility within a month due to poor health seeking behavior by patients and overburdened health care delivery system.

A delay of 95% by Talpur et al., and 89% by Gulzar et al., 70%,& 72 % by Maghous et al. and 66% by Baig et al. were reported in different studies.[4,11,15,16,19]

In this study, the mean age of study participants was 48.95±10.68 years. The age of study participants ranges between 22 and 77 years. A study conducted in Iran by Talpur AA reported the mean age of patients was 43.5 ± 10.38 which reflected that comparatively there is breast cancer presentation at younger age in Iranian patients.[14] In another study, peak incidence was seen between 31–45 years of age. In different studies conducted in Pakistan, Morocco, Malaysia and Iraq reflected mean age of the participants were of 45.38, 49.5±11.6, 49.5±11.6, 26.52 ± 6.90, 34.0±11.2,48.3 ± 10 and 49.6 ± 114 years respectively. All these studies revealed that the occurrence of breast carcinoma is increasing in the young population. A recently published local study reported that 65.6% of the women were of 40 years of age.[15-20]

In the current study, factors associated with patient delay were embarrassment 148(74%), lack of information 146(73%), not interested in treatment 118(59%) financial constrains 107(53%), competing life priorities 96(48%) and fear of cancer 90(45%). For system delay, the main factors were appointment delay 40(20%), fear of medication 20(10%) and false diagnostic test 5(2.5%). According to Rahool et al., in Sindh province about 21.8% reported delay due to embarrassment. It was also reported in other studies conducted in Syria, Pakistan.[4,9,10] In a study in Malaysia, about 38.1% of women were emba-rrassed due to breast examination.[19] Although shyness and embarrassment were observed in different countries, but it was a main concern in our study. It can be justified as there are sociocultural differences globally. Lack of information was reported in 77.2%,55.2%,55.4% and 41% of women in Pakistan and Ethiopia.[8,18,16,25] The results are quite comparable to this study. Lack of infor-mation, financial constrains and competing life priorities were the factors also reported in a study in Syria and Rabat, Morrocco.[9,14] A study conducted in Iraq concluded that lack of information was a significant factor for delayed presentation, with p value < 0.001.[20] There is low awareness about breast cancer, its symptoms and successful treatment among the population. The widespread misconception in the public is that if a person who is suffering from any kind of carcinoma has no or minimal chances of survival and there is no treatment that can cure cancer. So, the lack of information contributes to the late diagnosis of breast cancer and no interest in treatment, which land towards greater chances of mortality. Appointment delay was observed in 40(20%) patients. Scarcity of physicians leading to appointment delay is a significant contributing factor in system delay as quoted by Afaya et al. in a systemic review.[12] In this study, financial limitations constrains is a significant factor with p value of 0.00. Low socio-economic status is significantly associated with delay representing financial constrains with p value of 0.015, 0.027 and Odd's ratio of 8.11 respectively.[4,7,8] A study conducted by Gulzar et al., and Saleem et al., about 67.2% and 77.2% patients reported financial limitations respectively in seeking medical help with P < 0.001 and 0.03 respectively.[11,15,18] A study conducted in the USA among 1302 women cohort for ten years and in northern Pakistan and revealed financial limitations as a significant factor with Odd's ratio of 0.62 and 2.29.[21,22] Similar results were obtained from stud conducted in Iran by Dianatinasab et al., where income was significantly associated with delayed presentation with odd's ratio of 0.07 and 95% CI 0.008-0.63.[22] This indicates the significance of screening and free facilitation for the underprivileged population and not leaving them at the mercy of this heinous disease. Family History of Breast cancer is a contributing factor for patient delay with p value of 0.00. However, different studies revealed that patients with a family history arrived earlier at health facility as evident by studies conducted in Rabat with p value < 0.001, in the USA with OR 1.79 and a 5% CI 1.00-3.19, in Iran with OR = 3.82; 95% CI, 1.05-5.05.[15,22,24] This can be attributed that poor prognosis in family members made them realize that cancer is not a treatable disease. This myth needs to be addressed through community awareness, specially among caregivers of cancer patients. As this was a hos-pital based study with convenient purposive sampling, hence results cannot be generalized. Moreover, there is a possibility of recall bias, as patients either do not remember the exact date of symptom onset or under-report their delay to circumvent guilt. However, proper data collection by researcher and verification through medical laboratory reports were ensured. More studies from different oncology departments of hospitals need to be conducted

## Conclusion

Delayed presentation was observed in 193(96.5%) of patients. Financial limitations, competing life priorities, no interest in treatment, skin changes and family history of Breast cancer were significantly connected with delays.

**Conflict of Interest:** None

**Funding Source:** None

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## Authors Contribution

**SK:** Conceptualization of Project
**AA:** Data Collection
**RH:** Literature Search
**AR:** Statistical Analysis
**AA, ZT:** Drafting, Revision
**SK:** Writing of Manuscript