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Original Article

Factors Affecting Presentation Delay to the Hospital Among Breast Cancer Patients: A Retrospective Analysis

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Abstract

Objective: Breast cancer constituted 13.5% of all reported new cancer in India, with a notable mortality rate due to late presentation. The current research aims to address the extent of delay in presentation to the hospital and the factors that contribute to delayed presentation among breast cancer patients.

Materials and methods: A descriptive cross-sectional study was conducted among 138 primary breast cancer patients aged 18 to 60 years, with a time lag of more than 2 weeks between the initial recognition of symptoms and the first medical interaction. These patients were attending the oncology Outpatient Department (OPD) of tertiary care center in Central India, where female breast cancer patients receive treatment and follow-up care. The analysis employed binary logistic regression to assess the factors significantly affecting the delayed presentation to the hospital.

Results: Most of the participants were aged between 40 and 50 years and did not have a family history of breast cancer. The median delay in presentation to the hospital was 2 months. Women having breast lump as initial breast symptom tend to present late (> 3 months) to the hospital (p=0.037) and if the breast lump was smaller, they are more likely to delay seeking medical attention compared to those with larger breast lump (p=0.012).

Conclusion: The study indicates that many patients delayed seeking help due to small breast lumps. Improved screening services are needed for early detection. Future awareness campaigns should emphasize the link between breast lumps and cancer to reduce delays and improve patient quality of life.

Keywords: Breast Cancer; Delayed Presentation; Hospital

Introduction

In 2020, global cancer incidence reached an estimated 19.3 million cases, with India ranking third globally (1, 2), and breast cancer stood as the most prevalent cancer worldwide (1). According to the GLOBOCAN data from 2020, in India, breast cancer constituted 13.5% of all reported new cancer cases with total of 178361 new cases. Sadly, it was responsible for 10.6% of all cancer-related fatalities, claiming 90,408 lives. The cumulative risk of developing breast cancer in India was calculated to be 2.81 (2). The escalating prevalence of breast cancer, both on a global scale and specifically within India, has emerged as a profound cause for concern (1).

It is unsurprising that a majority of breast cancer patients in India receive treatment at the locally advanced and metastatic stages of the disease (3). In India, close to 60% of breast cancer cases are

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identified at stages III or IV of the disease (4). The initial presentation of breast cancer, typically in the form of a lump, is often not accompanied by pain and contributes to a delay in seeking treatment, affecting 50% to 70% of cases in rural areas (4, 5). It was observed that the period between women self-detecting a breast lump and their hospital presentation ranged from 2 days to 6 years and delayed presentation at a later stage is associated with a less favourable prognosis (6).

The majority of patients seek healthcare only when they have a noticeable, sizable mass or when secondary changes like local skin or chest wall alterations become visible and other contributing factors to late presentation include a lack of awareness about the disease, particularly in rural areas (4). The prevalent myths and widespread ignorance within Indian society contribute to an unwarranted fear of breast cancer, often deterring women from seeking timely medical care and this can be due to various factors such as illiteracy, limited awareness, and financial constraints. (7, 8). Women with lower financial means were more prone to encountering delays in seeking medical attention (9). Age, educational background, occupation, place of residence, consultation with traditional healers, the presence of an armpit lump, and concurrent medical conditions emerge as significant factors contributing to delayed presentation (10). Women who did not consult a traditional healer were 62% less likely to experience delays, while those without an armpit lump were roughly 9 times more inclined to encounter delays. The primary reasons cited for delayed arrival at health facilities among breast cancer patients were underestimating the seriousness of the disease, lacking awareness of symptoms, and seeking assistance from traditional healers (10) The breast symptoms were not causing any pain or discomfort was also found to be the reason for presentation delay of ≥ 3 months (11). A more extended delay in presentation showed a significant association with decreased survival (11, 12).

To address this growing burden of breast cancer-related mortality, it is imperative to prioritize early detection strategies. Early detection of breast cancer is instrumental in reducing the necessity for intensive treatment, thereby resulting in lower healthcare costs, diminished side effects, and an overall enhancement in the quality of life for patients. Early detection hinges on the prompt presentation of individuals to healthcare facilities. Therefore, the present study aims to identify the extent of delay in presentation to the hospital and the factors that contribute to delayed presentation to the hospital among breast cancer patients in the Indian context.

Materials and methods

A descriptive study was conducted from 18 February 2023 to 8 November 2023 at Oncology OPD of All India Institute of Medical Sciences (AIIMS), Bhopal. Participants who met inclusion and exclusion criteria were selected from Oncology OPD and retrospective data regarding presentation delay to the hospital and factors influencing presentation delay were collected from the participants by administering a self-structured questionnaire.

In this study, non-probability convenient sampling technique was used as it is more practical and suitable. The study population was primary breast cancer diagnosed females aged 18 and 60 years having >2 weeks of delayed presentation to the hospital and willing to participate in the study. Women diagnosed with cognitive impairment, psychological problem, who are unable to give responses, those with recurrence of breast cancer and patient with any other cancer that metastasize to the breast and not able to understand both Hindi and English were excluded from the study. Detailed flow diagram of study participants is given in Figure 1.

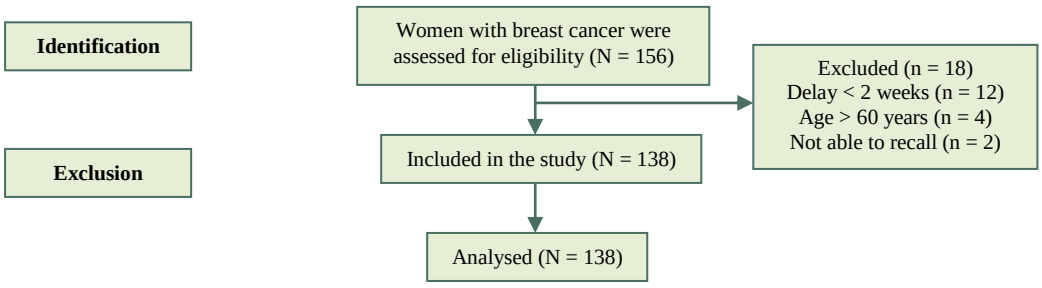

Figure 1: Flow diagram of the study participants as per STROBE guidelines

In the current study research variables included delayed presentation to the hospital and the factors affected delayed presentation to the hospital. Delayed presentation here refers to time lag of more than 2 weeks since initial recognition of breast cancer symptoms and first medical interaction among breast cancer patients.

To minimize potential recall bias, women were asked to remember the onset of first breast change and first visit to healthcare professional with the help of calendar and cultural festival dates, which was confirmed by the patient family members.

Based on the pilot study results, the sample size was calculated using a 6.6% prevalence of 6-month delayed presentation among breast cancer patients, with a significance level of 0.05 and 80% power. Estimated sample size was 94, whereas total number of participants enrolled for the study was 138.

In order to meet objectives of the study three structured questionnaire sections were prepared to collect data from breast cancer patients:

- Section A consisted of questions to assess socio-demographic and clinical characteristics of the participants.
- Section B included questions to assess duration of presentation delay to the hospital among breast cancer patients.
- Section C comprised of total 22 structured statements to assess factors affecting delayed presentation to the hospital among breast cancer patients categorized into 4 domains:
- Physical factors : consisted of 4 statements
- Knowledge factors : included 5 statements
- Psychological factors :comprised of 9 statements
- Socio-cultural factors: involved 4 statements.

Content validity of research tool was established from the panel of expert in the field of Medical-Surgical Nursing, Medical Oncology and Radiation Oncology. The Content validity index was calculated for various sections, including sociodemographic variables, clinical variables, presentation delay to the hospital assessment, and factors affecting presentation delay. The calculated indices were 0.94, 0.97, 1, and 0.99, respectively. The split-half correlation value was utilized to assess the reliability of the factors related to delayed presentation to the hospital, yielding a calculated value of 0.79.Tool was found to be valid (13, 14) and reliable (15, 16) to conduct the study.

The pilot study revealed the feasibility of the study. Using screening tool study participants were selected. An explanation of the study was given using participant information sheet first, and informed consent was obtained from them. Information regarding presentation delay to the hospital and factors affecting presentation delay was collected from the patient through face-to-face interview using structured questionnaire.

Data were analysed using the SPSS version 16 (IBM) software. Descriptive data were presented as frequencies and percentages. χ^2 test or Fisher's exact test was used to evaluate the association of sociodemographic and clinical variables with presentation delay. A multiple logistic regression model was used to adjust for the effect of certain factors, and finding presented as Adjusted Odds Ratio (AOR) and P was considered statistically significant at less than 0.05 level.

Results

Data of 138 breast cancer women were analyzed.43.5% of participants were aged 40 to 50, with 78.3% being housewives. Most were Hindu, and 92.0% had no history of oral contraceptive pills uptake. A detailed description of the socio-demographic characteristics of the participants is shown in Table 1.

93.5% of respondents had no family history of breast cancer, and 97.8% rarely or never performed breast self-examination. A detailed description of the clinical characteristics of the participants is shown in Table 2.

The median delay in presentation to the hospital was 2 months ranging from 15 days to 3 years. Percentage distribution of delayed presentation is given in Figure 2. Among women who presented late, breast lump was the most common first breast change observed, which was found to be significantly associated with delayed presentation (p=0.037).

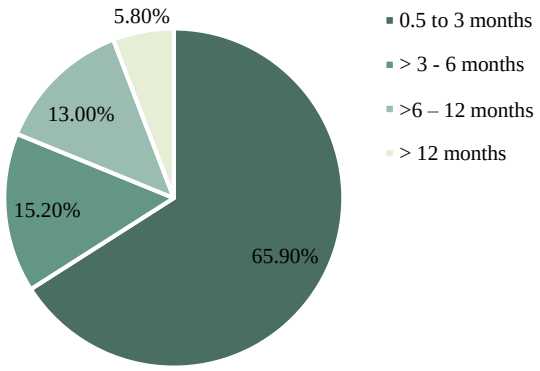

Figure 2: Percentage distribution of delay in the presentation to the hospital among breast cancer patients

Table 1: Description of the socio demographic variables of study participants (n=138)

Socio-demographic variables		Frequency (Percentage)
Age in years	18 – 28	2 (1.4%)
	29 – 39	26 (18.8%)
	40 – 50	60 (43.5%)
	51 – 60	50 (36.2%)
Level of education	Unable to read and write	36 (26.1%)
	Primary education and less	25 (18.1%)
	Secondary education	41 (29.7%)
	Higher secondary education	11 (8.0%)
	College and above	25 (18.1%)
Occupation	Housewife	108 (78.3%)
	Government employee	8 (5.8%)
	Private employee	5 (3.6%)
	Have own business	7 (5.1%)
	Others	10 (7.2%)
Marital status	Unmarried	2 (1.4%)
	Married	124 (89.9%)
	Divorced	1 (0.7%)
	Widowed	11 (8.0%)
Residence	Rural area	67 (48.6%)
	Urban area	71 (51.4%)
Number of children	Nil	4 (2.9%)
	1	8 (5.8%)
	2	64 (46.4%)
	3	37 (26.8%)
	>3	25 (18.1%)
Religion	Hindu	122 (88.4%)
	Muslim	13 (9.4%)
	Others	3 (2.2%)
History of oral contraceptive pills use	Yes	11 (8.0%)
	No	127 (92.0%)
Socio- economic status	Upper	2 (1.4%)
	Upper middle	8 (5.8%)
	Lower middle	42 (30.4%)
	Upper lower	80 (58.0%)
	Lower	6 (4.3%)

Thus, women having breast lump as initial breast symptom tend to present late (>3 months) to the hospital.

Table 2: Description of the clinical variables of study participants (n=138)

Clinical variables		Frequency (Percentage)
First change of breast observed	Breast Lump	106 (76.8%)
	Swelling under axilla / palpable axillary lymph nodes	6 (4.3%)
	Breast pain	10 (7.2%)
	Tingling	4 (2.9%)
	Nipple problems/ Abnormal Discharge per nipple	8 (5.8%)
	Two breasts are not equal in size or shape	2 (1.4%)
	Breast dimpling	2 (1.4%)
Family history of breast cancer	Yes	9 (6.5%)
	No	129 (93.5%)
Breast self-examination	At least once a month	3 (2.2%)
	Every 3 month	0 (0%)
	Rarely or never	135 (97.8%)
No Comorbid illness	Yes	102 (73.9%)
	No	36 (26.1%)

While other sociodemographic and clinical variables show no statistical significance with presentation delay to the hospital. Detailed description of factors affecting delayed presentation to the hospital is given in Table 3.

Factors with a frequency percentage greater than 7% are selected for univariate binary logistic regression to assess the statistically significant factors affecting delayed presentation to the hospital.

Table 3: Frequency and percentage distribution of factors affecting delayed presentation to the hospital among breast cancer patients (n=138)

No.	Variables	Response	Frequency (Percentage)
1.	There was no diagnostic/ treatment facility near me.	Yes	24 (17.4%)
		No	114 (82.6%)
2.	I was too busy in my household chores/ job.	Yes	45 (32.6%)
		No	93 (67.4%)
3.	Breast Lump was too small.	Yes	69 (50.0%)
		No	69 (50.0%)
4.	The symptoms were not causing any pain or discomfort for me.	Yes	105 (76.1%)
		No	33 (23.9%)
5.	I didn't know where to go for consultation for these observed breast changes.	Yes	17 (12.3%)
		No	121 (87.7%)
6.	I thought it is due to pregnancy/ effect of lactation.	Yes	3 (2.2%)
		No	135 (97.8%)
7.	I didn't have knowledge about Breast Cancer.	Yes	120 (87.0%)
		No	18 (13.0%)
8.	I thought it will be relieved by itself.	Yes	89 (64.5%)
		No	49 (35.5%)
9.	I thought it was not serious and didn't require medical attention.	Yes	101 (73.2%)
		No	37 (26.8%)
10.	I was afraid what others will think about it.	Yes	13 (9.4%)
		No	125 (90.6%)
11.	I was embarrassed to talk about my breast condition to others.	Yes	23 (16.7%)
		No	115 (83.3%)
12.	I was afraid to going out due to COVID-19 pandemic.	Yes	7 (5.1%)
		No	131 (94.9%)
13.	It don't want to accept my condition/ Denial.	Yes	7 (5.1%)
		No	131 (94.9%)
14.	I had fear of husband abandonment.	Yes	0 (0%)
		No	138 (100%)
15.	I was afraid of possible diagnosis of Cancer or any severe illness.	Yes	9 (6.5%)
		No	129 (93.5%)
16.	I was afraid of the treatment.	Yes	7 (5.1%)
		No	131 (94.9%)
17.	I didn't had trust on health care system.	Yes	1 (0.7%)
		No	137 (99.3%)
18.	I had fear that I might die.	Yes	1 (0.7%)
		No	137 (99.3%)
19.	My religion didn't allow me to take medical consultation about this condition.	Yes	1 (0.7%)
		No	137 (99.3%)
20.	I sought alternative treatment first for these symptoms.	Yes	26 (18.8%)
		No	112 (81.2%)
21.	I was concerned about the cost for the treatment.	Yes	20 (14.5%)
		No	118 (85.5%)
22.	Any other (Lack of family support)	Yes	10 (7.2%)
		No	128 (92.8%)

In the univariate logistic regression analysis, it was observed that patients were more likely to delay presentation to the hospital was the one who thought their breast lump was too small (p = 0.008) or they were embarrassed to talk about their breast condition to others (p=0.04) (Table 4).

However, in the multivariate analysis, patients with smaller breast lump are more likely to delay presentation i.e. 2.59 times, compared to those with larger breast lump (p=0.012), after adjusting for the effect of factor "I was embarrassed to talk about my breast condition to others" (Table 5).

Discussion

In the present study information was collected from 138 breast cancer female patients regarding the time they took to present their initial breast cancer-related symptoms to medical personnel. The median duration of delayed presentation was 2 months, ranging from 15 days to 3 years. Breast cancer patients who noticed a breast lump as their first observed breast change were significantly more prone to delay their presentation to the hospital compared to those who observed other breast changes initially.

The statistically significant factor identified using multiple binary logistic regression was "breast lump was small" which resulted in delayed presentation Therefore, breast cancer patients with smaller breast lumps have a 2.59 times higher chance of delaying their presentation to the hospital compared to those with larger breast lumps.

Nearly half of the patients in the present study with delayed presentation were between the age of 40 to 50 years. Similar findings are noted in other Indian studies (6, 17). Advancing age is traditionally correlated with a tendency to delay presentation, although conflicting evidence is present. (18, 19) In present study, only 2.2% participants performed breast self-examination at least once a month and one study also reported findings consistent with findings of present study. (20) There was no significant association found between socio-demographic variables and delayed presentation to the hospital. Similar findings of age (21, 22), residence (22) and socio-economic status (21, 22) not being significantly associated with delay was reported in previous reports. In line to the present study socioeconomic status was not found significantly associated with delay in north east India and Gaza.(6, 21-23) Meanwhile, the tendency for the older age group to seek healthcare later is reported in studies conducted by Thakur et al (6) and Shah P et al (23) Abdulkareem et al.'s study indicated that younger females tended to wait longer than their older counterparts, and rural women, along with those with lower levels of education, were at a higher risk of delayed presentation (24).

Breast lump was the most common first breast change observed by the patients in the present study and across the globe(17, 20–27), and significantly higher delay (p = 0.037) observed in the present study in those patients who had breast lump as their initial symptom compared to those who had other symptoms.

Table 4: Description of Univariate binary logistic regression analysis to find out the factors affecting delayed presentation to the hospital among breast cancer patients (N=138)

NO.	Variables	Odds Ratio	Confidence Interval		p-value
			Lower	Upper	
1.	There was no diagnostic/ treatment facility near me.	2.217	0.771	6.373	0.140
2.	I was too busy in my household chores/ job.	0.705	0.326	1.523	0.374
3.	Breast Lump was too small.	2.702	1.298	5.625	0.008*
4.	The symptoms were not causing any pain or discomfort for me.	1.251	0.538	2.909	0.602
5.	I didn't know where to go for consultation for these observed breast changes.	1.869	0.670	5.213	0.232
6.	I didn't have knowledge about Breast Cancer.	2.895	0.794	10.558	0.107
7.	I thought it will relief by itself.	1.712	0.797	3.678	0.168
8.	I thought it was not serious and didn't require medical attention.	1.877	0.800	4.400	0.148
9.	I was afraid what others will think about it.	2.479	0.782	7.856	0.123
10.	I was embarrassed to talk about my breast condition to others.	2.494	1.004	6.191	0.049*
11.	I sought alternative treatment first for these symptoms.	1.031	0.420	2.530	0.947
12.	I was concerned about the cost for the treatment.	1.722	0.658	4.507	0.268
13.	Lack of family support.	2.169	0.442	10.650	0.080

*indicates significant at p<0.05

Table 5: Description of Multiple binary logistic regression analysis to find out the factors affecting delayed presentation to the hospital among breast cancer patients

No.	Variables	Adjusted Odds Ratio	p-value
1.	Breast Lump was too small.	2.59	0.012*
2.	I was embarrassed to talk about my breast condition to others.	2.30	0.080

*indicates significant at p<0.05

Consistent results were observed in two Asian studies (20, 24) and contrast results of no significant association between initial breast change with delayed presentation was seen in an Indian (17) and a Malaysian (27) study. A common assumption was that breast lump was small or not causing any discomfort to them, therefore medical attention is not required. Women also misinterpret the breast lump with other non-serious disease condition that results in delayed presentation as they waited for the lump to heal by itself. Similar finding of breast pain being the second most common first breast change observed was found in studies conducted in India. (17, 22, 23).

A median delay of 2 months was observed in the present study is consistent with the findings of additional studies. (12, 28, 29) In contrast, certain studies have demonstrated a median delay o 2 months (6, 17, 20**).** The observation of 34.1% of participants delaying presentation for more than three months in the present study is corroborated by a similar percentage documented in an Indian study (26). Several research projects have reported contradictory findings, with a slightly greater percentage of patients presenting after more than three months. Specifically, percentages of 41.1% (20) and 46.4% (25) were reported in India, 50.5% in Ethiopia (10), 44% in Iraq (24), and 44.5% in Malaysia (29) respectively.

Factors affecting the delayed presentation were identified in the present study among participants. Upon searching for reports regarding the reasons for delay, consistent with other studies (23, 26, 29) the predominant factor contributing to delayed presentation was lack of awareness or knowledge about breast cancer. Awareness of cancer symptoms has been linked to increased attention to those symptoms and a reduced expected delay in seeking help (30). Similar findings to those of the current study were observed with comparable percentages under certain factors contributing to delayed hospital presentation like perception that symptoms did not signify a serious condition, the belief that symptoms would resolve over time, social stigma and financial constraints (20) Under psychological factors, embarrassment and fear of others judgment were the most common factor for delayed presentation in the present study. The perpetuation of such stigma can be contributed by the misunderstandings about the disease and the patriarchal dynamics within society, particularly in rural settings where women often rely on men for their healthcare. (31, 32) In the present study under socio-cultural factors, a common reason for delaying presentation was the first preference for alternative treatments, which included home remedies, spiritual approaches, herbal medicine, massage, etc. Concurrent findings was seen in a previous study conducted in the year 2020 in Malaysia (27). Patients often waited for their symptoms to subside by relying on these alternative therapies. While there is a lack of conclusive evidence regarding the effectiveness of alternative therapies in treating cancer, they often appeal to patients due to assertions of "minimal side effects", affordability and accessibility (33).

In the present study, multiple logistic regression revealed that smaller breast lump is significantly more likely to cause delay compared to those who had larger breast lump, whereas other factors included in the study were not found significantly affecting delayed presentation. Similarly, a Malaysian study observed breast lump as most common symptom of respondents and concluded that the main reason for seeking care was that the breast lump was getting bigger (27). In contrast, factors that were not significantly associated with delay in the present study were, however, found to be significantly associated with delayed presentation in other Indian and Malaysian studies, these factors encompassed awareness about breast cancer, adoption of alternative treatments (20), perceiving symptoms as non-serious and painless (21), lack of knowledge (26) and the belief that symptoms were not dangerous (27).

These study findings are generalizable to populations that share homogeneity and geographic similarity.

The present study findings will be helpful in developing future interventions related to breast cancer to prevent delay in presentation to the hospital. This project included multiple possible factors which

can affect the delay in presentation to the hospital among breast cancer patients. Adequate time was taken while collecting the information from each patient in order to find out the time lag and the factors which can affect the delay in presentation to the hospital among breast cancer patients. Patients were given the freedom to select multiple factors contributing to the delay in presentation, each of which they considered most significant.

However current study also faced limitations like, only one setting was involved in the study. Subjective evaluation was used for assessing delayed presentation to the hospital and there were possible chances of recall bias as it was a retrospective study.

Conclusion

Breast cancer is a prevalent cancer. The significant worry lies in delays in seeking medical attention and the tendency for individuals to present at advanced stages. The results of the study suggest that considerable number of patients experienced a small breast lump as a significant reason for the presentation delay. Therefore, better screening strategy related services for early identification can be provided and future awareness campaigns should highlight that any breast symptom have potential to be associated with breast cancer, which may help in reducing percentage of delayed presentation and further increase the treatment outcome and quality of life of the patients.

Conflict of Interests

Authors declare no conflict of interests.

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