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## Patient Delay, Diagnosis Delay and Treatment Delay for Breast Cancer: Comparison of the Pattern between Patients in Public and Private Health Sectors

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### ABSTRACT

**Background:** The purpose of this study was to compare patient delay, diagnosis delay and treatment delay in breast cancer patients of selected public and private health centers in Tehran, Iran.

**Methods:** In this cross-sectional study, female patients with newly diagnosed breast cancer in a public medical complex and a private breast clinic within one year were included. Patient delay was considered positive, if the interval between the detection of the first symptom by the patient and the first visit to a health care provider took longer than one month. Delay in diagnosis was defined as the period of more than one week between the first medical visit for the symptoms and the diagnosis of breast cancer. Following the confirmed diagnosis of breast malignancy, if the medical treatment was initiated later than one week, treatment delay had occurred. The potential reasons for patient, diagnosis and treatment delay according to the patients' reports were also recorded.

**Results:** Overall, 385 patients were included of whom 52.7% were recruited from the public hospitals and 47.3% from a private clinic. The prevalence of patient delay, diagnosis delay and treatment delay were 31.7%, 17.9% and 28.3%, respectively. Patient delay was significantly more common among patients with lower socio-economic status and those recruited from the public hospitals. All the patients with diagnosis delay were in the group recruited from the public hospitals.

**Conclusions:** Gaps between women of different socio-economic levels of the society need to be addressed in order to decrease patient, diagnosis and treatment delay.

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### Introduction

While Breast cancer is expected to account for nearly 29 percent of all new cancers among women, timely diagnosis and treatment is very important and can improve survival.<sup>1-4</sup> In the literature, various suggested intervals with different cut-offs exist to define delay.<sup>5</sup> Some authors consider patient delay as a period of more than "three months" between the



detection of symptoms by the patient and seeking the first medical advice.<sup>6</sup> Other investigators have categorized patient delay into periods of less than 1 month (short delay), 1 to 3 months (intermediate delay) and more than 3 months (long delay).<sup>7,8</sup> Similarly, different definitions and cut-offs exist for “diagnosis delay” as the interval between the first medical visit and the diagnosis of breast cancer.<sup>9</sup> There are other delay terms for breast cancer in the literature such as “system delay” which is the delay within the health care system in providing appointments, scheduling diagnostic tests, coming to a definitive diagnosis, and beginning treatment.<sup>10-12</sup> “Provider delay” is also another term which some authors use in referring to the time from first consultation with a health care provider until beginning of cancer treatment; while some others define it as the period of time between the first visit and diagnosis.<sup>13,14</sup>

Numerous authors have tried to explore the socio-cultural, economic and personal determinants of delay to develop preventive strategies and improve the patient outcomes.<sup>15</sup> Still, in developing countries, many patients delay in seeking medical advice after detection of a symptom in the breast or surrounding tissues.<sup>12,16</sup>

Most of the available literature on the prevalence and predictors of delay are from developed countries; while the mortality rates of breast cancer are higher -and in fact increasing- among less developed nations.<sup>4,17</sup> In these countries, the routine screening mammography is not widely utilized and patients commonly do not seek timely consultation for self-identified symptoms and thus present with more advanced stages.<sup>18,19</sup>

The purpose of this study was to compare patient delay, diagnosis delay and treatment delay in breast cancer patients of selected public and private health centers in Tehran, Iran.

## Methods

In this cross-sectional study, all consecutive female patients with newly diagnosed breast cancer in a public medical complex and a private breast clinic within one year were included. The main objective of the study was explained by the interviewer and they were invited to participate in the survey. Three delay intervals were created: patient delay, diagnosis delay and treatment delay. Patient delay was considered positive, if the interval between the detection of the first symptom by the patient and the first visit to a health care provider took longer than one month. The patients who delayed in seeking medical advice were asked regarding the potential reasons for their delay. Delay in diagnosis was defined as the period of more than one week between the first medical visit for the symptoms and the diagnosis of breast cancer. Following the confirmed diagnosis of breast

malignancy, if the medical treatment was initiated later than one week, treatment delay had occurred. The potential reasons for diagnosis and treatment delay according to structure interviews with patient were also recorded.

## Results

Overall, 385 patients were included of whom 203(52.7%) were recruited from the public hospitals and 182(47.3%) from a private clinic. Demographic characteristics of patients are demonstrated in Table 1.

**Table 1.** Demographic characteristics of patients

	N = 385
Age group (in years)	
<25	6 (1.6%)
25-34	30 (7.8%)
35-44	88 (22.9%)
45-54	123 (31.9%)
55-64	89 (23.1%)
>=65	47 (12.2%)
Missing	2 (0.5%)
Education	
Illiterate	64 (16.6%)
Primary school	97 (25.2%)
High school	43 (11.2%)
High school certificate	113 (29.4%)
University Education	66 (17.2%)
Missing	2 (0.5%)
Marital Status	
Never married	27 (7%)
Married (at the time of the study)	298 (77.4%)
Widow	47 (12.2%)
Divorced	3 (3.4%)
Economic status	
Low	166 (43.1%)
Moderate	160 (41.5%)
High	56 (14.5%)
Missing	3 (0.8%)
Place of residence	
Small cities, towns or villages	148 (38.4%)
Large cities	237 (61.6%)

In 73.1% of patients, the first clue for the malignancy was a symptom detected by the patient (excluding through breast self-exam) (n = 280), in 20.9 % by monthly self-examination of the breast (n=80), and in 6% by the periodic physician’s exam (n = 23).

The first presenting symptom had been a mass in 74.3% (n = 286), metastasis symptoms in 8.3% (n = 32), mastalgia in 7.3% (n = 28), skin retraction in 5.2% (n = 20), nipple discharge in 2.6% (n = 10) and breast ulcer in 2.3% (n=9).

The stage at diagnosis was stage 0 in 3.4% (n = 13), stage I in 18.2% (n = 70), stage IIa in 24.4% (n = 94), stage IIb in 24.2% (n = 93), stage IIIa in 13% (n = 50), stage IIIb in 3.1% (n = 12), stage IIIc in 4.9% (n = 19) and stage IV in 3.4% (n = 13) (missing = 5.5%, n=21).

The first health care provider that the patient had



visited for the first consult regarding the breast problem had been a surgeon in 40.8% (n = 157), a gynecologist in 31.4% (n = 121), a general practitioner in 14% (n = 54) and other health care personnel in 13.8% (n = 53).

Of the patients, 31.7% (n = 122) delayed more than one month after the first suspicious symptom to visit a health care provider. This was 43.1% among patients recruited from the public hospitals and 19.6% among those who were interviewed in the private clinic (P < 0.001).

There was a statistically significant association between patient delay and age; with the highest prevalence of patient delay among women under 25 years of age (66.7%), followed by 25-34 year-old patients (53.3%) and the lowest among women 55-64 years of age (20.2%) (P = 0.008). Considering the low number of patients who aged younger than 25 years, the first two groups were merged. Then, the highest prevalence of patient delay was 55.6% among women who aged less than 35 years (P = 0.001).

Women of lower economic status more frequently delayed for the first medical visit (41.8%), followed by those in moderate status (27.2%) and high status (16.1%) (P < 0.001).

Regarding the area of residence, women living in small cities or villages more commonly delayed (45.3%) in comparison to women residing in large cities (23.6%) (P < 0.001).

Educational status also showed a significant statistical association with delay; with the higher prevalence of delay in women who had not acquired high school certificate (37.4%) in comparison to more educated patients (26%) (P = 0.017). Patient delay did not show a significant association with marital status (P = 0.4).

Among patients seeking medical advice with delay, the most common explanation for this delay according to their self-reports was considering the symptom to be minor and not important (69.7%). Other reported reasons were lack of enough time for visiting a doctor, fear from the potential diagnosis of cancer and financial concerns for diagnosis and treatment.

In 82.1% of patients, the diagnostic procedure was performed within one week after the first visit. All the patients experiencing diagnosis delay were in the group recruited from the public hospitals. According to the patients' reports, the main reasons for this delay were reassurance of the physician regarding the presenting symptoms (42%), non-adherence to the physician's advice (26.1%), lack of access to mammography or ultrasonography in the area of residence (15.9%) and consulting various physicians without proceeding with the recommended diagnostic procedures (7.2%).

The associations between diagnostic delay and age group, educational level, economic status, stage

at presentation, and area of residence were not statistically significant.

Treatment delay occurred in 28.3% of patients (n = 109). The main reasons for initiation of treatment later than one week from the confirmed diagnosis of malignancy were long waiting lists for receiving treatment (49.5%), lack of availability of treatment facilities (14.7%) and financial problems (11%).

The highest prevalence of treatment delay was among women younger than 35 years of age (52.8%), followed by the 35-44 age group (34.1%) (P = 0.001). This was more common among women of low economic status (38.6%), followed by the moderate (23.1%) and high levels (12.5%) (P < 0.001). Patients recruited from the public hospitals more commonly encountered treatment delay (47.8%) in comparison with the patients visiting a private clinic (6.6%) (P < 0.001). Place of residence also showed a remarkable association with this type of delay: the relative frequency of treatment delay among patients living in small towns or villages was 43.2%, while this was 19.0% among the others (P < 0.001). Furthermore, initiation of breast cancer treatment in women with lower educational status was more commonly delayed (35.3%) in comparison with women who had high school certificate or university education (20.7%) (P = 0.002).

## Discussion

The purpose of this study was to show the prevalence and contributing factors of patient delay, diagnosis delay and treatment delay in two samples of newly-diagnosed breast cancer women in public and private health centers in Tehran, Iran. In our study, patient delay of more than 1 month, diagnosis delay of more than 1 week and -similarly-, treatment delay of more than 1 week were considered for further analysis.

According to the definitions explained above in methods, the prevalence of patient delay, diagnosis delay and treatment delay were 31.7%, 17.9% and 28.3%, respectively.

In a study from Iran published in 2005, the prevalence of more-than-1-month delay among advanced breast cancer patients was identical to the current study (32%).<sup>16</sup>

Patient delay in our study was most common among women younger than 35 years of age. This is very devastating when we consider the evidence that the mean age for breast cancer in Iran is about ten years less than the average in developed countries.<sup>20</sup> Some previous reports from Iran, Turkey and Nigeria have also shown this reverse association between age and patient delay.<sup>12,16,21</sup> This is in contrast to some other studies.<sup>8,22</sup> Ramirez *et al.*, in a review showed a strong evidence for increased risk of delay associated with older age.<sup>23</sup> The reverse association which is commonly observed in studies from



developing countries might be related to lower age and less awareness of breast cancer. Further research seems necessary to elucidate the reasons for this contrast among various reports.

In a study from Malaysia, only 33.2% of patients had consulted a health care provider within one month following appearance of symptoms. In our study, this was 68.3%. The most common stage at diagnosis of breast cancer was II which resembles our findings. Similar to our study, among the predictors of delay among women of Malay ethnicity were non-cancer interpretation of symptoms and the patient's attitude toward treatment. The contributions of other predictors like trying alternative therapies were not examined in our research. The authors concluded delays in seeking medical advice and timely diagnosis as serious problems in that country.<sup>24</sup>

In a study from Nigeria, the only predictor of more than three month delay was seeking alternative treatment for the symptoms. Overall, more than 73% of patients delayed for more than 1 month to see a doctor.<sup>25</sup>

Similar to our findings, other authors have reported that rural residence (or living in small cities) and low educational level of women have been associated with longer delays.<sup>14,16,26,27</sup>

In our study, like the report by Ozmen *et al.*, most of the malignant breast cancer were detected by patients and were predominantly presented as lumps.<sup>12</sup>

Fear from the potential diagnosis of cancer or from mastectomy has been another reason for delay, which can be attributed to some extent to lack of appropriate knowledge regarding the curability in case of timely diagnosis and treatment.<sup>16, 24, 27-30</sup> This highlights the importance of health initiatives that teach women regarding the essentials of breast cancer awareness.<sup>28,29,31,32</sup>

In our research, an explanation that women had regarding delay was under-estimation of the importance of the detected symptoms which was similar to the studies from Turkey<sup>12</sup>, Nigeria<sup>21</sup>, Libya<sup>28</sup> and Tunisia.<sup>33</sup>

Some patients said that they visited multiple doctors as they could not trust the opinion of the first one, and this had led to delay. It seems that "distrust and disregard" are two important predisposing factors for patient delay in various nations.<sup>12, 26</sup> In a study from Mexico, women with a self-identified sign/symptom of breast cancer experienced an average of 7.9 to 9 clinical visits before the confirmed breast cancer diagnosis, depending on stage due to the long waiting/referral time.<sup>19</sup>

All patients who confronted delay in receiving diagnostic assessments after the first contact with the doctor for the breast symptoms were in the group recruited from public hospitals. In other words, none

of the patients who visited a doctor in a private clinic incurred diagnosis delay. This demonstrates socio-economic disparity regarding timely diagnosis of breast cancer.<sup>4, 34-36</sup> Sharma *et al.*, in their review concluded that poverty is the most important barrier contributing to patient delay in developing countries.<sup>15</sup>

According to our findings, 31.7% of breast cancer patients visited a doctor later than one month following the first patient-detected symptom. The contributing factors to this delay were low socio-economic status, residing in small towns or villages and younger age. In fact, timely help-seeking showed significant association with social determinants of health such as education, economic status of the family and place of residence. All the patients experiencing diagnosis delay were in the group recruited from the public hospitals. Improving awareness of the women-especially those in lower socio-economic levels of the society- regarding the high prevalence of breast cancer, its warning signs and curability of this disease in case of timely diagnosis and treatment is necessary. Gaps between women of different socio-economic levels of the society need to be addressed in order to decrease patient, diagnosis and treatment delay. Physicians also need to suspect breast cancer earlier and prohibit re-assurance without following recommended screening or diagnostic guidelines.

Our study had some limitations. The reasons for delay were based on interpretation of the patients and their recall. The patients recruited from the public and private centers might not be representative. The public/university hospitals included in this study are considered as referral centers and thus, the underlying socio-economic context might contribute to patient, diagnosis or treatment delay. On the other hand, the patients visited at the private breast clinic and included in this research, might not be representative of all patients that are visited in private clinics in different parts of the city.

The contribution of some potential determinants of delay were not examined in this paper such as potential social and cultural barriers for seeking medical treatment for breast disease- as disease of a private part of the female body-, low priority of women's health issues even for themselves, lack of medical insurance and less stringent adherence of physicians to well-defined standards of screening, care and referral of patients.

Further research should examine the effect of various educational and infrastructural interventions on modifiable determinants of delay, especially in less developed countries.

Concerted public health initiatives are essential to show the importance of timely consultation, diagnosis and treatment of breast cancer to the members of the society and health care providers in order to decrease the related mortality rates and improve the patients' quality of life.



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