# RESEARCH COMMUNICATION

# Outcome of Breast Cancer in Iran: A Study of Tehran Cancer Registry Data

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## Abstract

    <u>Background</u>: Breast Cancer is the second most common cancer among Iranian women. This study was conducted to define the outcome of breast cancer which had been registered by Tehran Cancer Registry. <u>Methods</u>: All Tehranian breast cancer which registered from 1998 to 2001 was selected; the repeated cases were excluded according to their common name, family name, and Father's name. A simple data collection form was used to complete the demographic and diagnostic time and survival situation of the cases by five educated technicians with using phone interviews with patients or their families. All data were entered in Access file and then exported to SPSS-11.5, for descriptive and analytic analysis, p value was significant under 0.05. Since there were some cases had not phone number or the phone numbers were not accessible; 360 cases were selected with Simple Random Sampling and their hospital files were reviewed to complete the demographic and location situations data. Kaplan- Meier regression model was used for computing the survival. <u>Results</u>: Of the 7098 records, 4416 records were interviewed by phone. This phone interviews were succeeded among 2358 cases; Tehranian and other cities were defined in 986 and 1372 records respectively. The Tehranian cases were estimated 36.9% (CI95%: 31.9%-41.8%). The mean age of patients was 51.3±12.5, 31.4% of them was under 40 years old, the incidence rate of breast cancer in 100.000 women was estimated 17.09CI95 %( 15.67-18.50). Infiltrating duct carcinoma was the most morphology (68.4%). Right, left, and both breast involvement were seen in 48.6%CI95 %( 43.4%-53.8%), 46.1%CI95 %( 41.0%-51.2%), 0.3%CI95 %( 0.1%-0.5%) respectively. The tumor size over 2 centimeters was seen in 63.6% of cases at diagnostic time. Lymphadenopathy and metastasis were seen in 48.3% CI95 %( 43.1%-53.5%), and 19.7 % CI95% (15.6%-23.8%) of cases. The median survival was 5.0 years CI95 %( 4.9 years -5.1 years). <u>Conclusion</u>: This retrospective survival study was shown the seven years follow up from 1998 to 2005, women which were diagnosed in 1998, 1999, 2000, and 2001; 55.9%, 61.4%, 60.3%, 66% were alive respectively. Interventional projects for increasing the survival rate, early detection, and effective treatment of breast cancer were recommended.

**Key Words:** Survival - breast cancer - outcome - Tehran, Iran

## Introduction

    Breast cancer is the most second cancer among Iranian women. According to death survey in 18 and 23 provinces of Iran, its mortality rate was 2.5 and 2.7 per 100,000 women population, its burden was 7,762 and 11,109 in the years 2001 (Naghavi Mohsen, 2003) and 2003 (Naghavi Mohsen, 2005) . The National Cancer Registry registered 3,946 cases of breast cancer, incidence rate 16 per 100,000 in 2003 and 4,557 cases, incidence rate 18.2 per 100,000 in 2004 . There are many reports about the epidemiology (Talei et al., 1997; Harirchi et al., 2000), early detection (Hadi et al., 2002; Naderi and Bahrampoor, 2003), delayed presentation (Montazeri et al., 2003; Harirchi et al., 2004), risk factors (Ebrahimi et al., 2002), treatment (Salsali et al., 2003; Najafi et al.,2005), and other

basic surveys (Mehdipour et al., 2003; Moslehi et al., 2003) on breast cancer in Iran. According to these studies, breast cancer is a health priority, the most age group was seen in 40-50 years, and there were delay presentation for diagnosis and treatment. But the out come and survival of breast cancer had not been defined in Iran. Tehran Cancer Registry (TCR) had been conducted by Cancer Research Center of Cancer Institute of I.R. Iran from 1998. This registry was completed until 2001. This study was conducted to define the epidemiology and out come of breast cancer in this registry.

## Materials and Methods

    All records in TCR were 107,808, and breast cancer records were 11,411 from 1998 to 2001. Breast cancer

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records were exported to Access file by its ICD-O code. TCR is population based cancer registry, therefore there are many records from one patient. The first step for conducting the survey was deleted the repeated records. Since there are no National ID numbers in Iran, the following protocol was used to define the repeated records by using Access software: the data were sorted by their name, family name, and Father's name. All repeated records were sorted near each other. Each repeated records were proposed a block. The record with earliest diagnostic time was defined the index record of block and its uncompleted variables was merged by other record automatically. After this process, the other records of each block were deleted. This process could not define the cases which their name or family name were not correctly entered in TCR. Many name and family name had prefix or suffix, which might not be entered in TCR.

For completing the deletion of repeated records, all data were sorted by name, family name and phone number, and then the data were assessed manually by an educated technician to define the repeated cases and deleted them. After this phase, all records which had phone number, were selected and conducted by five educated technicians, the data collection form for each patient was completed by telephone interview with the patients or their family. The demographic, diagnostic time and survival situation were assessed by this data collection form. Each phone number was communicated in three times in three sequence days with one day interval, if there was no response, the communication was considered unsuccessful. From all records without phone number or unsuccessful communication, 360 records were selected with simple random sampling method, and their hospital files were reviewed to complete the demographic and location situations data by four educated technicians. All data was entered in access file and then export to excel and SPSS, version 11.5, for descriptive and analytic analysis, p value was significant under 0.05. Kaplan-Meier regression model was used for computing the survival analysis. All analysis was conducted among Tehranian records.

## Results

All records after repeating process and deleting the male records were 7,098. Phone interviews were conducted for 4,416 records, and were successful in 2,358 cases; Tehran and other cities accounbted for 986 and 1,372 records, respectively. 4,740 records were without phone number or the phone interviews were unsuccessful. From these records, 360 hospital files were assessed. Tehranian and other cities were defined in 133 and 226 records respectively; one residential status was not defined. There for Tehranian records were estimated 36.9% CI95%: (31.9%-41.8%) among 4,278 records.

The mean age of breast cancer was 51.34 ±12 .46, the min and max age was 16 and 98 years. The mean incidence rate of breast cancer in Tehran was estimated 17.09 CI95 %( 15.67-18.50) in 100.000 women populations from 1998-2001. The incidence rate by age group is shown in Table 1. 17.8% of patients were uneducated. The

**Table 1. Incidence rate of Breast Cancer per 100.000 Population from 1998-2001 by Age Group**

| Age Group | Year | | | | Overall |
| | 1998 | 1999 | 2000 | 2001 | |
|---|---|---|---|---|---|
| 15-19 | 0.00 | 0.00 | 0.18 | 0.00 | 0.09 |
| 20-24 | 0.84 | 1.04 | 1.45 | 0.82 | 0.99 |
| 25-29 | 5.40 | 5.08 | 5.88 | 5.00 | 5.27 |
| 30-34 | 14.45 | 13.66 | 17.95 | 12.09 | 14.53 |
| 35-39 | 33.96 | 26.62 | 35.41 | 24.19 | 30.11 |
| 40-44 | 51.81 | 50.54 | 56.90 | 42.99 | 50.43 |
| 45-49 | 68.36 | 60.22 | 72.76 | 55.99 | 64.44 |
| 50-54 | 72.63 | 66.24 | 81.03 | 56.46 | 68.87 |
| 55-59 | 76.35 | 63.52 | 87.39 | 65.49 | 73.18 |
| 60-64 | 90.50 | 75.33 | 74.72 | 68.89 | 77.30 |
| 65-69 | 74.06 | 51.48 | 65.65 | 46.29 | 59.30 |
| 70-74 | 47.54 | 49.13 | 64.83 | 46.45 | 53.32 |
| 75-79 | 60.91 | 45.36 | 59.99 | 71.38 | 59.46 |
| 80-84 | 27.56 | 36.50 | 54.30 | 53.84 | 40.87 |
| 85+ | 39.94 | 23.80 | 23.60 | 23.40 | 25.67 |
| Total | 18.19 | 15.90 | 19.51 | 14.76 | 17.09 |

**Table 2. Occupations of Patients with Breast Cancer in TCR from 1998-2001**

| Occupation | Frequency | Percentage |
|---|---|---|
| Unknown | 435 | 44.9 |
| House worker | 434 | 44.8 |
| Employed | 32 | 3.3 |
| Teacher | 28 | 2.9 |
| Retired | 20 | 2.1 |
| Students | 7 | 0.7 |
| Other | 4 | 0.4 |
| Physician | 3 | 0.3 |
| Nurse or obstetrician | 3 | 0.3 |
| Militant | 2 | 0.2 |
| Professor | 1 | 0.1 |
| Total | 969 | 100 |

occupation of patients is shown in table 2. Left, and right breast involvement were seen in 46.1%CI95%(41%-51.2%), and 48.6%CI95%(43.4%-53.8%). Tumor size under 2 cm, 2-5 cm, and over 5 cm were seen in 18% CI95%(14%-22%), 49.6% CI95%(44.4%-54.8%), and 7.5% CI95%(4.8%-10.2%) respectively. Lymph node involvement and metastasis were common, 45.9% CI95 %( 40.8%-51.0%), and 19.7% CI95% (15.6%-23.8%). The morphology of breast cancer by age group is shown
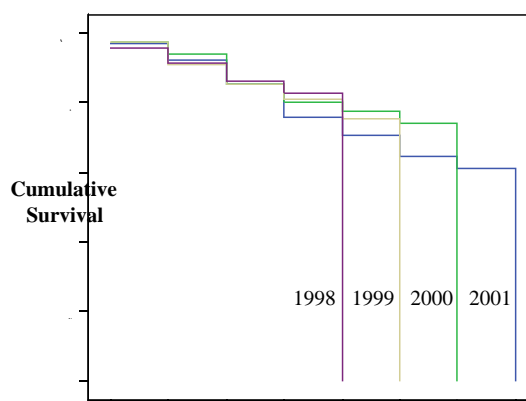


**Figure 1. Survival Curves for Breast Cancer Cases in Tehran Cancer Registry from 1998-2001**

**Table 3. Morphology of Breast Cancer in the Tehran Cancer Registry from 1998-2001 by Age Group**

| ICD-OM group | Age Group | | | | | | | | | | | | | | | Total |
| --- | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 | 45-49 | 50-54 | 55-59 | 60-64 | 65-69 | 70-74 | 75-79 | 80-84 | 85+ | |
| Adenocarcinoma,NOS | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 5 |
| Bronchiolo-alveolar AC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Carcinoma,undiff,NOS | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Comedocarcinoma,NOS | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3 |
| Cribriform carcinoma | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Epithelial tumor | 0 | 0 | 0 | 1 | 1 | 7 | 5 | 6 | 5 | 6 | 2 | 0 | 0 | 1 | 0 | 34 |
| Fibroadenoma,NOS | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Fibrous histiocytoma | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Infiltrating duct and lobular carcinoma | 0 | 0 | 0 | 0 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 6 |
| Infiltrating duct carc | 0 | 1 | 11 | 40 | 52 | 91 | 130 | 87 | 74 | 53 | 46 | 35 | 28 | 1 | 2 | 651 |
| Infiltrating ductular carc | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Leiomyosarcoma,NOS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Non-Hodgkin's,NOS | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Lobular carc,NOS | 0 | 0 | 1 | 2 | 5 | 6 | 5 | 5 | 6 | 4 | 0 | 2 | 2 | 0 | 0 | 38 |
| Lymphoma,NOS | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Medullary carc,NOS | 0 | 1 | 0 | 0 | 1 | 5 | 3 | 4 | 6 | 0 | 0 | 0 | 2 | 0 | 0 | 22 |
| Mucinous AC | 0 | 0 | 0 | 1 | 0 | 1 | 3 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 9 |
| Neoplasm | 1 | 0 | 2 | 7 | 20 | 32 | 29 | 22 | 14 | 20 | 10 | 6 | 7 | 1 | 2 | 173 |
| Neuroblastoma,NOS | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| P. dis. & infil. duct carc.,breast | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| Paget's disease and intraduct. ca. of breast | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Papillary carc,NOS | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Phyllodes tumor | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| Solid carcinoma,NOS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Stromal sarcoma | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Transitional cell carc,NOS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Tubular AC | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Total | 1 | 3 | 14 | 52 | 85 | 147 | 182 | 128 | 107 | 87 | 62 | 48 | 39 | 3 | 4 | 962 |

in Table 3. The median and mean survival of patients is shown in Table 4. After seven follow up from the first year of registry (1998) to the end of the project (2004); survival rate of patients which were diagnosed on 1998, 1999, 2000, and 2001 was 55.9%, 61.4%, 60.3%, and 66% respectively. The survival curve is shown in Figure 1.

## Discussion

This study defined the mean age of patients were 51.3 CI95%(50.5-52.1), and 20.6% of cases were under 40 years old, the most age group was 40-49 years old (33% of cases). There are more reports which confirm this result in Iran (Haghigha et al., 2003; Aminisani et al., 2004; Fathinajafi et al., 2004; Yavari et al., 2005). The mean incidence rate of breast cancer from 1998 to 2001 was estimated 17.09CI95%( 15.67-18.50) per 100.000 women population, but Dr. Harirchi and his coworkers estimated it to be 22.5 (Harirchi et al., 2005). According to National Cancer Registry, it was computed 18.2 in Iran and 20.3 in Tehran. This difference might due to the different methods

for distinguishing the patient's address; Patients may intentionally give an address in the area covered served by a special hospital in order or qualify for acceptance. In the other hand, many addresses were defined by patient's relatives' address. In this study, the patient's address was questioned, and was defined clearly whether he/she was Tehranian or no. There fore, incidence rate was estimated had a high validity. Infiltrative ductal carcinoma was found to be the most common at 68.4% of cases. 63.6% of patients were diagnosed with a tumor size over 2 cm. The mean size of tumor was $3.48\pm 1.99$. Lymph node involvement, and metastasis at diagnostic time was seen in 48.3% CI95 %( 43.1%-53.5%), and 19.7% CI95% (15.6%-23.8%) respectively. These results confirmed other study findings (Dabiri et al., 1999; Harirchi et al., 2000; Salsali et al., 2001; 2003; Kamehshian and Mazochi, 2003; Vahdaninia and Montazeri, 2004). The median follow up time for patients in this study was 60 months. Over all patient' 5 year survival rate was estimated 60.3%. According to a study which was conduced among 167 cases in 1997; they could follow 127 cases, over all

**Table 4. Kaplan-Meier Regression Analysis of Breast Cancer Survival in Tehran Cancer Registry, 1998-2001**

| Diagnosed year | Total N | Mean[a] | Std. Error | 95% Confidence Interval | Estimate | Std. Error | 95% Confidence Interval |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1998 | 183 | 5.47 | 0.16 | 5.15-5.79 | 7 | 0 | .. |
| 1999 | 193 | 5.09 | 0.12 | 4.85-5.33 | 6 | 0 | .. |
| 2000 | 304 | 4.30 | 0.08 | 4.15-4.46 | 5 | 0 | .. |
| 2001 | 211 | 3.56 | 0.07 | 3.42-3.71 | 4 | 0 | .. |
| Overall | 891 | 4.54 | 0.06 | 4.42-4.65 | 5 | 0.05 | 4.89-5.11 |

[a] Estimation is limited to the largest survival time if it is censored

patient's 5 year survival rate was 62%. Although there are 8 years past this study and many treatments protocol of breast cancer was developed; unfortunately, there were no difference in patient's survival rate during these years.

However, the base of this study was the data of TCR, and the phone interviews was conducted in 986 Tehranian cases; all Tehranian was estimated 2619 of 7089, indeed; the epidemiology and out come of breast cancer was defined in 37.6% of all Tehranian breast cancer patients which had been registered during 1998 to 2001 in TCR. Although, this problem was a bias and might effect on the result of this study, but the results of other studies confirmed our findings. In the other hand, this study is the largest study about breast cancer survival rate in Iran.

It was recommended to design interventional modalities to increase the survival rate of breast cancer in Iran. Mass education and increasing the knowledge, early detection, implementing the effective treatment protocol, and palliative cares of breast cancer is recommended as a health priority in Iran. The authors suggest educating new effective treatment protocol for surgeon, oncologists, and radiotherapist developed in the Continuing Medical Education (CME) courses. There are few linear accelerators in Iran. Ministry of health was advised to compute the need of such devises and provide them.

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