Incidence and screening of breast cancer in Iranian women

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Abstract: Breast cancer is the most common type of cancer among women worldwide and in Iran encompasses 32% of cancer diagnoses in women . The aim of this study was to develop the screening methods and determine annual incidence of the disease in one of the north-eastern region of Iran. In this cross-sectional study, 160 women, aged over 20, suffering from breast cancer were identified through a census survey conducted by health providers from 1380 to 1389 in Sabzevar, Iran. The data was collected through questionnaire which its validity was assessed by content and face validity and its reliability were supported through a test-retest method and it was completed by interview method. Descriptive statistics was used to develop statistical indices, frequency tables and charts. The results showed that the mortality rate of the disease, in women aged 40-49, had the highest frequency of 30.8%. Among 102 live patients, 82.4% of which was not aware about their disease and unfortunately the cancer was at the invasive stage.84.3% of them hadn't also undergone a mammography or ultrasound breast examination. It is important to inform women about the importance of mammography or ultrasound breast examination and it is vital to expand the associated facilities and educational programs to prevent and reduce the mortality rate of the disease.
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1. Introduction

Breast cancer is the most common type of cancer; due to the high rates of breast cancer-related mortality in Iranian women, it ranks as the third highest cause of mortality in Iran. The Incidence Age Index of breast cancer reached over 27 per 100,000 women in 2007 (Department of Prevention of Non-Contagious Diseases, Ministry of Health, 2010), and according to unpublished reports, this number increased to 32 in 2010. In the United States, this index is 120.4 per 100,000 women (American Center for Control and Prevention of Diseases, 2011).

While the prevalence and incidence of breast cancer is increasing in Iran, the Center for Disease Control (CDC) in the United States reported that the prevalence and mortality due to this disease decreased between the years 1998 to 2007.Furthermore, it was estimated that the mortality rate in women (40,598 in 2007) would reduce to 39,520 by 2011. The CDC has also reported an annual reduction of 2% in mortality and 1.3% in incidence rates. According to reports published in England of breast cancer statistics, the risk of breast cancer development is strongly associated with age, and over 80% of cases occur in women aged over 50 years (UK breast cancer mortality statistics, 2008). However, the average age of breast cancer patients in Iran is 10 years less that that of European and American patients (Cancer Research Center, Mashhad University of Medical Sciences, 2010).

Early diagnosis of early stage breast cancer plays a vital role in successful treatment and survival of patients. Unfortunately, this disease is typically not diagnosed in Iran until it reaches advanced stages, thereby resulting in an increased mortality rate.

A study by Harirchi et al. (2007) conducted in northeastern Iran, including the township of Sabzevar, showed that 48% of the study cohort (consisting of 318 health workers) had not undergone any form of breast cancer screening.

The following guidelines were published by the American Cancer Society for the early diagnosis of breast cancer (American Cancer Society, 2006):

1. Mammography: women aged 40 years and above should have annual mammograms;
2. Clinical breast examination by a gynecologist: women between 20−30 years of age should be examined once every 3 years by a gynecologist, and, once a year after the age of 40;
3. Self-examination of breasts: all women aged 20 years and over should report any changes they see or feel in their breasts.

Mammography is the quickest and safest method for tumor detection, as it can detect the tumor when it is not detectable by the affected person herself.

In Iran, 70% of cases are detected by the affected individual (Ghaemand Maghami 2007). This often occurs in advanced stages of disease in which the symptoms are quite obvious.

The incidence of breast cancer varies in different regions of Iran. The province of Khorasan Razavi, located in northeastern Iran, has the highest incidence rate of this disease in the country (Cancer Research Center, Mashhad University of Medical Sciences, 2011). The city of Sabzevar is located in this province. According to the city's health center, the population of women in Sabzevar is reported to be 143,769, of whom, 96705 are women over 20 years of age. (Development Division at Sabzevar Health Center, 2011).To date, no study has been conducted regarding the incidence and screening of breast cancer in this town.

This study attempted to determine the following:

1. The incidence and mortality due to breast cancer during the past 10 years in Sabzevar;
2. The prevalence of screening and initial detection of the disease with regards to the methods of breast cancer prevention in women in this population.

2. Materials and methods

This cross-sectional study was undertaken in 2011 to complete the objectives described above and determine the breast cancer incidence during the past 10 years (from 2001 to the end of 2010) in Sabzevar.

The statistical population included all women residing in Sabzevar Township. Through a census conducted by health workers and information obtained from cancer registration centers in Sabzevar, women afflicted with breast cancer were identified.

With the permission of Sabzevar University of Medical Sciences and in collaboration with the Ministry of Health, a briefing was held with participation of active volunteers covering all health centers, and the project objectives were explained. Then, the preliminary plan for estimating available financial and human resources, the project duration, and the approach for handling potential problems that may arise during plan implementation was discussed.

For data collection, a 2-part questionnaire was used, which consisted of the following:

1. Demographic information;
2. Questions related to the research objectives.

The questionnaire was validated by face ad content validity, and its reliability was assessed using a test−re-test approach, such that it was filled out twice at an interval of 15 days, and the correlation coefficient of 95−97% was calculated.

The questionnaire was completed by midwifery experts based at medical centers, who attended the aforementioned briefing sessions. After inviting the

afflicted women and obtaining their consent, interviews were conducted to fill out the questionnaires. In cases in which the afflicted women had died, a relative filled in her demographic details. Gifts were given to the participants as a show of appreciation. SPSS16 software was used for assessing the collected data. Descriptive statistics were used for calculation of indices and preparation of frequency tables and figures.

3. Results

A total of 160 women diagnosed with breast cancer in the past 10 years were identified, of whom 14 declined to cooperate and were excluded. Of the remaining population, 102 were alive and 44 had died. The average age of the women was 52.5 years (with a standard deviation of 1.2 years); the youngest woman was reported to be 28yearsold and the oldest was 86yearsold. Seventy-four percent of women were city dwellers and 61% were born in rural areas. With regard to education level, the largest portion of the population (43.4%) had an elementary school-level of education, and the smallest portion of the population (4.2%) had a university-level education. Ninety-one percent of the women were housewives and 81.5% were married. Fifty-nine percent of the women had 4 or more children. From an economic point perspective, 41.1% of women reported that their family income was insufficient to meet their requirements, and 57.5% reported that their income was only just sufficient for their needs.

The number of identified breast cancer cases over the past 10 years indicated that the highest frequency (17.1%) occurred in 2009(Figure 1). The highest mortality rate in women with breast cancer was reported in 2010, with a frequency of 29.5% (Figure 1).

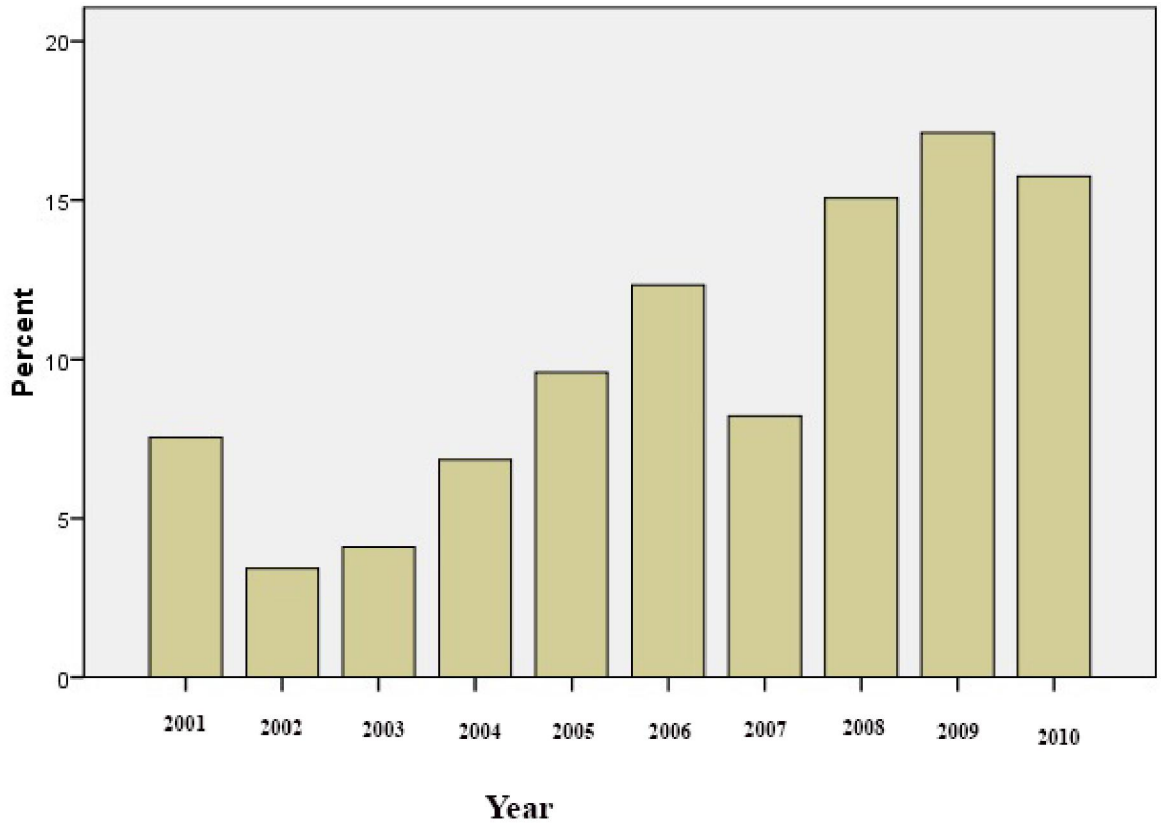

Figure 1: Chronological breakdown of identified breast cancer cases.

Figure 2: Chronological breakdown of mortality due to breast cancer (Omitted).

Breast cancer most commonly occurred in the women aged 40−49years, with a frequency of 30.1% (Table 1).

With regard to initial breast cancer detection, out of the 102 surviving women, 84 women claimed that they themselves first noticed a problem in their breasts (Table 2).

In connection with mammography history, 85.1% of the women reported that prior to the initial diagnosis, they did not have any history of mammography(Table 3).With regard to the self-examination of breasts, 48.5% of the women claimed that they had not completed self-examinations until receiving appropriate training from the health center staff (Table 4).

In addition, out of 102 surviving patients, 65 had medical records available. These records showed that all of the patients were examined by the doctor during the invasive stages of cancer. Out of these patients, 49.2% of the examinations occurred during the invasive stage 2 (Table 5).

Discussion

As demonstrated in this study, the incidences of breast cancer mortality and new breast cancer cases have been growing each year. In particular, mortality due to breast cancer has increased over the past 5 year. Additionally, the highest frequency of breast cancer was observed in the group of women aged 40−49 years.

In a report by the Division for Prevention of Diseases at the Ministry of Health in Iran, the age at which women in Iran are afflicted with breast cancer is 10 years lower that that of women in other countries. This trend was clearly observed in Sabzevar Township.

The Turkish Health Ministry has declared that the typical incidence age of this disease in Turkish women is 40 years and above.

According to statistics reported by the American Cancer society in 2011, there has been a significant reduction in the level of mortality in the past decade in 36 American states, and in 14 states this level has remained constant (which may be more to do with the local socioeconomic conditions). This same organization has cited mammography as one of the primary factors responsible for the reduction in breast cancer mortality. Importantly, the results of the current project indicated that 85% of women did not have a history of mammography prior to diagnosis, and often the disease was diagnosed in advanced stages, resulting in increased mortality rates.

In a study by Puschel et al. (2011) in Chile, detection of this disease in its early stages (stage 0) was reported in 5−8% of cases, whereas Seer's report in the United States indicated that the likelihood of early detection was 21.6%. Puschel et al. reported that the majority of breast cancer diagnoses were made during the invasive stages. It is clear that delayed diagnosis and lack of timely mammography result in disease progression, ultimately leading to increased mortality. Evidence confirms the role of mammography in extensive diagnosis of the disease, including a study by Gwyn, which revealed that there was a significant relationship between screening by mammography and diagnosis of breast cancer at stage 0 or *insitu*.

Hawkins (2004) also reported that mammography could reduce mortality of women in rural areas (without access to or awareness of the benefits of mammography)by 30−45%. Another critical recommendation of the American Cancer Society is the completion of breast self-examinations by women.

Secginli and Nahciran (2006) described the important role of breast self-examination, which they believe to be one of the most vital components in health care and empowerment of women.

In a study by Hacihasanoghlu and Gozum (2008) in Turkey, the importance of self-examination and the role of training in improving self-examination by women was highlighted, and these investigators reported that the use of correct technique before and after training was 13.2% and 79.1%, respectively.

In the present study, 48% of women with breast cancer in Sabzevar mentioned a history of self-examination. In a report by Wardle et al. (1995), 8% of women aged 17−30 years in 20 European countries had regular mammograms.

Despite the importance of this procedure and high rates of self-examination reported in the study samples, 2 points are yet to be considered. First, have the women been performing the self-examination technique correctly? In other words, was the training provided by the health workers and doctors given in a correct manner? Did the health workers ensure that the trained women performed the self-examinations properly? Second, is it actually possible to detect tumors by touch, particularly for those who are not familiar with the natural breast tissues, when a tumor can easily be diagnosed by mammography even when it is not detectable by touch? Furthermore, it is relatively difficult to find tumors by touch, as it requires repetition, practice, and awareness of the feel of normal breast tissue. Distinguishing normal breast tissue from abnormal tissue is a technique that is dependent on the literacy level and self-belief of the women performing self-examinations. Thus, in these communities, breast self-examination cannot always be recommended as an effective method for controlling breast cancer. Encouraging women to undergo mammography should take priority over all

other screening activities; alongside this, women should be taught the correct technique for self-examination while ensuring that it is performed correctly.

The American Cancer Society considers encouragement of women over 40 years of age to obtain annual mammograms and visit specialists as the most important steps towards reduction of suffering and deaths due to breast cancer. Importantly mortality was reduced and the diagnosis of cancer *in situ* was increased due to increased use of mammography (American Cancer Society 2011).

On the other hand, the economic status of the women in the current study indicated that a large percentage of them were poor or nearly poor, and only a small number of women had a reasonably favorable economic status. The results of this project also indicated low rates of mammograms. According to a report by Den Santis et al. (2011), 51.4% of poor women and 55.8% of nearly poor women in America had received mammograms during the 2 years prior to 2008. The study conducted by Nasar et al. (2004) regarding repeat mammograms in disadvantaged women in America described the important role of financial means in patients undergoing mammography.

In this study, lack of free mammograms for underprivileged women was the main hindrance to women receiving mammograms. With the proper facilities at their disposal, mammography would increase, thereby reducing breast cancer-related mortality in women.

This study indicated that mammography should take priority over all other preventive activities if reduction in the breast cancer-related mortality rate and timely diagnosis are to be achieved. Self-examination training, while useful, should only be exercised with consideration of the cultural and socioeconomic status of the patient, and by no means should replace either of the 2 methods described above.

Table 1: The highest frequency of breast cancer was observed among women aged 40–49 years.

	Frequency	Percent	Valid Percent	Cumulative Percent
29<	1	.7	.7	.7
30-39	18	12.3	12.3	13.0
40-49	44	30.1	30.1	43.2
50-59	39	26.7	26.7	69.9
60-69	30	20.5	20.5	90.4
70>	14	9.6	9.6	100.0
Total	146	100.0	100.0	

Table 2: Status of initial detection of disease by the studied women.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	women	84	82.4	82.4	82.4
	GENERALphysician	3	2.9	2.9	85.3
	Gynecologist	12	11.8	11.8	97.1
	midwife	2	2.0	2.0	99.0
	others	1	1.0	1.0	100.0
	Total	102	69.9	100.0	

Table 3: History of mammography by the studied women prior to the detection of cancer.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	N0	86	84.3	85.1	85.1
	Yes	15	14.7	14.9	100.0
	Total	101	99.0	100.0	
Missing	System	1	1.0		
Total		102	100.0		

Table 4: Self-examination of breasts by the studied women.

Table4:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	52	51.0	51.5	51.5
	Yes	49	48.0	48.5	100.0
	Total	101	99.0	100.0	
Missing	System	1	1.0		
Total		102	100.0		

Table 5: Separation of the stages of disease progression according to pathological results.

		Frequency	Percent	Valid Percent	Cumulative Percent
valid	stage 1	12	11.8	18.5	18.5
	Stage2	32	31.4	49.2	67.7
	Stage 3	18	17.6	27.7	95.4
	stage4	3	2.9	4.6	100.0
	Total	65	63.7	100.0	
Missing	System	37	36.3		
Total		102	100.0		

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