Breast Cancer Screening Among Medical Staff in Tehran, Iran: Improvement of Early Detection

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Abstract- Breast cancer is the most prevalent Iranian female malignancy. Breast screening reduces the number of malignant breast diseases. We aimed to assess the results of the pilot breast cancer screening on early detection in female medical staff in Milad Hospital, Tehran, Iran. A cross-sectional study. Female medical staff from Milad Hospital, Tehran, Iran, were examined by a specialist in 2016. A checklist, including demographic data, was completed by the participants. If necessary, they referred to as sonography or mammography. Data were analyzed using SPSS software. Of 746 people enrolled, 137 had no pathological point, 609 had suspicious or positive findings that were referred for further investigation, 449 had normal findings, and 7 had suspicious mass and were biopsied, 6 were benign. One case had primary invasive cancer. Since screening for breast cancer helps to early detection of this disease, the implementation of cancer screening programs should be on the priority of health authorities.

Introduction

The leading cause of women cancer-related deaths worldwide is breast cancer (1). The approximate incidence rate of breast cancer is 1.15 million women, and based on WHO reports, it increased 1%-2% in a year, and 50%, 502.000 of that occurs in developing countries (2,3).

Early diagnosis (tumor <2cm) is a positive prognostic factor and increases the long-term survival of the patients. In higher-risk patients, the early detection of breast cancer (mammography) is a routine part of regular medical examination. The information, knowledge, and awareness of breast cancer are important individual factors of breast cancer early detection, so many women miss it due to a lack of those factors. The lack of breast cancer screening and without screening facilities can cause breast cancer diagnosis in advance stage (1). Mammography screening reduces breast cancer mortality among women 40 to 74 yr of age (4).

In Iran, the total incidence rate and the stage of diagnosis are increasing, and the onset age is about 10 yr younger than western countries (2).

The incidence rate increase in the age group of 40-44-yr-old is 6.2%, in 45-49-yr-old 3.5%, and in 55-59-yr-old is 5.3% (5).

There are different suggested methods for early detection of breast cancer like breast self-examination (BSE), clinical breast examination, and mammography (6). The factor that affects performing BSE is about its importance and proper performing way (7).

To assess the efficacy of early diagnosis protocol for female medical staff, we conducted a screening program for them in Milad Hospital, Tehran, Iran.

Materials and Methods

This cross-sectional study was conducted in Milad Hospital in 2016 to assess the early breast cancer screening program on female staff. All of 1300 women staff (over 20 yr) invited, but only 746 women participated.

We asked all the participants to perform a self-breast examination at the beginning of the study and then completed by them a checklist containing demographic and clinical data like age, marital status, age of

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menarche, pregnancy history, OCP use, age and type of menopause, family history of various types of cancers, including breast cancer. In the following, the result of the self-breast examination completed by the staff in the checklist. Then, all the entries examined by a female breast surgeon. All stages of patient examination and follow up were based on NCCN Guideline 2016 (8). For women over 40-yr-old age, regardless of any finding, we performed mammography and sonography. For suspected women under 40-yr-old age, sonography was performed.

Assessed demographic data were selected based on the general of the national breast cancer control program of the Islamic Republic Iran prevention, such as early menarche, first live birth age after 30 yr, menopause age after 55 yr, hormone therapy, pregnancy medications, breastfeeding less than two-year, BMI 30 and more than 30, family history of breast malignancy, history of breast surgery, personal history of other cancers (9).

We received informed consent from all participants. This study was approved by the Ethics Committee of Milad Hospital.

We performed a descriptive analysis of all of the variables on the dataset, including age, marital status, history of medical education, age at menarche, etc. by tests like mean, frequency, std. Deviation, by SPSS ver. 16 (Chicago, IL, USA).

Results

Of 1300 staff women in Milad Hospital, 746 women between 21 and 58 yr, participated in this study and were examined by a breast surgeon.

The mean age of the participant was 35.7±5.7, and the mean age at menarche was 13.4+1.5-yr-old. In assessed demographic data, most of the participants were married (358, 76.1%) and 525 (70.3%) women educated in fields of medical sciences. Of the total, history of pregnancy, breastfeeding, taking OCP (Oral contraceptive), taking pregnancy medications and first live birth age over than 30 yr was 441 (59.1%), 392 (52.5%), 215 (28.8%), 39 (5.2%) and 277 (37.1%) respectively. The mean of duration taking OCP and pregnancy medications was 15.3 and 12 months, respectively. Nineteen (2.5%) were menopause, and menopause age of 18 (2.4%) was over 55 yr. BMI for 620 (83.1%) was <30. Only 62 (8.3%) had at least one family history of breast cancer (Tables 1, 2).

Table 1. Demographic nominal data

Demographic nominal data		subjects (n=746)	Percent (%)
Marital status	Married	358	76.1
	Single	166	22.3
	Unknown	12	1.6
Medical education	Yes	525	70.3
	No	221	29.7
Pregnancy	Yes	441	59.1
	No	286	38.3
	Unknown	19	2.5
Breastfeeding	Yes	392	52.5
	No	322	43.2
	Unknown	32	4.3
Oral contraceptive	Yes	215	28.8
	No	455	61.0
	Unknown	76	10.2
Pregnancy medications	Yes	39	5.2
	No	628	84.2
	Unknown	79	10.6
Menopause	Yes	19	2.5
	No	727	97.4
Menopause type	Natural	12	63.2
	Medicine	1	5.3
	Surgery	6	31.6
Family history of breast malignancy	Yes	62	8.3
	No	684	91.7
Hormone therapy	Yes	72	9.7
	No	577	77.3
	Unknown	97	13.0
Anti-estrogen therapy	Yes	18	2.4
	No	600	80.4
	Unknown	128	17.2

Table 2. Demographic numerical data

Demographic numerical data		subjects (n=746)	Percent (%)
Age (yr)	<40	562	75.3
	≥40	184	24.6
Age at menarche (yr)	<11	74	9.9
	≥11	641	85.9
	Unknown	31	4.2
First live birth age	< 30 yr	277	37.1
	≥ 30 yr	134	17.9
Breastfeeding duration (months)	<24	217	29.0
	≥24	162	21.7
	Unknown	13	1.7
Menopause age (yr)	<55	18	2.4
	≥55	1	0.1
Body mass index (kg/m²)	<30	620	83.1
	≥30	55	7.3
	Unknown	71	9.5

One hundred six participants (22.2%) had at least one chronic disease of the pulmonary, cardiovascular or thyroid, 6 had different history types of cancers (uterine 1, 0.1% - ovarian cancer 2, 0.3% -colon cancer 3, 0.4%) and 16 (1.7%) had a history of breast surgery.

Based on the NCCN protocol, in step one, all patients physically examined by the surgeon and 137 (18.3%) had no clinical findings. Overall, 609 suspect women (81.6%) referred to sonography (N=463, 62.06%) or mammography (N=146, 19.57%).

In total, 456 performed imaging ordered, and others refused to continue the project, 449 (60.18% of total and 98.4% of who performed imaging) were normal or with a fibrocystic or benign change in the breast (BI-RADS 1 and 2). Seven (0.53% of total and 1.53% of who performed imaging) had suspect mass (BI-RADS 4), and biopsy for them performed. Six diagnosed normal mass, and 1 diagnosed with primary Invasive breast cancer stage IIA and referred to related treatment (Figure 1).
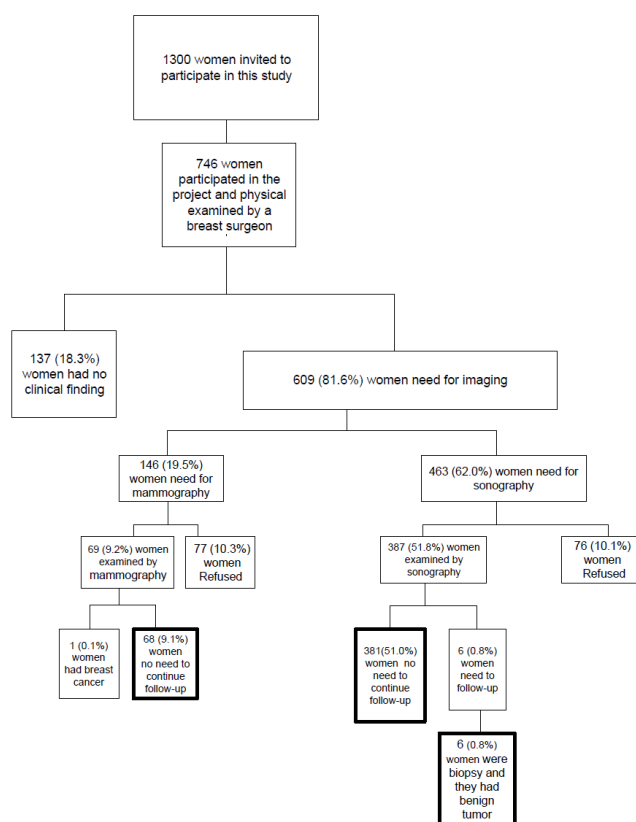

Figure 1. Overview of the study

Discussion

In recent years, due to techniques of early detection and treatment improvement, the mortality rate of breast cancer has decreased. However, in European women, breast cancer is still the leading cause of death due to cancer (10). The aim of this study was to perform breast cancer screening for medical staff and determine the rate of breast cancer in these staff.

Although breast cancer at a young age is rare, it is a bad prognostic factor (11). In Karachi, Pakistan, between the years 1995 and 1997, the incidence of breast cancer in ages 15-24 and 25-37 were 2.9% and 27.4%, respectively, which was the highest cancer presentation at these age groups (11). The importance of design breast cancer screening programs in women with any symptom and screening should not be limited to older age (11).

American Cancer Society recommends that women in the 20s and 30s, every 3 years should be clinical breast examined by a health professional (11). In our study, most participants have less than 40 yr, and the mean age was 35.7 ($\pm$5.7). Most of the exposure to risk factors was in age groups 30-44 yr (9). Moreover, the mean age of patients with breast cancer was 41.5 ($\pm$5.6) (12).

According to the national cancer institute's PDQ (Physician Data Query) cancer information summary about breast cancer, early menarche, defines as the beginning of menstrual periods at or before age 11, consider as a risk factor for breast cancer and each year delay in the age of menarche, reduces the risk of breast cancer by 6% (11). In our study, 9.9% reported having had early menarche in comparison that early menarche was in 3.3% (11). This factor puts them exposed to the risk of breast cancer.

For every 12 months of breastfeeding, breast cancer decreased by 4.3% (9). In our study, 162 (21.7%) had$\geq$ 24 months duration of breastfeeding. In Turkey, women with a positive history of breast cancer in a first-degree relative had higher breast cancer risk 5.7 times more than those with negative family history. About 6% and 15% of positive family history were reported for breast cancer, respectively. In our study, 62 (8.3%) have a positive family history of breast cancer (11,13).

In premenopausal women, the lower BMI has a higher risk of breast cancer due to irregular menstrual cycles and cycles without ovulation (9,11). In our study, 97.4% were not menopause, and 83.1% had <30 BMI, and they were at increased risk of breast cancer. 10.3%

of participants were underweight (11).

In Norway and Sweden, ever used OCP's in life, increases breast cancer risk more than 30% (14). Overall, 5% had a positive history of OCP's use, while in our study, it is 215 (28.8%) (11).

The overall cancer detection rate was 0.004% [15,] and in our study, this rate was 0.1%; also, findings BI-RADS 1 and 2, BI-RADS 3 and BI-RADS 4 was 85.6%, 12.5%, and 1.9% respectively. BI-RADS 1 and 2 were less than our study, and BI-RADS 4 was slightly more than our study.

With training improvement of lifestyle and reduced risk factors, can be decreased incidence of breast cancer. According to effects items on breast cancer, *i.e.,* low physical activity, cigarette smoking, repeated exposure to radiations, etc. suggested that assessed this item and data about participants will more complete in future studies.

Limitation of this study was not interested of staffs to participate of this study; to solve this problem should increase the awareness of women about risk factors of breast cancer and effects of screening to early detection of malignancy.

Early diagnosis can diagnose breast cancer in the early stages. Screening leads to early detection and reduced mortality. Regular screening programs in the community and the provision of screening facilities throughout the country can improve early diagnosis.

Acknowledgments

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