



Breast Cancer Screening Tests in Tabriz Behood Hospital

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Abstract

Objectives: Considering the prevalence age of breast cancer (BC) as whole and involvement of young aged Iranian women and as Behood hospital is a screening center for BC in Tabriz, East Azerbaijan, this study aimed to present the results of screening tests.

Materials and Methods: For 5000 women referred to BC clinic of Behood hospital, a self-designed questionnaire including demographic-social characteristics and risk factors of BC was completed by researcher. Then breasts of women were examined by midwives and recorded in questionnaire. In case of abnormal results ultrasonography, mammography and fine needle aspiration (FNA) were prescribed and results were recorded in the questionnaire.

Results: A total 516 cases of left breast mass and 480 cases of right breast mass were palpated. Forty cases out of 996 ultrasonography were abnormal. A total of 183 cases out of 636 mammography were abnormal. One case out of 14 FNA was cancer (7.1%). Occupation, menopause status, history of performing FNA, education level, marriage status, age of first pregnancy and body mass index (BMI) had significant relationship with abnormal clinical breast examination (CBE). Breastfeeding had significant relationship with abnormal sonography results. Menopause, diet, use of chemical agents and type of oils used in diet had significant relationship with abnormal mammography results ($P < 0.05$).

Conclusion: Based on these results, women should be encouraged to undergo BC screening tests more regularly and to increase their knowledge on BC and benefits of screening through public media.

Keywords: Breast cancer, Cancer screening tests, Fine needle aspiration, Mammography, Ultrasonography

Introduction

Breast cancer (BC) composes about one-third of all cancers among women and is considered as the most prevalent cause of cancer death after lung cancer among women. At present, one out of seven American women suffer from BC in their lives (1). One out of 8 Iranian women aged 40-55 years old suffer from BC. The age of occurrence of this disease in our society is about one decade lower than the global mean (2). In America, about 192370 women are added to the cancer list yearly and from among them, 40170 ones die (3). According to the study by Mousavi et al, cancer is the third most prevalent cause of death in Iran and the age specific of BC rate in Iran is 98 in 100000 (9.8%) (4), which was 19.25% in Golestan province according to the study by Marjani and Kabir (5). Risk factors involved in BC include age, gender, family history, hormones, pregnancy record, premature menarche, menopause, oral contraceptives, hormone replacement therapy, inheritance, previous history of benign breast diseases, previous history of BC diagnosis, x-ray exposure, life style (dietary, alcohol consumption), breastfeeding, etc. (6). Although this disease has high prevalence, the important point is its early and on-time diagnosis which is considered as the most important factor in BC treatment. If treatment is done in primary stages (less than 1

cm mass), the result will be 90% successful (7).

The effective methods for screening breast cancer is clinical breast examination (CBE) and mammography (8). CBE helps finding cancer and other palpable breast masses and proposes mammography for exploring impalpable BC at early stages of development. CBE is done with mammography while it is not replaced by mammography (9). The primary goal of mammography is screening women without symptom for finding BC at primary stages. Screening with mammography among women of 40 years and older, reduces the mortality by 20% to 30% (10). The effective screening provides the possibility of primary and secondary prevention of disease for reducing the lesions (11).

In fact, screening aims at finding the cancer when they are small (less than 1 cm) and there is most probability of recovery or surgery. The results of Gothenburg screening showed that the mortality reduces by 45% among 40-49 years old women who were screened (1). Screening for BC is necessary for all women in critical ages (10). For women without risk factor, CBE is done once a year in women older than 30 years old and it is done every 1-3 years for women below 30 years of age. Mammography is done every 1-2 years in 40-49 years old women and it is done yearly in 50-69 years old women (12). CBE should be done once every three years from 20 years of age and annually

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from 40 years of age; in case of a worrying situation, it should be performed at younger ages (13).

According to Olyaeemanesh et al, BC is the most prevalent cancer among Iranian women, and thus screening should be started in Iran at younger ages (14). American Cancer Society (ACS) proposes that women above 30 years and without any symptom, receive CBE as BC screening test permanently and regularly (15). Currently in Iran, CBE is the best screening method for all women while performing mammography for people with more risk (16). On the other hand, midwives are the first individuals from the health team who face women and can play a key role in detecting and referring women with breast mass in the screening process. According to the studies, replacement of general surgeon instead of midwife, as first examiner for clinical screening of BC, is not certified in the general health system (17).

Unfortunately, most of the people refer when cancer is in an advanced level, thus, it seems necessary to train them in regard to self-breast examination and performing screening test at proper ages (18).

Executing precise training programs in the society and increasing the quality of health cares and conducting screening tests (CBE and mammography) at health and treatment centers can be a big step in premature exploring of breast masses including benign and malignant, reducing the treatment expenses and reducing the mortality among women. Also it can play a big and valuable role in improving life quality and reducing the complications resulting from mothers' premature death (19).

BC clinic of Behbood hospital was established in March 2007. In this center mammography, ultrasonography, fine needle aspiration (FNA) and other paraclinical methods are performed and if needed the patient is referred to different governmental treatment centers. By now, about 21 000 patients have been examined. Regarding the prevalence of BC and low age of prevalence in Iranian society, we decided to study the risk factors and screening methods of BC among those referring to BC clinic of Behbood hospital to inform the health-treatment centers from the results of these actions. So that it could be a starting point for such activities in other clinics and hospitals and a step towards early diagnosis of breast masses including benign and malignant.

Materials and Methods

The current study is a descriptive one. Target population were women referring for screening to BC clinic of Behbood hospital. This study started in 2010 on 5000 women and finished in 2014. Convenience sampling was done and criteria for entering the study included all women older than 15 years, referring to BC clinic of Behbood hospital, who were willing to participate in the study and could answer the questions in the questionnaire.

The excluding criteria included non-willingness for participation in the study. The sample size was computed by available $P=7\%$ in review of literature and using the following formula with 95% reliability and 5% error at 5000

ones ($N = pqz^2/d^2$).

The content validity was used for determining the validity of the research such that the questionnaire was given to 10 internal and external professors at the Tabriz Faculty of Nursing and Midwifery and having studied them, the required amendments were done. It was finalized and then used for research samples. For reliability of CBE, simultaneous examination was used such that clinical examination was done by two of trained researchers on 10 research samples and then the reliability of it was computed ($r=0.87$).

Procedure

The self-designed questionnaire which included demographic-social characteristics and risk factors of BC, was completed privately for all the women above 15 years old referring to Breast clinic of Behbood hospital in 2010. After obtaining consent, the breasts were examined by the physician or midwife and the results were recorded on special sheets and if the results were abnormal, the physician requested mammography, ultra sonography, FNA and serology tests and the results were registered in the questionnaire. The next referring time was defined and regarding the results, the physician made decision for type of treatment. Finally, data were analyzed by SPSS 21, descriptive statistical tests (mean and standard deviation) and chi-square test.

Approach

- 1- Acceptance of the cost of performing certain tests in patients by research planner.
- 2- Participation of psychologist colleagues for counselling.

Results

The findings show that most of the samples were in the 20-39 years age group (55.9%) and the mean age of people was 37.485 years (10.81%). Most of the women had primary education (38%) and more than 80% were housewives. The job of most of the employed ones were non-administrative (5.5%) and more than 80% were residing in the city (88.4%).

Most of the women were married (91.9%). In 85% of women, the income was less than the cost. More than 70% of samples did not have history of infertility and used non-hormonal contraceptive methods (75.4%). Most of the women had normal body mass index (BMI) (3.3%); mean BMI was 27.33 (SD: 4.8). The mean of pregnancy in married women was 2.5 (SD: 1.61) and most of them had one pregnancy (68.8%). Most of the married ones had one child (71.6%) and had at least one time breastfeeding record (54.6%).

The mean of menarche age was 12.61 years (SD: 1.33), with age range of 10-19 years (88.2%), the mean of first pregnancy was 2.91 (SD: 4.17) and about 50% of them had a age range of 18-39 years. Most had A Rh+ blood group (20.8%), 87.9% had family history of benign breast disease, 96% did not have FNA record and/or radiotherapy (96.9%). About 70% of people did not have hormone

replacement therapy (HRT) and more than 90% of them did not have BC record and only 0.3% had such a record. 93.4% of samples did not have BC history in their first rank relatives before menopause and 92.8% did not have such history after menopause.

Regarding the life style, the results showed that most of the people (83.7%) had low-fat diet; about 90% used 2-3 spoons of oil daily and type of consumed oil was liquid oil (56.3%). About 65% of women did not have plant protein consumption, while 97% regularly used fruits and vegetables. Seventy-seven percent of samples did not use detergents in their homes and only used it once in a week. Unfortunately, the type of pollutant in most of the samples was unknown (76.4%) and detergents were not used very oftenly (15.5%). Most of the participants in the research did not smoke (97.9%) or consume alcohol (76.4%); unfortunately most of the women did not do exercises (87%) and only 11.7% of women exercised which was mostly

jogging, swimming and mountain climbing.

Among patients undergoing CBE, 516 masses were palpated in left breast and 480 masses in right breast; totally 759 had abnormal examination results and the remaining were normal. From among 996 sonographies done, 40 were abnormal and the remaining were normal. Unfortunately only 14 FNA results were returned to Center for BC screening and from among them one cancer was reported. Patient's occupation, menopause, benign breast disease history in the family, history of doing FNA, academic status, marital status, number of children, number of pregnancies, age, age of first pregnancy and BMI had significant relationship with breast mass (Tables 1 and 2) and breastfeeding frequency had significant relationship with abnormal sonography results (Table 3). Also menopause, diet, exposure to pollutants, types of pollutant and type of dietary oil used had significant relationship with abnormal results of mammography (Table 4).

Table 1. Relationship Between Demographic-Social-Midwifery Characteristic With Clinical Breast Examination (CBE) Results in Left Breast

Variable	Mass in left breast		Statistical tests	
	Mass	Without mass		
Age (year)	<20	34 (24.1)	107 (75.9)	R = 33.17, df = 3, P = 0.00
	20-39	316 (12.9)	2140 (87.1)	
	40-59	152 (9.4)	1470 (90.6)	
	>60	13 (9.4)	126 (90.6)	
	Mean (SD)	37.45 (10.81)		
Age of first pregnancy	<18	97 (8.9)	987 (91.1)	R = 21.49, df =2, P = 0.04
	18-39	260 (11.8)	1946 (88.2)	
	>40	13 (10.2)	114 (89.8)	
	Mean (SD)	20.91 (4.17)		
Number of pregnancy	1	345 (11.4)	2676 (88.6)	R = 6.08, df =2, P = 0.04
	2-9	50 (8.3)	552 (91.7)	
	>10	9 (7.9)	105 (92.1)	
	Mean (SD)	2.5 (1.61)		
Number of children	1	357 (11.4)	2786 (88.6)	R = 8.77, df =2, P= 0.01
	2-9	33 (7)	441 (93)	
	>10	5 (8.1)	57 (91.9)	
	Mean (SD)	2.3 (1.3)		
Occupation	Housewife	393 (86)	3139 (90.4)	R = 8.42, df =1, P = 0.003
	Employed	64 (14)	335	
Breastfeednig times	1	271 (11.4)	2114 (88.6)	R = 6.10, df =3, P = 0.10
	2-9	81 (10.4)	700 (89.6)	
	>10	13 (6.3)	193 (93.7)	
	Unknown	4 (17)	53 (93)	
Menopause	Yes	477 (92.4)	3406 (88.3)	R = 6.89, df =1, P = 0.002
	No	39 (7.6)	452 (11.7)	
FNA record	Yes	7 (1.4)	7 (0.2)	R = 19.30, df = 1, P = 0.001
	No	497 (98.6)	3703 (99.8)	
Marital status	Divorced.widowed.married	454 (89)	3581 (94.5)	R = 23.22, dF = 1, P = 0.001
	Single	56 (11)		
Academic status	Primary	173 (43)	1488 (50.8)	R = 8.67, df = 2, P = 0.01
	High school diploma	150 (37.3)	961 (32.8)	
	Above high school diploma	79 (19.7)	480 (16.4)	
Economic status	Income less than cost	444 (96.3)	3309 (95.1)	R = 0.35, df = 1, P = 0.32
	Income more than cost	17 (3.7)	148 (4.3)	
Method of contraception	Hormonal	360 (93)	2943 (91.2)	R = 1.42, df = 1, P = 0.13
	Non-hormonal	27 (7)	283 (8.8)	
Breastfeeding duration in the last child	Less than 24 months	58 (10.3)	506 (89.7)	R = 0.40, df = 1, P = 0.30
	More than 24 months	22 (18)	227 (91.2)	

Table 2. Relationship Between Demographic-Social-Midwifery Characteristic With Clinical Breast Examination (CBE) Results in Right Breast

Variable	Mass in left breast		Statistical tests	
	Mass	Without mass		
Age (year)	<20	26 (19.3)	109 (80.7)	R = 21.49, df = 3, P = 0.00
	20-39	299 (12.2)	2142 (87.8)	
	40-59	141 (8.8)	1457 (91.2)	
	>60	12 (8.8)	124 (91.2)	
	Mean (SD)	37.45 (10.81)		
Age of first pregnancy	<18	95 (8.8)	981 (91.2)	R = 4.89, df =2, P = 0.08
	18-39	232 (10.7)	1944 (89.3)	
	>40	18 (10.2)	109 (85/8)	
	Mean (SD)	20.91 (4.17)		
Number of pregnancy	1	152 (14)	932 (86)	R = 15.45, df =2, P = 0.00
	2-9	147 (10.1)	1315 (89.9)	
	>10	95 (9.1)	952 (90.9)	
	Mean (SD)	27.33 (4.8)		
Number of children	1	314 (10.1)	2786 (89.9)	R = 2.52, df =2, P= 0.28
	2-9	37 (7.9)	432 (92.1)	
	>10	7 (11.7)	53 (88.3)	
	Mean (SD)	2.3 (1.3)		
Occupation	Housewife	789 (90.7)	31 (91.2)	R = 0.0, df =1, P = 0.61
	Employed	81 (9.3)	3 (8.8)	
Breastfeednig times	1	249 (10.6)	2107 (89.4)	R = 3.67, df =3, P = 0.29
	2-9	63 (8.2)	703 (91.8)	
	>10	19 (9.3)	185 (90.6)	
	Unknown	6 (10.7)	50 (89.3)	
Menopause	Yes	454 (94.6)	3390 (88.1)	R = 17.87, df =1, P = 0.00
	No	26 (5.4)	456 (11.9)	
FNA record	Yes	6 (1.3)	6 (0.2)	R = 18.10, df = 1, P = 0.001
	No	463 (98.7)	3695 (99.8)	
Marital status	Divorced/widowed/married	421 (88.5)	3571 (94.5)	R = 23.28, dF = 1, P = 0.00
	Single	53 (11.2)	209 (5.5)	
Academic status	Primary	173 (44.6)	1473 (50.5)	R = 5.19, df = 2, P = 0.07
	High school diploma	140 (36.1)	969 (33.2)	
	Above high school diploma	75 (19.3)	474 (16.3)	
Economic status	Income less than cost	391 (65.1)	3307 (95.9)	R = 0.0, df = 1, P = 0.61
	Income more than cost	20 (4.9)	142 (4.1)	
Method of contraception	Hormonal	324 (90.5)	2952 (91.6)	R = 0.49, df = 1, P = 0.26
	Non-hormonal	34 (9.5)	271 (8.4)	
Breastfeeding duration in the last child	Less than 24 months	53 (9.4)	510 (90.6)	R = 0.0, df = 1, P = 0.51
	More than 24 months	23 (9.6)	217 (90.4)	

Discussion

The results of research showed that 5000 women participated in the screening program. Regarding the age, most of them were in 20-39 years age group, had primary education, were housewives and resided in city. Most of the samples were divorced/married or widowed, did not have good economic status, had A Rh⁺ blood group, did not have any infertility history and did not use hormonal methods for contraception. Most of the samples had normal BMI, were pregnant at least once, had at least one child and had one breastfeeding history. Most of them had menarche around 12 years of age, experienced their first pregnancy at the age of 21 years, had no record of benign disease in the family or had no record of FNA or radiotherapy. Most of them had no treatment record of HRT, BC record, and BC record in first rank relatives before and after menopause. The above findings are fully consistent with the results of study by Hosseinzadeh et al (20).

Naghbi et al in their study announced the rate of CBE or breast palpation at 4 to 25% (21), while Salimi Pormehr et al in their research conducted among women referring to Ardebil treatment and health centers reported CBE at 4.7% (22) and Farshbaf et al reported it at 19.1% which is almost similar to the current study (23). Individual's occupation, menopause, history of breast disease in the family, history of FNA, education status, marital status, number of children, number of pregnancy, age, age of first pregnancy and BMI had significant relationship with abnormal breast examination. These findings i.e. educational status and history of benign breast disease in the family are consistent with the results of study by Hosseinzadeh et al (20), Braaten et al (24) and Cunningham et al (25) regarding the economic-social status (education level and income). The economic-social factors and life style factors like diet and physical activity can influence fertility behaviors such as infertility, age at first pregnancy, number of

Table 3. Relationship Between Demographic-Social-Midwifery Characteristic With Abnormal Breast Sonography Results

Variable	Abnormal sonography		Statistical tests	
	Mass	Without mass		
Age (year)	<20	41 (100)	0 (0)	R = 2.88, df = 3, P = 0.41
	20-39	661 (96.2)	26 (3.8)	
	40-59	23.5 (94.8)	13 (5.2)	
	>60	17 (94.4)	1 (5.6)	
	Mean (SD)	37.45 (10.81)		
Age of first pregnancy	<18	222 (98.2)	4 (1.8)	R = 4.47, df =2, P = 0.10
	18-39	498 (95.6)	23 (4.4)	
	>40	742 (96.2)	29 (3.8)	
	Mean (SD)	20.91 (14.17)		
BMI	Thin	267 (97.8)	6 (2.2)	R = 0.37, df =2, P = 0.82
	Normal	323 (94.4)	19 (5.6)	
	Fat and overweight	198 (96.6)	7 (3.4)	
	Mean (SD)	27.33 (4.8)		
Breastfeednig times	1	557 (96.7)	19 (3.3)	R = 9.69, df =3, P = 0.02
	2-9	149 (93.1)	11 (6.9)	
	>10	25 (100)	0 (0)	
	Unknown	3 (75)	1 (25)	
Menopause	Yes	906 (94.6)	37 (92.5)	R = 0.31, df =1, P = 0.38
	No	52 (5.4)	3 (7.5)	
Marital status	Divorced/widowed/married	864 (92)	39 (97.5)	R = 1.61, dF = 1, P = 0.16
	Single	75 (8)	1 (2.5)	
Academic status	Primary	389 (51.7)	19 (61.3)	R = 2.13, df = 2, P = 0.34
	High school diploma	266 (53.3)	7 (22.6)	
	Above high school diploma	98 (1.3)	5 (16.1)	
Economic status	Income less than cost	837 (96.7)	34 (94.4)	R = 0.50, df = 1, P = 0.35
	Income more than cost	29 (3.3)	2 (5.6)	

Table 4. Relationship Between Demographic-Social-Midwifery Characteristic With Abnormal Breast Mammography Results

Variable	Abnormal mammography		Statistical tests	
	Mass	Without mass		
Age (year)	<20	2 (100)	0 (0)	R = 1.75, df = 3, P = 0.62
	20-39	47 (75.8)	15 (24.2)	
	40-59	376 (70.7)	156 (29.3)	
	>60	25 (67.6)	12 (32.4)	
	Mean (SD)	37.45 (10.81)		
Age of first pregnancy	<18	161 (74.2)	56 (25.8)	R = 0.84, df =2, P = 0.65
	18-39	218 (70.6)	91 (29.4)	
	>40	13 (72.2)	5 (27.8)	
	Mean (SD)	20.91 (14.17)		
BMI	Thin	64 (72.7)	24 (27.3)	R = 2.32, df =2, P = 0.31
	Normal	181 (78.4)	50 (21.6)	
	Fat and overweight	153 (72.5)	58 (27.5)	
	Mean (SD)	27.33 (4.8)		
Diet	High fat	77 (17.1)	14 (7.7)	R = 9.40, df =1, P = 0.001
	Low fat	374 (82.9)	169 (92.3)	
Menopause	Yes	383 (84.5)	135 (73.8)	R = 10.01, df =1, P = 0.001
	No	70 (15.5)	48 (26.2)	
Use of detergent	Yes	89 (20.6)	24 (13.5)	R = 4.23, dF = 1, P = 0.02
	No	343 (79.4)	154 (86.5)	
Type of oil used	Solid oil-butter	172 (39.1)	51 (29.1)	R = 12.62, df = 2, P = 0.00
	Liquid oil	240 (54.5)	99 (56.6)	
	Both	28 (6.4)	25 (14.3)	
Type of pollutant	Unknown	342 (82.4)	154 (88)	R = 2.87, df = 1, P = 0.05
	Detergents	73 (17.6)	21 (12)	

children and breastfeeding duration (20). The findings of current study are consistent with the study of Hadjisavvas et al (26) and Beiler et al (27) regarding the number of children.

From among 996 sonography, 40 were abnormal (0.8%) and the remaining were normal and only the history of breastfeeding had significant relationship with abnormal sonography results which is consistent with the results of study by Hosseinzadeh et al (20), Ozmen et al (28), Hadjisavvas et al (26) and Collaborative group (29). Breast-feeding can reduce the risk of BC by two mechanisms i.e. breast tissue differentiation and reduction of the number of ovulatory cycles during the life (20).

From among 636 mammography, 183 were abnormal (3.66%) and the remaining were normal. Naghibi et al in their study reported mammography from 3% to 26% (21), Salimi Pormehr et al at 3.7% and Farshbaf et al at 3.3% which are fully consistent with the current study (22).

Menopause, diet, use of detergents, type of pollutants and type of oil used have significant relationship with abnormal mammography results. These results are consistent with the results of study by Hosseinzadeh et al (20), Larsson et al (30), Boggs et al (31), Balasubramaniam et al (32) and La Vecchia et al (33) regarding the diet (using oily foods, fruits and vegetables).

Therefore increasing women's awareness and knowledge regarding early diagnosis is an essential (21). Khani et al named poverty, lack of health insurance and increasing age as the effective factors in performing CBE among women in different regions of the world and believe that most women with low economic-social status or even education, refrain from breast examination or mammography in most developing countries in spite of having insurance coverage. It seems that lack of awareness in Iranian women regarding the risk factors, diseases symptoms and benefits of executing screening programs and manner of health and treatment clinics function related to BC results from lack of preventive programs (34).

Limitations

- Absence of follow-up and co-operation with some of the patients
- Denial of the problem
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Conclusion

Since several studies had been conducted in Iran on the BC screening methods and regarding the difference in designing studies, different results and identifying different factors in some of these papers, performing a systematic review on literature seems suitable.

Ethical Issues

Local ethical committee approved this study.

Conflict of Interests

The authors declare no conflict of interests.

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