

## RESEARCH COMMUNICATION

**Risk Factors for Breast Cancer in Iranian Women Aged Less than 40 Years****Najmeh Tehranian<sup>1</sup>, Fatemeh Shobeiri<sup>2\*</sup>, Farahnaz Hafezi Pour<sup>1</sup>, Ebrahim Hagizadeh<sup>1</sup>****Abstract**

This case-control study was carried out in a university-affiliated teaching hospital, Tehran city, Iran. A total of 312 newly diagnosed cases aged less than 40 years old participated and were matched for age and ethnicity with 312 controls. The results showed that in women who never married (OR=2.42 95% CI=1.51-3.88) (P<0.001), had a family history of breast cancer (OR=7.07 95% CI=2.95-16.99) (P<0.001), a low age of menarche (OR=0.1 95% CI=0.04-0.23) (P<0.001), lower parity (OR=13.3 95% CI=3.89-45.66) (P<0.001) and took oral contraceptive pills (OR= 2.83 95% CI=1.87-4.24) (P<0.000) were at increased risk. A direct association with age at first birth was also evident (P=0.041), with a significantly inverse association between duration of lactation and breast cancer risk (p=0.016). On multivariate logistic regression, parity, family history of breast cancer, use of oral contraceptive pills, and age at first birth remained significant. In women lower than 40 years of age, breast cancer risk was significantly higher in women with parity  $\geq 4$  compared with nulliparity but no association emerged with history of breast-feeding. Other risk factors were similar to those described in breast cancer epidemiology at any age.

**Keywords:** Young age - breast cancer - risk factors - Iran

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**Introduction**

Breast cancer accounts for approximately one third of all cancers in women and is second only to lung cancer as the leading cause of cancer deaths among women. Breast cancer, however, has the highest incidence rate of all cancers. Over the past 50 years, the incidence of breast cancer in the United States has increased significantly; currently one in every seven women will develop the disease during her life time (Anderson et al., 2004; American Cancer Society, 2006; Jemal et al., 2006; Break, 2007). While in Iran will develop one in every thirty five women. According to statistics from the Iranian Cancer Society, 3,645 new cases of invasive breast cancer will be diagnosed during 1998-2002 years (Mohagheghi and Mosavi-Jarrahi, 2006). In the United Kingdom, where the age standardized incidence and mortality is the highest in the world, the incidence among women aged 50 approaches two per 1,000 women per year, and the disease is the single commonest cause of death among women aged 40-50, accounting for about a fifth of all deaths in this age group (McPherson et al., 2000). Breast cancer is a rare disease in young women, yet is the leading cause of cancer deaths in all ethnic groups in the United States and many parts of the world (Yankaskas, 2005-2006). Diverse studies performed with the objective of establishing the epidemiology for breast cancer in young

women have shown widely varying results (Yankaskas, 2005-2006).

Breast cancer constitutes 13-35% of all female cancers. Almost half of patients are below 50 and median age is 49-52 years as compared to 63 in industrialized nations. A recent rise of Age-Standardized Incidence Rates (ASR) is noted. Advanced disease remains very common in Egypt, Tunisia, Saudi Arabia, Syria, Palestinians and others.

Breast cancer is the most common cancer among women in Arab countries with a young age of around 50 years at presentation. Locally advanced disease is very common and total mastectomy is the most commonly performed surgery. Awareness campaigns and value of clinical breast examination were validated in the Cairo Breast Cancer Screening Trial. More radiation centers and early detection would optimize care and reduce the currently high rate of total mastectomies (El Saghir, 2007).

According to multi-national collaborative study retrospectively in India, Malaysia and Hong Kong have reported that despite an increasing trend, the incidence of breast cancer is lower, yet the cause-specific mortality is significantly higher in developing Asian countries compared with developed countries in Asia and the rest of the world (Agarwal et al., 2007).

The objectives of this study were to determine the risk factors of breast cancer in Iranian women less than 40 years of age.

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## Materials and Methods

A case control study was carried out to investigate associations between breast cancer risks at age under 40 years among women in university-affiliated teaching hospital in Tehran city, Iran. A total of 624 women were recruited. After providing written informed consent, participants were interviewed in clinic. 312 newly diagnosed cases aged below 40 years old participated (case group) and were matched for age and ethnicity with 312 controls with no diagnosis of cancer or other chronic diseases (control group). An interview-based questionnaire designed to collect information on demographic and socioeconomic status, as well as reproductive, medical history was used.

Data processing and statistical analysis were performed by using the SPSS 10.0. They were expressed as percentage. The significance level was taken at 5%.

## Results

The general information about the selected subjects is presented in table 1, Most of women (41.3 and 40.0%)

**Table1. General Characteristics of the Subjects**

Characteristic	Case group (%)	Control group (%)	P value
Age (y)			
< 25	3.3	2.6	
25-29	15.7	19.9	
30-34	39.7	37.5	0.570
35-39	41.3	40.0	
Marriage status			
Married	77.9	89.7	
Divorce	2.2	1.0	0.001*
Single	19.9	9.3	
Number of deliveries			
0	4.5	7.1	
1-2	56.2	75.3	0.001*
3	24.4	15.9	
≥ 4	14.9	1.7	
First delivery age (y)			
< 30	87.5	78.5	
≥ 30	12.5	21.5	0.041*
Menarche age (y)			
< 12	17.6	3.2	
12	26.9	13.5	
13	33.1	39.4	0.001*
14	12.5	26.3	
≥ 15	9.9	17.6	
Familial breast cancer			
Yes	12.2	1.9	
No	87.8	98.1	0.001*
Duration of breast feeding (m)			
< 24	95.9	95.8	
≥ 24	4.1	4.2	0.985
Usage OCP			
Yes	38.8	18.3	
No	61.2	81.7	0.001*
Abortion			
Yes	18.0	19.0	
No	82.0	81.0	0.749

\* Significant at the 5% level; OCP, Oral contraceptive pill

were within 35-39 years old in case and control groups, respectively. Small differences in the education status were evident between the two groups and essentially higher percentage of women from both groups had college education. Majority of women from both groups were housewives. Majority of women surveyed had 1-2 children in both groups (case, 56.2%; control, 75.3%), and (38.8 and 18.3%) of women were using contraception in case and control groups, respectively. There were no statistically significant differences in age, breast feeding and abortion history in women at the two groups.

The results of Univariate logistic regression analysis according to the model tested in this study are shown in women never married (OR=2.42 95% CI=1.51-3.88) (P<0.001); with a family history of the breast cancer (OR=7.07 95% CI=2.95-16.99) (P<0.001; menarche at the age of ≥15 years compared with <12 years (OR=0.1 95% CI=0.04-0.23) (P<0.001); parity ≥4 compared with nulliparity (OR=13.3 95% CI=3.89-45.7) (P<0.001); oral contraceptive pills (OR=2/83 95% CI=1/87-4/24) (P<0.000) and was directly associated with age at first birth (OR=1.93 95% CI=1.02-3.67) (P=0.041) among women aged ≥30 years at first birth compared with these aged <30). No association emerged with history of breast-feeding (p=0.985) and history of abortion (p=0.749), but there was a significantly inverse association between duration of lactation and breast cancer risk (p=0.016). For women who breastfed for <24months OR=1.77 95% CI=1.22-2.58) when compared with those who breastfed for ≥24 months. In multivariate logistic regression parity, family history of the breast cancer, use of oral contraceptive pills, age at first birth was impacted. in women less than 40 years breast cancer risk was significantly higher in women with parity ≥4 compared with nulliparity and no association emerged with history of breast-feeding. Other risk factors in women less than 40 years in this study were similar to those described in breast cancer epidemiology at any age.

The stage-wise distribution of the disease is comparatively favorable in Iran. Pathology of breast cancers in young Iranian women and the clinical picture are different from those of average patients managed elsewhere in the world.

## Discussion

Breast cancer is the leading cause of cancer-related deaths in Asia, and in recent years is emerging as the commonest female malignancy in the developing Asian countries, overtaking cancer of the uterine cervix. There have been no studies objectively comparing data and facts relating to breast cancer in the newly developed, and developing Asian countries thus far.

According to Yankaskas, Young women have low incidence rates of breast cancer compared to older women. However, cancer incidence increases at a faster rate with increasing age in young women. Their cancers tend to be larger and higher grade with poorer prognostic characteristics, resulting in a higher risk of recurrence and death from breast cancer when compared to older women. Many of the usual risk factors for breast cancer in older women also increase risk in younger women including

increasing age, Black race, family history, later age at first birth and menarche, radiation exposure and lack of physical activity. Risk factors that have specific relevance to young women include reproductive factors, history of induced abortion or miscarriage, oral contraceptive use, smoking, and radiation exposure (Yankaskas, 2005-2006). The present study also confirms a significant influence in women with parity  $\geq 4$  compared with nulliparity and no association emerged with history of breast-feeding. Other risk factors in women less than 40 years in this study were similar to those described in breast cancer epidemiology at any age.

According to Agarwal et al. Patients are about one decade younger in developing countries than their counterparts in developed nations. The proportions of young patients (< 35 years) vary from about 10% in developed to up to 25% in developing Asian countries, which carry a poorer prognosis. In the developing countries, the majority of breast cancer patients continue to be diagnosed at a relatively late stage, and locally advanced cancers constitute over 50% of all patients managed (Agarwal et al., 2007).

In Italy, patients under 40 years old more frequently had a family history of breast cancer, more often used oral contraceptives and on average they had experienced menarche 1 year earlier than did older patients (Sidoni et al., 2006). Our results according to multivariate logistic regression model indicated that parity, family history of the breast cancer, use of oral contraceptive pills, age at first birth was impacted, respectively.

The incidence most risk factors in this large dataset of women aged less than 40 years were similar to those described in breast cancer epidemiology at any age. Of interest are the inverse associations with body mass index, age at menarche and time since last birth, the direct ones with age at first and last birth, and the higher risk of parous women compared with nulliparae in the Netherlands in women under 40 years has been more or less stable for the last 2 decades, while the mortality rate has decreased in the same period (van der Sangen et al., 2008). Most risk factors of breast cancer in women aged less than 40 years were similar to those described in breast cancer epidemiology at any age. Of interest are the inverse associations with body mass index, age at menarche and time since last birth, the direct ones with age at first and last birth, and the higher risk of parous women compared with nulliparae. Breast cancer is the most common cause of cancer-related death among women worldwide, with case fatality rates highest in low-resource countries. Despite significant scientific advances in its management, most of the world faces resource constraints that limit the capacity to improve early detection, diagnosis, and treatment of the disease (Tavani et al., 1999).

Early breast cancer detection improves outcome in a cost-effective fashion assuming treatment is available, but requires public education to foster active patient participation in diagnosis and treatment. Clinical breast examination combined with diagnostic breast imaging (ultrasound +/- diagnostic mammography) can facilitate cost-effective tissue sampling techniques for cytological or histological diagnosis (Mohagheghi and Mosavi-Jarrahi,

2006).

Better socioeconomic conditions, health awareness, and availability of breast cancer screening seem to be the major causes of a favorable clinical picture and outcomes in Iran. Population-based screening with affluent resources and accessible care should be implemented.

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## References

- Agarwal G, Pradeep PV, Aggarwal V, et al (2007). Spectrum of breast cancer in Asian women. *World J Surg*, **31**, 1031-40.
- American Cancer Society (2006). Breast cancer facts and figures 2005-2006. Atlanta : American cancer society.
- Anderson WF, Chu KC, Devesa SS (2004). Distinct incidence patterns among in situ and invasive breast carcinomas, with possible etiologic implications. *Breast Cancer Res Treat*, **88**, 149-59.
- Break S (2007). Berek & Novak's Gynecology (14<sup>th</sup> ed.), Lippincott Williams & Wilkins Co, New York, 1605-9.
- El Saghir NS, Khalil MK, El Kinge AR, et al (2007). Trends in epidemiology and management of breast cancer in developing Arab countries: a literature and registry analysis. *Int J Surg*, **5**, 225-33.
- Jemal A, Siegel R, Ward E (2006). Cancer statistics, 2006. *Ca Cancer J Clin*, **56**, 106-30.
- McPherson K, Steel CM, Dixon JM (2000). ABC of breast diseases. *BMJ*, **321**, 624-8.
- Mohagheghi M, Mosavi-Jarrahi A (2006). Cancer incidence in the population of Tehran Metroplis, 1998-2002. The cancer institute cancer research center : Tehran, Iran.
- Sidoni A, Cavaliere A, Bellezza G, et al (2006). Breast cancer in young women: clinicopathological features and biological specificity. *Breast*, **12**, 247-50.
- Tavani A, Gallus S, La Vecchia C, et al (1999). Risk factors for breast cancer in women under 40 years. *Eur J Cancer*, **35**, 1361-7.
- van der Sangen MJ, Voogd AC, van de Poll-Franse LV, et al (2008). Breast cancer in young women: epidemiology and treatment dilemmas. *Ned Tijdschr Geneesk*, **152**, 495-500.
- Yankaskas BC (2005-2006). Epidemiology of breast cancer in young women. *Breast Dis*, **23**, 3-8.