

Prevalence of Breast Cancer in a Defined Population of Iran

A Rezaianzadeh¹, ST Heydari², H Hosseini¹, AA Haghdoost³, E Barooti⁴, KB Lankarani^{2*}

¹Department of Epidemiology, Shiraz University of Medical Sciences, Shiraz, Iran ²Health Policy Research Center, Shiraz University of Medical Sciences, Shiraz, Iran ³Kerman University of Medical Sciences, Kerman, Iran ⁴Ministry of Health and Medical Education, Women's Affairs Office, Tehran, Iran

Abstract

Background: Prevalence of breast cancer in Asian developing countries is much lower than western developed countries. The main aim of this study was to measure breast cancer prevalence in a defined population of Iran.

Methods: A total of 25201 women who were under coverage of "Imam Khomeini Relief Foundation (IKRF)", which is an organization for delivering supportive social and cultural services to the deprived and poor subgroups of the society, were involved in the study. The study was conducted during years 2007 and 2008. All subjects were interviewed for their socio-demographic features and underwent precise clinical and para-clinical breast examination.

Results: Mean age was 47 years with standard deviation 10 ranging from 11 to 88 years. Subjects were from deprived subgroups of the community; were mainly illiterate or had primary school education (86%) and majority of them (93%) had their first full-term pregnancy at age less than 26 years and also were multiparous. With confirmed diagnosis by breast biopsy, breast cancer prevalence was 0.15% (95%CI; 0.10-0.20).

Conclusion: Compared with developed countries, Asian developing countries have been at a lower risk of breast cancer development. It is seen that more deprived subgroups are at much lower risk. The more industrialized life is accompanied with more hazards.

Keywords: Prevalence; Breast cancer; Household women; Iran

Introduction

Breast cancer is the most frequently diagnosed malignancy among women in developed countries,^{1,3} and in some developing countries.^{4,6} Breast cancer is more prevalent in developed western countries than in developing Asian countries. Investigations have revealed that almost one in nine American women will suffer from breast cancer in their lifetimes^{7,8} while the Western European and North American population have the highest lifetime risk. Prevalence of breast cancer in these countries is estimated between 8 and 10%. However, the lowest prevalence is seen in Asian countries, about 1%.⁹ In Iran, the prevalence of breast cancer was reported to be 6.7 per thousand in 2002, which is less than the estimates for Asian countries.¹⁰ Several reports from Iran have reported that the prevalence of breast cancer in Iran

is lower than in European and American countries but they did not report an exact measure.^{11,12}

Breast cancer usually occurs at the time when women have important family and occupational roles, and thus any treatment in relation to this cancer would be particularly stressful for the patient and her family. Disparities in the prevalence of breast cancer have long been debated. As mentioned before the prevalence of breast cancer is low in Iran. The main aim of this study was to measure the prevalence of breast cancer in a specific group of women from low social class and deprived subgroups of Iranian population.

Materials and Methods

A total of 25201 women who were insured by the "Imam Khomeini Relief Foundation (IKRF)" were involved in this study. The "Imam Khomeini Relief Foundation (IKRF)" was established in 1980 in Islamic Republic of Iran for delivering supportive

*Correspondence: Kamran Bagheri Lankarani, MD, Health Policy Research Center, Shiraz University of Medical Sciences, Shiraz, Iran. Tel/Fax: +98-711-2309615, e-mail: heidaryt@sums.ac.ir
Received: March 10, 2011 Accepted: May 9, 2011

social and cultural services to deprived and poor subgroups of the society. Thus women in this study were mainly Vulnerable Household Women's Health Assessment (VH-WHAT) from poor and low social subgroups.¹³ This study was conducted during a two years period from 2007 to 2009.

Islamic Republic of Iran, in the Middle East region with an over 70 million population, consists of 30 provinces with Tehran as its capital with more than 10 million residents. Along with Tehran, 10 more province capitals including: Shiraz, Mashhad, Kerman, Kermanshah, Bushehr, Qom, Isfahan, Gorgan, Rasht and Yazd were included in this study.

The statistics and number of vulnerable women was obtained from the provincial public service organizations (IKRF). Population size of each province capital was determined according to its population and allocated budget.

All of the subjects were first interviewed for socio-demographic data, drug history and history of cancer. Selected gynecologists and surgeons attended educational workshops to be oriented regarding the principals of a concise breast examination. Then in the appointment day, a gynecologist or surgeon performed a complete breast examination to detect any lump or mass along with axillary lymph node exam. All participants in the range of 35 to 60 years then referred to designated radiology centers for mammography. For those women above 60 or below 35 years of age, mammography was done according to physician's opinion and results of breast examination.

In some cases with suspicious results of mammography, a breast ultrasonography was performed to evaluate any abnormal mass or lumps; in presence of any cystic lesion it was aspirated by needle. All suspicious breast masses underwent biopsy for detection of malignant lesions and the breast cancer diagnosis was confirmed by the result of biopsy. All analysis was conducted using Stata v10.

Results

Mean age of the population study was 47 years with standard deviation of 10 years, ranging from 11 to 88 years. Only 2% were single while 19% were married and 79% were divorced or widowed women. Fifty eight percent reported their menarche at age 13 years or less and the rest at 14 years and above. Age of marriage in 70% of them was 18 years or less and in 26% was 19 to 25 years and only 4% had age of mar-

riage at age 26 years or above. Fifty five percent had their first pregnancy at age 18 or less and 37% between age 19 to 25 and only 8% at age 26 years and above. Eighty eight percent were unemployed and received their life expenses from IKRF. Forty percent were illiterate and 47% had only primary school education and only 3% had university education. Forty six percent had never used OCP, 47% had started to use OCP between ages 20 to 30 years and 7% at age above 30 years. However, duration of OCP use was not clear for the two last groups (Table 1).

Number of pregnancies was significantly associated with diagnosis of breast cancer and those with a higher number of pregnancies were less likely to be diagnosed with breast cancer. Marital status, menarche age, age of marriage, age at first pregnancy, occupation and education were not associated with the disease diagnosis.

About 1% of subjects had history of radiation exposure and 6% had reported hormone therapy before the time study and these two factors were not associated with the disease diagnosis. Positive family history of both breast cancer and ovarian cancer was about 3%. Also family history of breast and ovarian cancer were significantly related and those with family history of one cancer were more likely to have family history of another. Eighteen percent of breast cancer patients had reported family history of all other cancers. Only one of the breast cancer patients had been previously diagnosed with ovarian cancer. History of cancer in subjects and their families was not associated with the disease diagnosis.

All of the subjects were examined for benign changes in breast skin and nipple like redness and exfoliation. However, none of diagnosed patients with breast cancer had these changes in their breasts. Final diagnosis of breast cancer was confirmed in 38 of 25201 subjects of study which was 0.15%, 95%CI; 0.10-0.20.

Discussion

The results of this study showed that prevalence of breast cancer in the specific population of study was 0.15% which is much lower than other studies on breast cancer prevalence from Iran.^{10,11} The majorities of subjects in this study (93%) had their first full-term pregnancy at age less than 26 years and also were multiparous. Furthermore, those with a higher number of pregnancies were less likely to be diagnosed with breast cancer. It has been shown that early pregnancy

Table 1: Distribution of socio-demographic and reproductive features

Variable	Percent	Variable	Percent
Marital status		Education	
Single	2	Illiterate	39
Married	19	Primary school	47
Divorced	29	High school	11
Widowed	50	University	3
Occupation		Menarche age	
Manual	6	≤13 years	58
Non-manual	5	≥14 years	42
Housewife	89		
Age at marriage		Age at first pregnancy	
≤18 years	70	≤18 years	55
19-25 years	26	19-25 years	38
≥ 26 years	4	≥ 26 years	7
No. of pregnancies		OCP use	
0	5	Never	46
1-5	64	Between age 20-30	47
6-10	27	Above age 30	7
≥11	4		
Age at time of study		Smoking	
≤25 years	1	Smoker	3
26-39 years	23	Ex-smoker	2
40-49 years	37	Never smoker	95
50-64 years	36		
≥65 years	3		

and multiparity are protective factors for breast cancer development.¹³ About half of subjects of this study had never used OCP and the rest had reported OCP use between ages 20 to 30 years without mentioning the duration of usage. In addition, apart from use of OCP, 94% of subjects had reported no hormone replacement therapy. It has been also reported that prolonged exposure to exogenous estrogens and progestins in hormone therapy increased a woman's risk of developing breast cancer.¹⁴

Eighty six percent of our study population were illiterate or had education level less than 6 years. A 36% lower risk was observed for women with more than 16 years of education as compared to those with the lowest educational achievement (7-9 years).¹⁵ Alcohol intake was another risk factor for breast cancer and none of subjects of this study were alcoholic.¹⁵

These characteristics of our study population could be a reason for the very low prevalence of breast cancer among them. Moreover, all subjects were from a low social class and deprived subgroups of Iran's population. Although recent studies have shown that breast cancer risk is increasing in developed countries, some studies reported that changes in

risk of breast cancer differs in various ethnicities.^{15,16} The prevalence of breast cancer is much higher in developed countries but with a better prognosis. In Iran with a lower prevalence, it has been shown that the overall prognosis is worse when compared to developed countries.^{17,18}

Furthermore, despite the high prevalence, the prognosis of breast cancer is better in the developed countries. However, although the prevalence of breast cancer in Iran is lower than that in the developed countries, the overall prognosis is worse.¹⁹ Since this study was conducted on a specific group of Iran's population, further investigations on general population are needed to measure the prevalence of breast cancer in normal population.

Acknowledgement

The authors wish to thank the Shiraz University of Medical Sciences and Imam Khomeini Relief Foundation for their cooperation.

Conflict of interest: None declared.

References

- 1 Fisch T, Pury P, Probst N, Bordoni A, Bouchardey C, Frick H, Jundt G, De Weck D, Perret E, Lutz JM. Variation in survival after diagnosis of breast cancer in Switzerland. *Ann Oncol* 2005;**16**:1882-8. [16216833] [<http://dx.doi.org/10.1093/annonc/md404>]
- 2 Grau AM, Ata A, Foster L, Ahmed NU, Gorman DR, Shyr Y, Stain SC, Pearson AS. Effect of race on long-term survival of breast cancer patients: Transinstitutional analysis from an inner city hospital and university medical center. *Am Surg* 2005;**71**:164-70. [16022018]
- 3 Nagel G, Wedding U, Röhrig B, Katenkamp D. The impact of comorbidity on the survival of postmenopausal women with breast cancer. *J Cancer Res Clin Oncol* 2004;**130**:664-70. [15300426] [<http://dx.doi.org/10.1007/s00432-004-0594-3>]
- 4 Al-Moundhri M, Al-Bahrani B, Pervez I, Ganguly SS, Nirmala V, Al-Madhani A, Al-Mawaly K, Grant C. The outcome of treatment of breast cancer in a developing country--Oman. *Breast* 2004;**13**:139-45. [15019695] [<http://dx.doi.org/10.1016/j.breast.2003.10.001>]
- 5 Foo CS, Su D, Chong CK, Chng HC, Tay KH, Low SC, Tan SM. Breast cancer in young Asian women: Study on survival. *ANZ J Surg* 2005;**75**:566-72. [15972049] [<http://dx.doi.org/10.1111/j.1445-2197.2005.03431.x>]
- 6 Kim KJ, Huh SJ, Yang JH, Park W, Nam SJ, Kim JH, Lee JH, Kang SS, Lee JE, Kang MK, Park YJ, Nam HR. Treatment results and prognostic factors of early breast cancer treated with a breast conserving operation and radiotherapy. *Jpn J Clin Oncol* 2005;**35**:126-33. [15741302] [<http://dx.doi.org/10.1093/jco/hyi039>]
- 7 Ann D. Thor, Jianzhou Wang, Sue A. Bartow. *The Breast*. In: Emanuel Rubin, Fred Gorstein, Raphael Rubin, Roland Schwarting, David Sarayer. *Rubin's Pathology*, 4th Edition, 2004; p. 998-1016.
- 8 Susan C. Lester, Ramzi S. Cotran. *The Breast*. In: Ramzi S. Cotran, Vinay Kumar, Tucker Collin S. Robbins *Pathologic Basis of Disease*, 6th Edition, 1999; p. 1093-1117.
- 9 Farooq S, Coleman MP. Breast cancer survival in south asian women in england and wales. *J Epidemiol Community Health* 2005;**59**:402-6. [15831690] [<http://dx.doi.org/10.1136/jech.2004.030965>]
- 10 Hadi N, Sadeghi-Hassanabadi A, Talei AR, Arasteh MM, Kazerooni T. Assessment of a breast cancer screening programme in Shiraz, Islamic republic of Iran. *East Mediterr Health J* 2002;**8**:386-92. [15339128]
- 11 Vahdaninia M, Montazeri A. Breast cancer in Iran: A survival analysis. *Asian Pac J Cancer Prev* 2004;**5**:223-5. [15244529]
- 12 Mehrabani D, Tabei SZ, Heydari ST, Shamsina SJ, Shokrpour N, Amini M, Masoumi SJ, Julaei H, Farahmand M, Manafi A. Cancer occurrence in Fars Province, Southern Iran. *Iran Red Crescent Med J* 2008;**10**:314-322.
- 13 Barooti E, Haghdoost AA, Hosseini H, Tabibzadeh Z, Bahmani S, Taheri S, Zamiri N, Lankarani KB. Vulnerable Household Women's Health Assessment Trial (VH-WHAT): Protocol Design and Implementation. *Iran Red Crescent Med J* 2010;**12**: 358-64.
- 14 Cullinane CA, Lubinski J, Neuhause SL, Ghadirian P, Lynch HT, Isaacs C, Weber B, Moller P, Offit K, Kim-Sing C, Friedman E, Randall S, Pasini B, Ainsworth P, Gershoni-Baruch R, Foulkes WD, Klijn J, Tung N, Rennert G, Olopade O, Couch F, Wagner T, Olsson H, Sun P, Weitzel JN, Narod SA. Effect of pregnancy as a risk factor for breast cancer in BRCA1/BRCA2 mutation carriers. *Int J Cancer* 2005;**117**:988-91. [15986445] [<http://dx.doi.org/10.1002/ijc.21273>]
- 15 Kahlenborn C, Modugno F, Potter DM, Severs WB. Oral contraceptive use as a risk factor for premenopausal breast cancer: a meta-analysis. *Mayo Clin Proc* 2006;**81**:1290-302. [17036554] [<http://dx.doi.org/10.4065/81.10.1290>]
- 16 Maskarinec G, Zhang Y, Takata Y, Pagano I, Shumay DM, Goodman MT, Le Marchand L, Nomura AM, Wilkens LR, Kolonel LN. Trends of breast cancer incidence and risk factor prevalence over 25 years. *Breast Cancer Res Treat* 2006;**98**:45-55. [16752080] [<http://dx.doi.org/10.1007/s10549-005-9129-0>]
- 17 Keegan TH, Chang ET, John EM, Horn-Ross PL, Wrensch MR, Glaser SL, Clarke CA. Recent changes in breast cancer incidence and risk factor prevalence in San Francisco Bay area and California women: 1988 to 2004. *Breast Cancer Res* 2007;**9**:R62. [20210979] [<http://dx.doi.org/10.1186/bcr1768>]
- 18 Rezaianzadeh A, Peacock J, Reidpath D, Talei A, Hosseini SV, Mehrabani D. Survival analysis of 1148 women diagnosed with breast cancer in Southern Iran. *BMC Cancer* 2009;**9**:168. [19497131] [<http://dx.doi.org/10.1186/1471-2407-9-168>]
- 19 Heydari ST, Mehrabani D, Tabei SZ, Azarpira N, Vakili MA. Survival of Breast Cancer in Southern Iran. *Iran J Cancer Prev* 2009;**2**:51-4.