Prevalence of Risk Factors and Protective Factors of Breast Cancer in Yasuj City, Iran

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ABSTRACT

Aims Breast cancer with known risk factors and preventive factors is one of the most important health concerns and the most common cancer among women worldwide. This study was conducted to assess breast cancer risk factors and protective factors in women aged 20-69 years in Yasuj, Iran.

Instruments & Methods In this descriptive cross-sectional study, a total of 492 women aged 20-69 years were selected through systematic random sampling method. Data were collected through a demographic checklist and a checklist of potential and proven risk factors and protective factors based on textbooks and the Up To Date web site. Data analysis was performed by SPSS 16 software using descriptive statistics.

Findings The most common risk factors were overweight (41.1%), obesity (27.2%), and exposure to smoking (27.6%). Among the probably protective factors, the most frequent were breastfeeding for at least 16 months (83.5%), then the number of pregnancy≥5 (33.5%), and normal BMI after menopausal (18.5%).

Conclusion The most common risk factors and protective factors are modifiable and related to the lifestyles.

Keywords Breast Cancer; Risk Factors; Protective Factors; Iran

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CITATION LINKS

[1] Salehiniya H. Epidemiology and trends in breast cancer mortality in iran [2] Prevalence of breast cancer in Isfahan Province, Iran [3] Premenopausal Breast Cancer Collaborative: A pooling project of studies participating in the national cancer institute cohort consortium [4] Risk factors and preventions of breast cancer [5] Breast cancer in Iranian woman: Incidence by age group, morphology and trends [6] The economic burden of breast cancer in Iran [7] A ten-year study on the prevalence and frequency of risk factors for breast cancer in Sabzevar, Iran [8] Risk factors of breast cancer in Dezful city of Iran: A case-control study [9] Breast cancer status in Iran: Statistical analysis of 3010 cases between 1998 and 2014 [10] Cancer incidence in Iran in 2014: Results of the Iranian national population-based cancer registry [11] Factors that modify breast cancer risk in women [12] Prevalence of breast cancer risk factors in women (20-69 years old) in Isfahan [13] Assessment of risk factors for breast cancer among women under 50 years old [14] Prevalence of breast cancer risk factors in Japan [15] Breast cancer risk factors. Prz Menopauzalny [16] Relevance of risk factors of breast cancer in women: An eastern Indian scenario [17] Prevalence of breast cancer risk factors in women aged 20-69 years in Dehaghan in 2012 [18] An investigation of breast cancer risk factors in Cyprus: A case control study [19] Prevalence, risk factors and disease knowledge of breast cancer in Pakistan [20] Prevalence of risk factors for breast cancer in German airline cabin crew: A cross-sectional study [21] Assessment of certain breast cancer risk factors during reproductive age in women in Mashhad (2002-2003) [22] Risk factors of breast cancer in women of Golestan provice: A case conyrol study [23] Breast cancer in Iran: An epidemiological review

Introduction

Breast cancer is a major health concern [1], the most common cancer among women worldwide [2-4] and the first cause of cancer death [1, 5] in both developed and developing countries [6], and its incidence is estimated to be 1.7 million by 2020 [2], accounting for 25% of female cancer every year [2-7]. The incidence of breast cancer in the East Mediterranean Region (EMRO) has reported that 27 per 100000 female populations [8]. In Iran, breast cancer is the most frequent malignancy in women, and its peak incidence is in the fourth to fifth decades of life [9] with a standardized age rate (ASR) of 27.4 (95% CI,22.5-35.9) [2]. In Kohgiluye and Boyer-Ahmad province (Southwest of Iran), breast cancer is the most frequently identified type of malignancy among women, with an average annual crude incidence rate of 19.42 an ASR of 21.82 per 100000 female population, accounting for 25.41% of female cancer in 2014 [10]. Given that, the incidence of breast cancer is gradually increasing. The high economic burden of it (in Iran, it was US$ 947374468, and most of the cost was related to the productivity lost due to breast cancer deaths and the direct medical cost accounted for nearly 17% of the estimated total cancer) and its negative effects on mental health, socioeconomic status and quality of life of patients and other family members, having data about the prevalence of risk factors and preventive factors of breast cancer is necessary [6].

About one-half of newly diagnosed breast cancers can be explained by known risk factors [11], such as aging, age at menarche, first live birth and menopause, personal and family history of breast cancer, gene mutation, unhealthy lifestyle, overweight and obesity assessed as body mass index (BMI), lack of breastfeeding, hormone replacement therapy (HRT), smoking, alcohol consumption, chest radiation in adolescence, proliferative breast disease, previous use of oral contraceptive pills [5] that has been mentioned in several studies in Iran (Isfahan, Kermanshah, Dehaghan, Dezful) and other countries such as Poland, China, London, Japan, India, Cyprus, Pakistan [3, 4, 7, 8, 11-19]. In general, breast cancer risk factors can be divided into behavioral (modifiable) and non-behavioral (non-modifiable). Lifestyle is a major changeable risk factor of breast cancer that can be efficiently controlled by individuals, and awareness of this factor can significantly increase their perceived susceptibility towards a healthy lifestyle and self-care behaviors [7]. On the other hand, breastfeeding for at least 12 months, and physical activity are two important changeable protective factors that may decrease the possibility of developing breast cancer [11].

Based on the subjects mentioned above, it is very important to assess and clarify the prevalence of risk factors and protective factors of breast cancer in women. Given that life, style is different in various parts of Iran, and it has an important role in developing modifiable risk factors; on the other hand, there is a lack of data about this matter in Yasuj (Iran); this study was conducted to investigate the prevalence of risk factors and protective factors of breast cancer in resident women in Yasuj (Iran) to enable policymakers and health care providers to design and implement necessary interventions to modify risk factors and strengthen protective factors.

Instrument & Methods

This descriptive cross-sectional study was conducted in urban health centers of Yasuj in 2019. There are five urban health centers in Yasuj, and the electronic health file of all women is available from an integrated national health system as the framework. A total of 492 women aged 20-69 years were selected through a systematic random sampling method. A representative sample size of 492 women was calculated at the 95% confidence level, the average prevalence of breast cancer risk factors was 0.17 in Isfahan (Iran) [12], and d was 0.2. After explaining the study's purpose, the written informed consent was taken from all women for their participation in the study, and they were reassured that their information was confidential.

Data were collected through a demographic checklist and a checklist of potential and proven risk factors and protective factors based on textbooks and the Up To Date website.

Women completed the questionnaires themselves. If someone was illiterate, her questionnaires were completed by the researcher.

Data analysis was performed using SPSS 16 software. Quantitative variables were presented as mean±SD, and Qualitative variables were presented as counts (frequencies).

Findings

The mean age of women was 41.45±12.67 years old. Out of 492 women, 460 (93.5%) were married, 102 (20.7%) were employed, and 130 women (26.4%) were menopause. The mean BMI was 27.5±4.3Kg/m². Reproductive characteristics of participants have been shown in Table 1.

Table 1) Reproductive characteristics of women aged 20-69 years

Variables	Mean±SD	Median
Parity (number)	3.50±2.30	3
Delivery (number)	3.08±2.18	3
Abortion (number)	0.44±0.75	0
Age of menarche	13.17±1.99	13
Age at first live birth (years)	21.09±5.15	20
Age of menopause (years)	49.13±5.41	50
The total duration of breastfeeding (months)	62.36±48.52	48

The most common risk factors were overweight (41.1%), obesity (27.2%), and exposure to smoking

(27.6%). Personal history of breast, colorectal, ovarian, and endometrial cancer, history of radiotherapy to the chest, and Alcohol consumption were not reported by anyone (Table 2).

The frequency of protective factors that may reduce breast cancer risk was ordered as 1- breastfeeding for at least 16 months: 411 (83.5%), parity≥5: 154 (33.5%), and normal BMI after menopause: 24 (18.5%).

Table 2) Frequency of related risk factors to breast cancer of women aged 20-69 years

Variables	No. (%)
Early menarche	84 (17.1)
First, live birth after 30 years old	17 (4)
Late menopause	16 (12.3)
Overweight	202 (41.1)
Obesity	134 (27.2)
History of breast cancer in the first-degree family	15 (3)
Personal history of breast cancer	0
HRT more than five years	2 (2.39)
Radiotherapy to chest	0
Alcohol consumption	0
Smoking	71 (14.4)
Second-hand smoker	136 (27.6)
Night shift work	14 (13.73)
Personal history of ovarian cancer	0
History of ovarian cancer in the first-degree family	1 (2)
Personal history of endometrial cancer	0
History of endometrial cancer in the first-degree family	7 (1.4)
Personal history of colorectal cancer	0
History of colorectal cancer in the first-degree family	20 (4.1)
Overweight after menopause	52 (40)
Obesity after menopause	54 (41.5)

Discussion

The most frequent modifiable risk factors were considered overweight, second-hand smokers, obesity, and smoking in the current investigation.

In the study by Winter *et al*., the mean BMI was about 22Kg/m2 [20] in the normal range despite our study (27.5Kg/m²). This difference can be due study population, which assessed the risk factors of breast cancer in the German airline cabin crew. Aich's study in India shows that the mean BMI in the control group was 23.7±4.7Kg/m² [16], which was normal and lower than our results. Also, 30% and 22% of participants had overweight and obesity, respectively, which is lower than our findings (41% and 27%) and may be related to the difference in race and geographic location of residence. In the Rouhparvarzadeh study, only 9% of women were obese [12]. This discrepancy may be justifiably ethnicity, lifestyle, and tendency to obesity in women. According to Hadjisavvas and his colleagues, 39% and 23% of women were overweight and obese, respectively [18].

More than 25% (27.5%) of women in our study reported a history of exposure to a smoker at home.

In the Badrian study in Dehaghan, 27.5% were passive smokers [17]. Also, in a study by Fathi and her colleagues in Mashhad, 25.6% were second-hand smoker [21] which are in concordance with our results. Nevertheless, in the Rouhparvarzadeh study, only 8.7% [12] of women reported exposure to a smoker, approximately one-third compared to our study. In a study by Jafarinia *et al*., exposure to a smoker was reported by 39% of women [8]. These differences may be due to sociocultural differences.

According to our results, 14.4% of women were smokers, which is very higher than other conducted studies in Iran, such as 0.2% [17] and 0.4% [12] in 2012, respectively. This difference can be explainable with the increased prevalence of smoking in women since recent years, customs, ethnicity, and sociocultural factors. On the other hand, the results of our study are nearly similar to Hadjisavvas in Cyprus (18.7%) [18] and Winter in German (12.6%) [20].

Regarding age at menarche, the mean age of menarche was 13.17± 1.99 years in our study, and 17% had early menarche. In a study by Aich *et al.* mean age of menarche was 13.47±1.6 years, and 7.8% had early menarche [16]. In Hadjisavvas's study, early menarche was reported by 11.4% [18]. The results of one study in Yasuj (Iran) in 1997, the mean age of menarche was 13.50±1.33 that is similar to our study after two decades [22]. In the findings of another study in Iran, the mean age of menarche was 13.42±1.42 [23] and 13.14±1.5 [23] that are in concordance to our results, too.

Regarding early menarche, it was reported by 3.94% and 4.6% in Badrian [17] and Rouhparvarzadeh [12] studies, respectively. Nevertheless, it is very lower in comparison to our results. This difference may be due to ethnicity and climate differences.

Our study results showed that the mean age at first live birth was 21.09±5.15 years and in 17% of women, first live birth was after 30 years old. In the studies of Besharat *et al*. [22] and Mousavi *et al*. [23], the mean age at first live birth was 21.56±18.61 and 19.40±4.5 years, respectively. The maximum age at first live birth was 23 in Fathi Najafi *et al*.'s study [21]. These results are similar to our findings. In Winter *et al*. [20], age at first live birth was higher (32 years old) in German airline cabin crew that can be reasonable due to their jobs. In another study in Japan, it was 26.4±3.5 years. It should be considered that many factors such as sociocultural factors, tendency to have a high-level academic education, increasing age of marriage can influence the age at first live birth. The results of studies in Iran, regarding the age at first pregnancy≥30 years, were 2.6% in Dezful [8], 2% in Isfahan [12], and 1.2% in Dehaghan [17]. It was 0.09% in India [16] and 10.5% in Cyprus [18], too. This high difference may be due to increased marriage age, the tendency to delay childbearing, and the increased divorce rate in Iran in recent years.

In our study, the mean age of menopause was 49.13±5.41, and late menopause was reported by

12% of 130 menopause women. It was 48.31±4.56 [23], 48 ±5.2 [24] in Besharatand *et al.* and Mousavi *et al.*'s studies, respectively, concordance with our results. In a study of Mizota & Yamamoto in Japan [14] and Aich *et al.* in India [16], it was 51.4±3.5 and 44.4±5. 6 years, respectively. It should be noticed that some factors, such as climate situation and family history, can influence the age of menopause.

Late menopause (after 55 years) was reported by Badrian *et al.* [17] and Rouhparvarzadeh [12] in 0.53% and 0.2% of Iranian women, respectively. These are very lower in comparison to our findings. It may be due to a higher percentage of overweight and obesity in women of this region. Also, genetics has an important role in predisposing women to late-onset menopause.

HRT for more than five years was reported by 204% of women. It was 0.53% [17], 1.8% [8], and 7.8% [18] in a study by Badrian *et al.*, Jafarinia *et al.,* and Hadjisavvas *et al.*, respectively. Wide variation in HRT consumption may be related to the severity of symptoms, level of tolerance, differences in geographic location, race, and ethnicity.

About 14% of women reported night shift work in our study, whereas it was 0.2% [12] and 0 [17] in Dehaghan and Isfahan, respectively. It can be explainable by socioeconomic factors in different provinces of Iran.

Any women in this study did not report alcohol consumption. It should be considered that alcohol consumption is forbidden in Iran that can influence the true answer. In studies by Rouhparvarzadeh [12] and Badrian *et al.* [17], it was 0.1% and 0.06%, respectively.

There was no report of a personal history of breast, ovary, endometrial and colorectal cancer in this study. Radiotherapy to the chest was not reported by anyone, too.

Family history of breast cancer in the first-degree family was positive in 3% of women. It was positive in 0.7% [12], 0.86% [17], 2.3% [16], 2.2% [14] and 9% [18] in Isfahan (Iran), Dehaghan (Iran), Mashhad (Iran), India and Japan, respectively. According to the present study results, family history of the ovary, endometrium, and colorectal cancer was positive in 2%, 1.4%, and 4% of women, respectively. It was overlaid positive in 0.4% [12] and 0.46% [17] in Rouhparvarzadeh and Badrian *et al.'s* study, respectively. Given that genetic and environmental factors have a role in developing breast cancer, differences in the results are not unexpected.

Based on our findings, more than 80% of post-menopause women were overweight and obese, which is very high, and the necessity of implementing some interventions such as lifestyle modification is felt.

Breastfeeding as a protective factor was positive in more than 80% of women. Mead's breastfeeding duration was more than five years, and 50% of women had to breastfeed for more than four years. In the study by Rouhparvarzadeh [12], Badrian *et al.* [17], and Jafarinia *et al.* [8], 83.5%, 88%, and 78.5% had breastfed for more than two years, respectively that are in concordance with our results. Nevertheless, in the study of Hadjisavvas *et al.* [18], only 24% of women had to breastfeed for more than one year. Also, the average duration of lactation in Aich *et al.* [16] study was about 25 months.

Mean and median parity was 3.5±2.3 and 3, respectively, in our study, and one-third of women had parity≥of 5. In Aich *et al.*, 18% had parity≥5, and median parity was 3 [16]. The results of Hadjisavvas *et al.* [18] showed that 44% of women had three or more children. Given that socioeconomic and cultural factors play an important role tendency to childbearing, Differences are acceptable. On the other hand, in Iran, increasing the age of marriage, the tendency to delay childbearing, and having one to two children in most families are the probable causes of decreasing parity. In this study, based on sampling, none of the samples had breast cancer, So we could not predict risk factors and protective factors.

Conclusion

Overweight, obesity and smoking exposure were the most common risk factors related to lifestyle and modified. Given that most of the women were housekeepers, the necessity of changing their lifestyle is felt. On the other hand, planners and policymakers should implement some interventions for healthy lifestyles, focusing on a nutritional diet, effective physical activity, and disadvantages of smoking and exposure to it. Also, training women about breast cancer risk and protective factors via mass media and health care providers is essential. Besides, it enables policymakers and health care providers to design and implement necessary interventions to modify risk factors and strengthen protective factors.

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