Journal of Midwifery & Reproductive Health

JMRH.mums.ac.ir

A Ten-Year Study on the Prevalence and Frequency of Risk Factors for Breast Cancer in Sabzevar, Iran

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ARTICLEINFO

Article type:
Original article

Article History:
Received: 07-July-2015
Accepted: 11-May-2016

Key words:
Breast Cancer
Prevalence
Reproductive Factors
Risk Factors

ABSTRACT

Background & aim: Evaluation of prevalence of risk factors for breast cancer in different regions of Iran and identification of their significant effect on this disease can promote the prevention and reduction of breast cancer incidence. Therefore, this study aimed to evaluate the prevalence, demographic characteristics, and frequency of the risk factors of breast cancer during 10 years.

Methods: This cross-sectional study was conducted on 160 women with breast cancer during 10 years. The samples, referred by health connectors and registration centers for patients with cancer, were selected using census sampling. Research tool was a reliable and valid researcher-made questionnaire, validity and reliability of which were confirmed. Data analysis was performed in SPSS version 16 using descriptive statistics.

Results: In total, mean age of surviving women was 50.7±1.2 years. The highest incidence rate of breast cancer was 35.2% in the group of participants aged 40-49, while the highest prevalence rate of this disease was 0.432 per 1000 samples in a group of patients aged 50- 59 years. Moreover, the most frequent risk factors for this disease were previous use of oral contraceptive pills (OCP) (56.8%) and positive family history (19%).

Conclusion: The results of this study were indicative of positive family history as a certain risk factor for breast cancer in Sabzevar. Therefore, it is recommended that special attention be paid to women with positive family history of breast cancer. Therefore, prioritization of breast cancer screening and prevention programs is of paramount importance in this regard.

► *Please cite this paper as*:
Hashemian M, Akbar Zade R, Khosroabadi AA, Asadi ZS, Saleh Abadi S, Hoseini BL. A Ten-Year Study on the Prevalence and Frequency of Risk Factors for Breast Cancer in Sabzevar, Iran. Journal of Midwifery and Reproductive Health. 2016; 4(3): 673-678. DOI: 10.22038/jmrh.2016.7101

Introduction

Breast cancer is one of the major issues of public health around the world (1). This disease is the most common type of cancer after lung cancer and the fifth leading cause of mortality in women after lung, liver, stomach, and colorectal cancers worldwide. In addition, breast cancer is the most prominent cancer among the women of both developed and developing countries. Incidence rate of this disease varies across different regions of the world, ranging from 27 per 100000 in Middle Africa and Eastern Asia to 96 in Western Europe.

Range of mortality rates associated with breast cancer varies in different regions, which have been reported to be lower than the incidence rates of this disease. This could be due to the more favorable survival of breast cancer patients in developed regions with high prevalence, the rates of which range from six per 100000 in Eastern Asia to 20 per 100000 in Western Africa (2). Breast cancer has been identified as the most common type of cancer in

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Iran, as well as leading cause of mortality in women with cancer. Based on the statement of Center for Disease Management in Ministry of Health and Medical Education, and given the increased prevalence rate of cancer cases from 27 per 100000 women in 2007 to 33 per 100000 in 2010, it is obvious that this disease is still developing (3).

Several risk factors for breast cancer include age, gender, family history, genetics, diet and lifestyle, obesity, overweight, early menarche, late menopause, lack of breastfeeding, hormone replacement therapy (HRT), pregnancy after 40 years of age, smoking, alcohol consumption, and radiation (4, 5).

Recognition of the factors that increase the risk of breast cancer by 2-3 times is necessary; such examples are benign breast disease, prior mammography (especially during adolescence), positive family history, and the presence of specific genes. According to the results obtained by Najafi, the prevalence rates of risk factors for breast cancer were as follows: age >40 years (68%), previous use of oral contraceptive pills (OCP) (46.2%), and positive family history (1.5%) (6). According to the literature, more than 80% of breast cancers have been observed in women aged >50 years. Therefore, it is safe to assume that age is significantly associated with the incidence of breast cancer (7).

In general, risk factors for breast cancer are divided into two groups: behavioral (changeable) and non-behavioral (unchangeableunchangeable) factors (7). Lifestyle denotes the behavioral orientations of a person, which refers to the responsibilities of individuals. To date, lifestyle has been known as a major factor for breast cancer in women. However, considering its flexibility, lifestyle can efficiently be controlled by individuals (4).

On the other hand, non-behavioral factors, such as genetics and family history, are inconvertible and out of control. Early diagnosis of this disease through screening tests and educational interventions regarding genetic factors could prevent breast cancer by identifying the mutations of BRCA1 and BRCA2 genes, which are involved in the occurrence of this disease (8).

Reproductive (menstrual) factors, such as early menarche and late age at menopause, are also recognized as unchangeable factors. It is worth noting that raising the awareness of women toward these factors can significantly promote their perceived sensibility towards a healthy lifestyle and self-care behaviors. Other changeable reproductive factors include nulliparity and lack of breastfeeding.

Gao, who assessed the association between menstrual factors and breast cancer, declared that early menarche, nulliparity, and higher maternal age at the first pregnancy were associated with increased risk of breast cancer among both pre- and post-menopausal women. However, this researcher indicated that an association was observed between an increased risk of breast cancer and some variables, including lack of breastfeeding and late age at menopause only among post-menopausal women. According to this study, the frequency of risk factors for breast cancer were as follows: women aged 45-54 years (38.7%), positive family history (3.7%), and use of oral-contraceptives (21.9%) (9). Another contributing factor for breast cancer is chest radiation exposure. Previous studies have shown a higher risk of breast cancer in women who had chest radiotherapy in adolescence (10).

Although the high incidence rate of breast cancer is confirmed worldwide, few studies have been conducted to evaluate the frequency rate of breast cancer, especially through self-report of the patients in a long period of time. Therefore, this study aimed to evaluate the prevalence, demographic characteristics, and frequency of the risk factors of breast cancer during 10 years.

Materials and Methods

This cross-sectional study was conducted in Sabzevar during 10 years (2001-2011). The inclusion criteria of this study were being diagnosed with breast cancer and >20 years of age, recognized by health connectors and registration centers for patients with cancer. In addition, written informed consent was obtained from the participants prior to the study. On the other hand, the exclusion criteria of this study were unconfirmed cancer and mortality.

The research protocol was confirmed by Research Committee, Sabzevar University of Medical Sciences, Sabzevar, Iran. This study was in collaboration with the management of Non-communicable Disease (NCD) unit of the Ministry

of Health.

First, the objectives of the study were explained to the health connectors through a briefing meeting. Health connectors were capable of assessing the patients in terms of breast cancer diagnosis. In addition, the selected patients were referred by registration centers for patients with breast cancer in Sabzevar during 10 years. The research tool was a reliable and valid questionnaire, which was confirmed by content and face validity and test-retest reliability. This questionnaire consisted of two sections: demographic data and questions related to the objectives of the study, including age at menarche, menopause and pregnancy, family history, breastfeeding, OCP intake, and previous mammography.

To confirm content validity, experts' opinions regarding various sections of the ques-tionnaire were obtained, followed by the calculation of content validity ratio (CVR) for each section using Lawshe table. Moreover, content validity index (CVI) was assessed in this regard. Qualitative validity was also determined by incorporating grammar and proper words. To confirm face validity, the research tool was distributed among 10 participants, except for the panel of experts. Qualitative face validity was determined by editing difficulty level, irrelevancy, and clarity of each item. On the other hand, we determined quantitative face validity through the calculation of questionnaire score and evaluation of the impacts of the scores of each item (>1.5). Hajizadeh et al. also used the same method to confirm the validity of their study (11). To confirm reliability, the ques-tionnaires were filled twice with a 15-day interval (α= 0.95- 0.97).

Eventually, the prevalence (N. of patients with breast cancer/women population*1000) of breast cancer was calculated in this study. Patients were invited to participate in the study through a telephone call. The questionnaires were completed by trained midwives via interviews in healthcare centers. Data analysis was performed in SPSS version 16, and P-value of less than 0.05 was considered significant.

Results

In total, 160 women, diagnosed with breast cancer in the past 10 years, enrolled in this study. However, 14 participants were excluded from the study due to their lack of cooperation. The remaining 146 women consisted of 102 surviving and 44 deceased women. According to the results, the mean age of surviving women was 50.7±1.2 years. The age range of the samples was 26-81 years. Among the participants, 74% inhabited in Sabzevar and 39% were born in Sabzevar. The majority of women (43.4%) had primary education and only 4.2% of the samples had academic education. With regard to occupational and marital statuses, most of the participants were housekeeper (91%) and married (89.5%) at the time of the study. Most of the patients (59.6%) had <5 children.

In terms of economic status, 41.1% of surviving women reported an insufficient income status, while 57.5% of them were economically privileged. Other following information in this study was exclusive to the surviving women in the study. The highest incidence rate of breast cancer was 35.2% in a group of patients aged 40-49 years, and the highest prevalence rate was observed in a group of participants aged 50-59 (Table 1).

Table 1. Prevalence of breast cancer in participants based on age group during 10 years

Age group	Frequency	Percent	The base population	Prevalence rate (*1000 women)
<30 y	2	2	85907	0.023
30–39 y	12	11.8	161011	0.074
40–49 y	36	35.2	88164	0.408
50–59 y	28	27.5	64856	0.432
60–69 y	20	19.6	47317	0.423
>70 y	4	3.9	30369	0.132
Total	102	100	477624	0.213

According to Statistical Center of Iran, 477624 subjects enrolled in this study during a ten-year course in Sabzevar (12). According to the prevalence formula mentioned above, the prevalence rate of breast cancer was 0.213 in 1000 women. In terms of menstrual risk factors,

age at menarche was <11 years in 8.5% of women, while age at menopause was >55 years In total, 100 of 102 women answered the in just 3% of them. The mean age of participants provided in Table 2.

Table 2. Frequency of some influencing factors for breast cancer in participants during 10 years

Variable	Positive (%)	Negative (%)	N
Family history	19 (19)	81 (81)	100
Breastfeeding history	86 (84.3)	16 (15.7)	102
Maternal age >30 years at the first pregnancy	7 (7.1)	91 (92.9)	98
Previous use of contraceptive pills	59 (58.4)	42 (41.6)	101

Table 3. Frequency of participants diagnosed with breast cancer in terms of age and menarche and menopausal ages during 10 years

Age group	Frequency	Percent	mean±S.D	Min age	Max age
Age	102	100	50.7±1.2	26	81
Menarche age	95	93.1	13.2±1.6	9	20
Menopausal age	64	62.7	46.4±4.7	34	57

questions of the breast cancer family history; however, only 19 of the subjects mentioned positive family history of breast cancer (first-degree family members including mother, sister, daughter and second-degree relatives, such as grandmother, grandchildren, aunts, and cousin's daughter).

Some risk factors for breast cancer, presented in Table 3, were breastfeeding, menarche, and administration of OCP. In addition, most of the participants had no memory of cervical and chest radiography in puberty, while 39.6% mentioned radiography from different body parts in adulthood, and 28.6% experienced cervical and chest radiography during their life.

Discussion

According to the present study, the highest incidence rate of breast cancer was observed in patients aged 40-49 years. According to the literature, breast cancer was mostly observed in Iranian women in the 4th decade of life (10 years less than Western countries) (13). Hacihasanoglu also reported the mean age of patients with breast cancer to be one decade lower in Turkey, compared to Western countries (14); however, these similarities might be due to geographical areas of these countries.

With regard to population of each age group, the highest breast cancer incidence rate was in the patients aged 50- 59 years, while the lowest incidence rate was observed in the participants aged <30 years. In other words, the incidence rate of breast cancer could be increased by aging, which makes age an unchangeable risk factor for this disease. In this regard, American Cancer Society (ACS) has suggested age to be the second leading risk factor for breast cancer following gender (1).

Several studies have reported controversial results regarding the frequency of risk factors in patients with breast cancer. In the present study, menstrual and menopausal ages of the patients were 13.2±1.6 and 46.4±4.7 years, respectively. Similar results were obtained in a study by Besharat, in which menstrual and menopausal ages were reported to be 13.13±1.24 and 45.81±6.04, respectively (15).

In the current study, 92.9% of the subjects aged <30 years were primigravida, which was similar to the study by Tehranian (87.6%) (16). According to the results of the present study, 84.3% of the participants have breastfed their children. However, controversial results were obtained in the study by Tehranian, in which only 4.1% of the patients had a positive history of breastfeeding (16). A higher frequency of first pregnancy in the patients aged <30 years and a history of breastfeeding was observed in the present study, compared to the study by Tehranian. This inconsistency might be due to some differences in the conditions of capital cities, such as Tehran, compared to smaller towns.

In the present study, one of the higher frequency risk factors for breast cancer was reported to be positive family history of the

patients. Nevertheless, this result was not in congruence with the studies by Khameghian et al. (frequency: 2%) (17), and Gao (frequency: 3.7%) (9). The prevalence of positive family history for breast cancer might vary based on the race/ethnicity of the patients (18), which could be the reason for this inconsistency in results.

Evaluation of 52 epidemiologic studies has shown that 7496 (12.9%) women with breast cancer and 7438 (7.3%) of women of the control group reported positive family history of breast cancer in one or more first-degree family members. In fact, the risk factors for breast cancer could be elevated due to the increasing number of first-degree relatives with breast cancer (19). In other words, one of the unchangeable risk factors for breast cancer is positive family history.

In the present study, previous use of OCP was 58.4% in the patients, which was in accordance with the study by Sharifzade. While the frequency of OCP intake was 52.9% in the mentioned study, no significant relationship was observed between this risk factor and breast cancer incidence (20). However, other case-control studies reported controversial findings in this regard. While Tehranian, Halakouie, and Vessey confirmed no significant relationship (16, 21, 22), the findings of Rosenberg were indicative of a significant relationship between OCP and breast cancer (23). Recent studies have demonstrated whether 10 years or more of OCP consumption could increase the risk of breast cancer; however, less duration of OCP intake does not result in increased risk of cancer (1).

Another contributing factor for breast cancer in women was radiography. According to the literature, radiation, especially in chest area, has been suggested as a threatening factor for breast factor. Studies have suggested that women exposed to chest radiation in childhood are more at the risk of breast cancer compared to their peers, especially during puberty (24). The main strength of the present study was the assessment of breast cancer patients via self-report during 10 years. One of the limitations was that some of the data were not available as they were forgotten by the patients. For instance, no radiography history was present in the participants during adolescence. Evidently, dose and frequency of radiation and age of the patients at the time of exposure were some of the important criteria to be considered in this regard.

Conclusion

In conclusion, positive family history was evidently shown as a major risk factor for breast cancer in women in Sabzevar. Therefore, special attention to women with positive family history and prioritizing educational interventions and other methods of early diagnosis of breast cancer in Sabzevar are of paramount importance.

Acknowledgements

Hereby, we extent our gratitude to the head of Disease Control Department of Ministry of Health, Dr. Etemad and relevant expert, Mr. Norouzi, vice president of Sabzevar University of Medical Sciences, health connectors, environmental supervisors, and staff of healthcare centers, including Shahid Aldaghi clinic for their cooperation. It is worth noting that this study was financially supported by Sabzevar University of Medical Sciences.

Conflicts of interest

The authors declared no conflicts of interest.

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