The Relation between Breast Cancer and Reproductive Factors in Women Referring to Tohid Hospital of Sanandaj in 2011-2012

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Abstract: Breast cancer is the most common cancer and the fifth leading cause of death in Iranian women. Considering high prevalence of breast cancer at young ages in Iran and problems of the disease for individuals and their families provides enough justification for conducting the present study. Therefore, the present research was aimed at investigating the relation between breast cancer and women's reproductive factors. **Method:** The study is case study. Participants were 450 women who referred to Tohid Hospital, Sanandaj. Purposeful sampling was applied. Questionnaire method and interview were applied to collect data. Afterwards, the collected data were analyzed through chi-square test, t-test, and logistic regression. **Findings**: Analysis of the collected data showed that there was a significant relation between studies women's breast cancer, education (OR=1.51, 1.15, 15-2), and occupation (t=1.69, P<0.04). Moreover, there was a significant relation between contraceptive pill taking time (OR=0.86, 0.8-0.93), duration of breastfeeding (OR=1.19, 1.07-1.31), full-term pregnancy (OR=3.34, 1.96-5.65) and breast cancer. **Final Results**: The results showed that a number of individual characteristics and reproductive factors have significant correlation with breast cancer; therefore, breast cancer and its adverse consequences need to be prevented to a large extent by training and informing women about methods of examination and control of the disease.

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Introduction

Breast cancer is the commonest cancer in women all over the world and the second most common cause of women's death after lung cancer. The risk of developing cancer in women's lifetime is 12.5% and the risk of dying out of breast cancer is 36% [1]. Prevalence of breast cancer had an increasing growth in 1970-1990. In 2000 over 1 million breast cancers were diagnosed which is 22% of all women's cancers. In the same year, 373000 women died out of breast cancer which is 14% of the total deaths as a result of women's cancers [2]. Breast cancer is considered as a health problem in the US. It is estimated that over 212000 women get breast cancer annually and 41000 women die out of the disease. However, number of deaths had a decrease of 2.3% through 1990-2002. According to the latest statistics, risk of getting breath cancer during a lifetime is one out of eight and approximately 80% of cases occur after age of 50 [3]. This disease mostly occurs at ages 40 to 60 [4]; however, in our country that has a young population, it is observable among women aged 30-40 [5]. In Iran, 21.4 percent of the total reported cancers are breast cancers. In Iran, the raw statistics for breast cancer occurrence is 22.4% among every 100000 women. Available data shows that the disease is increasing in Iran [2]. Abdullah Fazl Alizadeh (2010-2011), the head of Iranian Cancer Association, stated that cancer has an increasing growth in Iran and is considered as the third leading cause of death in the country. Taking this increasing trend, it is expected to devote a large percentage to itself in the near future. Moreover, the head of Iranian Cancer Association introduced cancer as one of the problems of human society which threatens human beings at all age groups and case numerous human and financial losses and our country is no exception. Nowadays, breast cancer is the second most common cancer among women and the mean age of infection to the disease among Iranians is 5 to 10 percent less than other countries [6]. Among preventable causes of breast cancer are obesity, high-fat diets, high calorie diets, lack of exercise, alcohol and tobacco consumption, and exposure to X-ray. Moreover, some other factors are distinguished as risk causes of breast cancer including: early onset of menstruation (before 12), lack of delivery, failure to get pregnant, childbirth after age of 30, late menopause (after 55) which are all caused by exposure to estrogen [3]. Age has been considered as the most important risk factor. Breast

cancer risk increases with age. The risk of breast cancer decreases as the mother's age is lower at the time of delivery. Breast feeding and multi parity plays a protective role. If the ovaries are extracted before menopause, risk of infection will decrease [7]. Epidemiological studies on breast cancer since 1957 shows that there is an 80% relation between breast cancer infection and number of abortions. Moreover, women over 29 or under 18 who have had more than 2 abortions are more prone to breast cancer. In addition, family history along with experiencing abortion increases infection about 80% [8]. Women in reproductive age are subject to change in hormones like estrogen, progesterone, prolactin, and prostaglandins. These changes are in relation with menstruation, abortion under 20 weeks, and stillbirth (death of embryo in the first 5 months) and they cause breast cancer to increase in women [9]. Abortion is one of the causes of breast cancer; however, it does not mean every woman who has had abortion will get the disease. The results of numerous studies have showed that hormonal changes in breast tissues, preterm birth, early puberty, late menopause, abortion, weight gain during pregnancy, high level of estrogen, interruption of prostaglandins while abortion, young age in the first menstruation, and decrease of breastfeeding are factors causing breast cancer [10 & 11]. The relative risk of cervical cancer is 2.3 times higher in women who have experience abortion once compared to those who have not had it. Women who have experienced abortion twice or more are 4.92 times more prone to getting cervical cancer. The same increasing risk with single or multiple abortions is reported for ovarian and liver cancers. There is a significant relation between an increase in women's risk of getting cancers caused by abortion and hormonal changes that end pregnancy. Moreover, abortion doubles risk of getting breast cancer. After the first, second, or more abortions the risk of breast cancer increases [12]. The results of other studies showed that breastfeeding the baby for 12 months and giving birth to every baby respectively decrease the risk of breast cancer 4.3% and 7%, so that the longer the breastfeeding lasts and the more the babies are given birth to, the lower the risk of cancer will be [8].

Michels' (2007) research showed that abortion, stillbirth, and young age in the first menstruation are regarded as factors causing breast cancer [10]. In the Third International Congress on Palliative and Supportive Care of Cancer, Shirin Ashuori stated that the lower the age of first menstruation is, the higher the risk of getting cancer will be, so that there has been reported to be a significant difference between those with menstruation before and after age of 12 [13]. Based on whatever has been mentioned above, breast cancer not only affects the patients' lives and lifespan but it also has a direct influence on their health and beauty. Therefore, providing public awareness about health enhancing behaviors is one of the most fundamental and reliable ways to guarantee women's health because by applying healthy methods and necessary care, factor affecting breast cancer infection can be specified; and by timely and appropriate training women, its possible complications can be determined and the disease could be controlled or hindered. Therefore, the present study was aimed at finding out the role of reproductive risk factors and their relation with breast cancer in Iranian women.

Method

The investigation was a case-control study. The case group included all women who suffered from breast cancer and referred to Tohid Hospital, Sanandaj. And the control group included other patients who did not suffer from breast cancer and referred to other hospitals. Purposeful sampling was applied. The sample size was 450 women 150 of whom had breast cancer and referred to different wards of Tohid Hospital like radiotherapy, chemotherapy, and oncology and 300 of whom were those patients who were hospitalized in other wards. A questionnaire was made to collect required data and its validity and reliability were checked. Afterwards, women who were diagnosed to have breast cancer by the surgery team and based on histopathology results were included in the study. The control participants were selected among patients who referred to outpatient clinics, did not have breast cancer at the time of study, and did not experience the disease in the past. Moreover, if they faced with adverse events like catching intense and chronic diseases or they got unwilling to participate in the study, they would be crossed out from the investigation. Participants in both groups were homogenized regarding their ages and if any of them had record of consuming alcohol, smoking, frequent exposure to ray, high level of blood fat, and genetic background of getting cancer, they would be excluded from the study. Afterwards, questionnaires were completed through face-to-face interview and referring to the patients' medicals records. This information included personal information (age, obesity, number of children, marriage status, occupation, literacy) and midwifery specifications (age in the first menstruation, number of pregnancies, number and experience of abortion, number and duration of breastfeeding, consumption of contraceptive pills, menopause, consumption of hormones, experience of breast cancer in family, and experience of colon, bowel, and cervical cancers). Collected data were analyzed using SPSS 17.0

Table 1. Frequency Distribution of Individual Information in the Case and Control Groups

Personal Information		Case Group		Control Group	
		Number	Percent	Number	Percent
Education	Illiterate and Elementary	87	58	147	49
	Secondary and High School	28	18.7	60	20
	Associate and Bachelor	21	14	60	20
	Master's and higher	14	9.3	33	11
	Total	150	100	300	100
Marriage Status	Single	10	6.7	8	2.7
	Married	123	82	271	90.3
	Divorced	17	11.3	21	7
	Total	150	100	450	100
Occupation	Employed	20	13.3	24	8
	Unemployed	2	1.3	6	2
	Housekeeper	128	85.3	264	88
	Self-employed	0	0	6	2
	Total	150	100	450	100
Number of Children	No children	20	15	14	4.7
	1-2 Children	35	26.3	108	36.1
	3-4 Children	54	40.6	110	36.7
	5-6 Children	14	10.6	39	13
	7 and more Children	10	7.6	28	39
	Total	133	100	299	100
BMI	Slim	2	1.3	10	3.3
	Normal	36	24	94	31.3
	Overweight	72	48	134	44.7
	Fat	17	11.3	47	11.3
	Too Fat	23	15.3	15	15.3
	Total	150	100	300	100

software. In so doing, descriptive statistics, t-tests, chi-square test, and logistic regression were applied.

Results

The results showed that most of the women were illiterate, married, and housekeeper. Regarding the number of children, most of women in the case group (40.6%) had 3-4 children. And about half of the participants were overweight (See Table 1). Mean age of the first menstruation in both groups was 13. The highest percentage of participants in the case and control groups (respectively 44.9% and 51.1%) had had 1-3 pregnancies. Collected data showed that most of the women had breastfed their children 1-3 times. And most of them had breastfed their children 1-4 years. Data analysis showed that 29% of the women in both groups had experienced abortion once or twice. About 14.7% of women in the case group and 28.1% in the control group had consumed contraceptive pills for 1-3 years. The highest percentage of women, i.e. 65%, had never experienced abortion. About 58% of them were not menopausal. About 95% of them did not mentioned hormone consumption after menopause. And the highest percentage of them (95%) did not have family record of breast cancer. In both groups, 50% had consumed contraceptive pills, about 95% did not experienced cervical and colon cancers, and 81.3% of the pregnant women in the case group were full-term pregnant while 59.2% of the control women were so (See Table 2). The results of the study showed that there is a significant relation between breast cancer and education (OR=1.51, 1.15-2) and occupation (OR=1.86, 1.22-2.82). There is also a significant relation between obesity and breast cancer (t=1.96, P<0.04) (See Table 3). The results of the study showed that there is a significant relation between duration of contraceptive pills (OR=0.86, 0.8-0.93), duration of breastfeeding (OR=1.19, 1.07-1.31), full-term pregnancy (OR=3.34, 1.96-5.65) and breast cancer (See Table 4).

Conclusion

The results showed that most of the women in both groups were illiterate, married, and housekeeper. The results of statistical tests showed that there was a significant relation between women's education and occupation and their infection to breast cancer. Homaie's (2010) research showed that the risk of breast cancer in individuals with better social and economic status and educated ones is higher, this

Table 2. Frequency Distribution of Midwifery Information in the Case and Control Groups

Midwifery Information		Case Group		Control Group	
		Number	Percent	Number	Percent
Number of Pregnancies	No Children	11	7.5	6	2
	1-3	66	44.9	156	51.1
	4-6	50	24	88	29.2
	7-9	16	10.9	28	9.3
	10 and more	3	2.8	21	7.3
	Total	147	100	299	100
Times of Breastfeeding	0	12	8.5	22	7.5
	1-3	75	52.8	169	57.3
	4-6	48	33.8	71	24
	7 and more	7	4.9	33	11.2
	Total	142	100	295	100
Duration of Breastfeeding	1-4	120	82.7	198	67.5
	5-8	24	16.6	70	23.8
	9-12	1	0/7	22	7.5
	13 and more	0	0	8	0/7
	Total	145	100	293	100
Number of Abortions	1-2	43	28.7	87	29
	3-4	7	4.6	9	./3
	5 and more	1	0/7	8	2.7
	Total	150	100	300	150
Duration of Consuming Contraceptive Pills	1-3	22	14.7	84	28.1
	4-6	18	12	32	10/7
	7-9	4	2.7	6	2
	10-13	14	9.3	10	3.3
	14 and more	7	4.8	4	1.3
	Total	150	100	299	100

Table 3. Frequency Distribution of Some Midwifery Information in the Case and Control Groups

Questions	Groups	Yes		No		Total	
		Number	Percent	Number	Percent	Number	Percent
Abortion Record	Case	50	33.3%	100	66.7%	150	100%
	Control	103	34.3%	197	65.6%	300	100%
	Total	153	34%	297	66%	450	100%
Full-term Pregnancy	Case	122	81.3%	28	18.7%	150	100%
	Control	177	59.2%	122	40.8%	299	100%
	Total	299	66.6%	150	33.4%	449	100%
Menopause	Case	63	42%	87	58%	150	100%
	Control	124	41.5%	175	58.5%	299	100%
	Total	187	41.6%	262	58.4%	449	100%
Consumption of Hormones after Menopause	Case	5	3.3%	145	96.7%	150	100%
	Control	14	4.7%	284	95.3%	298	100%
	Total	19	4.2%	429	95.8%	448	100%
Family Record of Breast Cancer	Case	7	4.7%	143	95.3%	150	100%
	Control	10	3.4%	288	96.6%	298	100%
	Total	431	3.8%	431	96.2%	448	100%
Record of Pill Consumption	Case	71	47.3%	79	52.7%	150	100%
	Control	149	49.8%	150	50.2%	299	100%
	Total	220	49%	229	51%	449	100%
Record of Colon and Ovarian Cancers	Case	8	5.4%	141	94.6%	149	100%
	Control	12	4%	286	96%	298	100%
	Total	20	4.5%	427	95.5%	447	100%

Table 4. The Relation between Breast Cancer and Individual Characteristics of Women in the Case and Control Groups

Individual Characteristics	OR	Lower	Upper	P	The Relation between Breast Cancer and Individual Characteristics of Women
Age	-----	------	----	0. 04	--
BMI	-----	------	-----	0. 04	*
Education	1.51	1.15	2	0.003	*
Number of Children	−−−−−	−−−−	−−−−−	0.3	---
Marriage Status	−−−−−	−−−−−	−−−−−	0.2	--
Occupation	1.86	1.22	2.87	0.004	*

Table 5. The Relation between Breast Cancer and Midwifery Characteristics of Women in the Case and Control Groups

Midwifery Characteristics	OR	Lower	Upper	P	The Relation between Breast Cancer and Reproductive Factors
Duration of Breastfeeding	1.19	1.07	1.31	0.001	*
Full-term Pregnancy	3.34	1.97	5.65	0.000	*
Duration of Pill Consumption	0.86	0.8	0.93	0.000	*

is probably caused by different life styles like diets, age of the first pregnancy, hormone consumption, and alcohol consumption [14]. Yavari (2005-2006) claims that the risk of getting breast cancer in women who have university education is 4.81 times higher than those who do not [2]. The study showed that there is a significant relation between breast cancer and obesity. Bruner and Sudares (2007) concluded that known and preventable factors causing breast cancer are obesity, high-fat diets, high calorie diets, lack of exercise, alcohol and tobacco consumption, and exposure to X-ray [3]. Valeria (2002) stated that there is a direct relation between relative body weight and breast cancer; and the disease risk is 1.5 to 2 percent higher in overweight individuals compared to normal ones [8]. Most of the participants in the current study had been menstruated at age of 13-15. The results proved that there is no significant relation between menstruation and breast cancer. Some of studies showed that onset of the first menstruation at an early age increases breast cancer risk. It seems that breast cancer risk decreases about 20% per year that the first menstruation postpones [14]. In the present study, participants in both groups had breastfed their children 1-3 times. There is no significant relation between breast cancer risk and times of breastfeeding. Studies conducted in America College, Harvard University in 2009 showed that times of breastfeeding have no significant effect on breast cancer risk [15]. In the current study; however, the participants had breastfed their children for 1-4 years. There is a significant relation between duration of breastfeeding and breast cancer. Valeria's (2002) study showed that breastfeeding the child for 12 months decreases breast cancer risk about 4.3% and the longer the duration of breastfeeding is, the grater the decreasing effect will be [8]. Most of the women (65%) had not experienced abortion and about 40% of them had experienced it once or twice. Epidemiological studies on breast cancer showed that breast cancer can be seen in women over 29 and under 18 who have experienced abortion more than two times. Moreover, experience of abortion along with family background increases the risk of breast cancer about 80% [8]. However, in the study conducted at Harvard University in association with Oxford University in 2009, the results showed that previous abortions and times of breastfeeding do not affect breast cancer a lot [8]. The present study showed that there is a significant relation between consuming contraceptive pills and breast cancer. A large body of research exists on oral contraceptive pills. Some studies have showed that consumption of oral contraceptive pills does not result in a remarkable increase in breast cancer. However, they slightly increase breast cancer risk in women under 35 [14]. Biral's (2004) study showed that consuming contraceptive pills has no effect on infection to the disease [16]. Moreover, about 58% of the participants were not menopausal. The results of the study

showed that the late onset of menopause and the effect of aging can influence breast cancer risk only before menopause age and after that the degree of its risk becomes one-sixth before menopause; it means that ovaries' activity can affect the risk of the cancer. Chances of developing breast cancer in women with menopause before age of 55 are twice higher than those who enter menopause before age of 45 [14]. In this study, most of the individuals (95%) did not have experience of breast cancer. Valeria (2002) states that only 5-10 percent of breast cancer patients have positive family background; and the risk of developing cancer in individuals who have infected mother or sister is 1.5 to 3 percent higher [8]. Although family record of breast cancer can have a significant effect on the chance of developing the disease, it does not mean every case in family causes the other members to catch it [17]. Moreover, there is a significant relation between full-term pregnancy and breast cancer. The role of some reproductive factors in relative risk of breast cancer is known; however, some of them are still remained to be further investigated. About 95% of the participants had experienced ovary, cervical, and colon cancers. There is no relation between breast cancer and experience of cervical and ovary cancers. Dariaii (2010-2011) states that record of cancer in mother, sister, or daughter and infection of two individuals or more in father or mother's family and record of ovary and colon cancers increase chances of getting the disease [17]. In women with uterine or ovarian carcinoma, the chance of initial breast cancer is about 1.3 to 1.4 times higher [17]. The participants in the present study; however, had not experienced cancers related to breast cancer, this issue can be considered in future studies.

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