

Risk Factors for Breast Cancer among women in the Mosul City/ Iraq: A Case-Control Study

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ABSTRACT

Background: To assess the risk factors for breast cancer among the Iraqi women in the city of Mosul.

Methods: A case- control study was conducted in Mosul City-Republic of Iraq for the period from 1 September 2018 to 30December 2018. Data were collected from 300 women who received a reliable and accurate diagnosis test of breast cancer. A questionnaire was constructed to obtain information about the risk factors for breast cancer which included (Age at menarche, age at marriage, age at conception, age at menopause, occupation, educational level, economic level, residency, number of live births, breast-feeding practice, use of contraceptives. The estimate multiple logistic regression analysis was performed in the SPSS to compute odds ratios (ORs) for the confounding between risk factors.

Results: In socio-demographic variables, no significant differences were found among age marital status, and educational status. 40-49 age groups showed highest breast cancer patient (44.7%), where 45% healthy controls. Mean age of cases were 45±5.7 years and controls were 43.91±4.37 years. Significant risk was found with early marriage and early 1st pregnancy. Mean age of marriage among the cases was 17.99±5.97 years and among the controls was 18.91±4.95 years and mean age of 1st pregnancy among the cases was 19.44±4.93 years and among the controls was 20.88±4.64 years.

Conclusion: It is recommended that the women should be educated about self-examination of the breast and, especially those who have risk factors like family history of the disease.

Keywords: Cancer, Breast, Women, Risk factor

INTRODUCTION

Breast cancer is considered the most common diseases and the main cause of death among women around the world. Annually, more than one million of breast cancers are detected globally, with a mortality rate of more than four thousand per year. This disease attacks men as well. However, only one percent of the whole breast cancer cases occurs in men^{1,2,3,4}, Breast cancer is the leading cause of death among European and American women too. Nearly 1/14 women have breast cancer throughout their lifetime^{5,6,7}. Reports have shown that the ratio of cases per 100,000 women in the Netherlands (91.6)⁸, the United States (91.4)⁹, France (83.4)¹⁰ and (31.4) Japan¹¹. With respect to Arab countries, it appears that Arab women are having the same problem and not out-of-the-way from contemporary diseases mainly the deadly ones. A large number of papers and reports in most of Arab countries have shown the prevalence of breast cancer among Arab women. In Egypt¹², the incidence of breast cancer is at the top of the list of cancers among Egyptian women with 42 cases per 100 thousand of the population. In Saudi Arabia^{13,14}, A recent statistic has displayed that the number of cases of breast cancer among Saudi women is about 12 women per 100 thousand. In Lebanon¹⁵, the health reports show that 700 new breast cancer cases are registered every year. As for Jordan¹⁶, breast cancer is one of the most serious diseases that threaten the life of Jordanian females. It constitutes about 31% of the total cancer affecting Jordanian women. According to the National Cancer Registry (2003), between 500-550 breast cancer cases are recorded annually. The percentage of females in the Jordanian society is about 49.1%, which is estimated at 5,350,000 women. The proportion of females aged 20 years and above is about 51.5% of all Jordanian females

according to the 2004 census. 70% of cases of breast cancer are diagnosed in the late stages of the disease. This reduces the probabilities of healing the infected and survival rates. As only (7%) of breast cancer cases were diagnosed in the early stages of the disease¹⁶. The King Hussein Cancer Center, in collaboration with government and private sectors, is working to reduce breast cancer rates in the advanced stages from 70% to 20% over the next five years.

As for Iraq, breast cancer is one of the most common cancers among Iraqi women. It represents about 32% of the percentage of cancers that Iraqi women have suffered, as documented in the latest Iraqi Cancer Register¹⁷.

The objective of study was to assess the risk factors for breast cancer among the Iraqi women in the city of Mosul.

METHODS

A case- control study was conducted in Kirkuk City-Republic of Iraq for the period from 1 September to 30 December 2018. Data were collected from 300 women who received a reliable diagnosis method of breast cancer detection. Inclusion criteria covered the age group between (39-50) year, while exclusion criteria involved age group (>39 and <50) year. A special questionnaire was constructed to obtain information about the risk factors for breast cancer which included (Age at menarche, age at marriage, age at conception, age at menopause, occupation, educational level, economic level, residency, number of live births, breast-feeding practice, use of contraceptives.

SPSS were used to estimate binary logistic regression analysis to compute odds ratios (ORs) for the confounding between risk factors. In statistical inference

procedures chi-square distribution based on the likelihood ratio score or Wald test statistics which are good to fit statistics. $P < 0.05$ was taken as the cut-off level for statistical significance.

RESULTS

Of the 700 women enrolled in this study, 300 were cases and 400 served as controls. The result shown in table (1) displays the general demographic characteristics as well as reproductive and non-reproductive variables. In socio-demographic variables, no significant differences were found among age, marital status, and educational status. 40-49 age groups showed highest breast cancer patient (44.7%), where 45% healthy controls. Mean age of cases were 45 ± 5.7 years and controls were 43.91 ± 4.37 years. Cases had maximum percentage of housewife's women (59.3%). Early menarche was found to be the reason for increasing the risk of breast cancer (95% CI 2.98-5.55). Mean age of menarche was 12.59 ± 1.1 years among the cases and 13.24 ± 1.44 years among the controls. 37% of breast cancer patients had early menarche before thirteen years old. Significant risk was found with early marriage and early 1st pregnancy. Mean age of marriage among the cases was 17.99 ± 5.97 years and among the controls was 18.91 ± 4.95 years and mean age of 1st pregnancy among the cases was 19.44 ± 4.93 years and among the controls was 20.88 ± 4.64 years.

Table 1: Distributions of Breast cancer patient and control study

Variables				
Age (year)	Case	Control	χ^2 test	Pvalue
<39	77(25.7)	100(25)	0.041	0.980
40-49	134(44.7)	180(45)		
>50	89(29.6)	120(30)		
Social Status	Case	Control	χ^2 test	Pvalue
Single	81(27)	120(30)	0.754	0.385
Married	219(73)	280(70)		
Residence	Case	Control	χ^2 test	Pvalue
Rural	185(61.7)	240(59.5)	0.200	0.655
Urban	115(38.3)	160(40.5)		
Job	Case	Control	χ^2 test	Pvalue
Employed	122(40.7)	134(33.5)	3.796	0.051
Housewife	178(59.3)	266(66.5)		
Education	Case	Control	χ^2 test	Pvalue
Non-Literate	93(31)	83(20.75)	10.189	0.006
Intermediate	151(50.3)	221(55.25)		
>High school	56(18.6)	96(24)		
Body mass index	Case	Control	χ^2 test	Pvalue
<29 kg/m ²	134(44.7)	171(42.75)	0.256	0.613
>29 kg/m ²	166(55.3)	229(57.25)		
Family history	Case	Control	χ^2 test	Pvalue
Yes	171(57)	37(12.3)	132.133	0.000
No	129(43)	263(87.7)		

Table 2: Distributions of Breast cancer patient and control study according to some of risk factors

Factor	Case	Control	χ^2 test	P-value
Age at menarche				
>13	111(37)	44(11)	179.990	0.000
<13	179(63)	356(89)		
Menopause	Case	Control	χ^2 test	P-value
Yes	137(45.7)	52(13)	92.812,	0.000
No	163(54.3)	348(87)		
Age at marriage	Case	Control	χ^2 test	P-value
<18	147(49)	264(66)	53.075	0.000
>18	72(24)	108(27)		
Single	81(27)	28(7)		
Parity	Case	Control	χ^2 test	P-value
Single	81(27)	28(7)	174.195	0.000
Nulliparous	33(11)	120(30)		
1-2	102(34)	240(60)		
<3	84(28)	12(3)		
Age at first birth	Case	Control	χ^2 test	P-value
<30	168(76.7)	299(80.4)	1.116	0.291
>30	51(23.7)	73(19.6)		
Breast feeding	Case	Control	χ^2 test	P-value
Always	153(69.9)	124(33.3)	73.868	0.000
Never	66(30.1)	248(66.7)		
Oral contraception	Case	Control	χ^2 test	P-value
Ever	138(63)	184(49.5)	10.208	0.001
Never	81(37)	188(50.5)		
HRT	Case	Control		
Never	273(91)	354(95.2)	4.603	0.032
Ever	27(9)	18(4.8)		

Table 3: Multiple logistic regression of breast cancer risk factors

Factors	χ^2 test	P	OR	95%CI
Age				
Age at menarche	78.36	< 0.0001	3.27	2.98-5.55
Age at first birth	30.67	< 0.0001	3.28	2.03-5.95
Parity	15.53	< 0.0001	2.12	1.50-3.28
Menopause	7.22	<0.003	2.18	1.19-2.38
Family history of breast cancer	4.94	<0.02	1.21	1.07-1.87
Education(years)	6.87	<0.005	2.65	1.26-3.66
Breast feeding	5.42	<0.003	3.21	1.19-1.25
Oral contraception	4.71	<0.02	1.51	1.07-0.94
HRT	3.56	0.005	0.85	0.14-2.76

DISCUSSION

In this study, it was observed/found that breast cancer among women were associated with young age in Mosul City. The reason of breast cancer in young women need further study from Mosul's Health care stakeholder. In general, it has become increasingly recognized that breast

cancer increases with age. But it is striking that breast cancer among middle-aged women is increasing. This finding was confirmed by the findings of other studies. The same observation was observed in the Kingdom of Saudi Arabia⁹, where the incidence of breast cancer increased significantly and had a life expectancy of (48) years. , In Saudi Arabia, several factors for high breast cancer have been hypothesized such as exposure to light at long intervals at night, obesity and reduced physical activity.

One of the factors associated with breast cancer is the early age of menstruation. This may be explained by the fact that older women are exposed to internal estrogen for a longer period, although this relationship did not appear as a direct cause of breast cancer. The finding of present study confirmed that early menarche age was associated with an increased risk. The age at menarche was not found to be a risk factor among Mexican¹⁸, Japanese¹¹ women.

Several studies have shown that overweight and obesity are associated with increased risk of breast cancer, especially after menopause. This risk increases in women who have never used menopausal hormone therapy (MHT). The results of a large study conducted in. found that women who gained more than 9 kg (20 pounds) of their weight after the age of 18 had a higher risk of breast cancer after menopause was 15% higher than women who were not overweight or increased slightly. However, weight gain in adulthood may also be associated with an increased risk of breast cancer. It is also believed that the increased risk of breast cancer after menopause may be due to increased levels of estrogen in obese women. However, after menopause and when the ovaries stop producing hormones, then fat tissue becomes the most important source of estrogen. Because obese women have higher fat tissue, estrogen levels are higher, which can increase the chances of rapid growth of breast tumors^{19,20,21,22}.

Several studies have indicated that the use of oral contraceptives increases the risk of breast cancer, (23-24). Nevertheless, there are studies that disprove the positive relationship between the use of oral contraceptives and breast cancer and confirmed that there is a parasitic relationship between them and that contraceptives do it function in preventing Pregnancy. Early pregnancy is the first defense against breast cancer²⁵⁻²⁶.

A British study found that breastfeeding reduces the risk of breast cancer by a fifth. The study, which included 37,000 women, showed that women who committed to breast-feeding had a 10 percent lower risk of developing breast cancer. The rate of infection was also reduced by the worst types of breast cancer by 20%. The study found that only 23 percent of British women who breastfed their babies for six months often also provided their children with artificial milk. However, the World Health Organization recommended only breastfeeding, without artificial milk during the first six months of the child's age²⁷.

US researchers at two charity associations and Washington University in St. Louis analyzed 27 studies involving 36,881 women. The researchers found that the longer the duration of breastfeeding, the lesser incidence of breast cancer to be occurred. The researchers concluded that breastfeeding reduces the level of estrogen that can

lead to cancer. Some scientists believe that the process of breastfeeding prevents the formation of cancer cells²⁸.

Diagnosis of breast cancer during pregnancy is uncommon, and the implications of this association are controversial²⁹.

National Cancer Institute stated that having a full-term pregnancy at or before age 20 offers the most protection against developing breast cancer. This may prevent the risk of breast cancer in half relative to women who have a child at the age of 35 or older or never have children. Breastfeeding saves estrogen levels low, so woman don't have pre-pregnancy levels of estrogen until baby is weaned³⁰.

In present study, family history considers a significant risk factor in developing breast cancer. Many studies using a different study designs demonstrated the relationship between risk of breast cancer in women and the family history. However, the degree of this risk differs according to type of relative affected, age at which relative developed breast cancer and number of relatives affected and furthermore differ according to age of the women³¹.

In United Kingdom, relative risks of breast cancer in relation to family history Score (FHS), a study revealed that 85 percent of women had negative family history with breast cancer (FHS=0), 8% had (<0-20), and seven percent had scores more than this, with only 0.9% women having a score C500. Risk of breast cancer raised significantly as the FHS increased (P trend\0.0001). Women in the peak FHS group had a relative risk of 3.50 (95% CI 2.56–4.79; P\0.0001) compared with those with no affected relatives³².

CONCLUSION & RECOMMENDATION

It is recommended that the women should be educated about self-examination of the breast and, especially those who have risk factors like family history of the disease.

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