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The Association between breast cancer and some lifestyle factors among women in Sulaymaniyah city, Iraq: Case-Control study

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Abstract

A healthy lifestyle could contribute to decreasing breast cancer in women at high risk. This study was performed to find out the association between some lifestyle factors, and breast cancer among women in Sulaymaniyah city. A retrospective case-control study was carried out, from July 2019 to October 2019. Purposive sample 400 women attending Hiwa Hospital and Teaching Hospital were assigned to either the case or group. A questionnaire was constructed by the researcher to elicit detailed information related to study objectives. All subjects were completed as in-person interview techniques. The questionnaire is presented to a panel of 12 experts to check the validity. Internal consistency and reliability were measured by using Cronbach's alpha formula on the questionnaire list. Analyzing and interpreting data using the application of descriptive statistical analysis, inferential chi-square test. The results have revealed that there was a significant association between breast cancer and educational level, residence area, body mass index, abortion, hormonal contraception, long-duration contraception use above 6 years, benign breast disease. The study concludes that women with higher Body mass index riskier to breast cancer in their lives.

Introduction

The female breast has always been a logo of beauty, fertility, and femininity. It is not surprising that written records and illustrations of breast cancer originate in antiquity since the situation of the organ permissible simple identification [1]. Cancer could also be a number one rationalization for mortality worldwide, liable for 7.6 million deaths or roughly 13% of all deaths in 2008, 70% of that occurred in low- and middle-income countries. This may be raised to 13.1 million deaths annually by 2030 [2]. Breast cancer could be a major health burden among women worldwide. It's the most common cancer among women in each high-resource and low-resource settings and is liable for over a million of the estimated 10 million neoplasms diagnosed worldwide annually. It's conjointly the first reason behind cancer deaths among women globally [3].

Among women, breast cancer is the leading kind of disease, accounting for 16% of all female cancers [4]. In worldwide, mostly women are dying from breast and cervical cancer more than maternal mortality [5]. In Iran, the third main rationalization for death is cancer. The National Cancer Register reports from 2003 to 2006, population-based cancer has been dependent. The age-standardized incidence rate of cancers was 98 and 110 per 100 000 among females and males. The male to female standard ratio was 1.12. The foremost common cancer among women was breast cancer and for men stomach cancer [6]. Cancer incidence in Turkey, a comparatively large country with a population of 72 million in which 9,847 females have cancer. Age-Adjusted Incidence Rate(AAIRs) per 100 000 were: 129.4 in women for all cancer sites,

excluding non-melanoma skin cancer. Among women, the rate per 100 000 was highest for breast cancer (33.7) followed by colorectal (11.5), stomach (8.8), thyroid (8.8) and lung (7.7) [7].

Unfortunately, within the Kurdistan new cases document annually, there have been 2432 new cases diagnosed with cancer in Hiwa Cancer Hospital in 2017 and this number elevated to 2738 new cases in 2018 whereas 1601 new cases diagnosed until July 2019. Sometimes, patients returning from alternative cities to Iraq to receive treatment in this hospital [8].

Many factors participate in exaggerated breast cancer risk, furthermore as age, genes, childbearing history, menstrual history, use of hormone therapies, socioeconomic, physical activity, BMI, family history and breastfeeding history [9].

Specific Objectives

1. To identify Socio-demographic, lifestyle and reproductive characteristics among study samples.
2. To find out the relationship between breast cancer with some socio-demographic factors, lifestyle factors as (smoking cigarettes, exercise, BMI) and reproductive history.

Material and Methods

Study Design

A retrospective, a case-control study was adapted to achieve the expressed objectives. Collection of data took 3 consecutive months starting from July first to October third, 2019.

The Sample of the Study

A Non- probability (Purposive Sample) of 200 breast cancer women as case group was selected from Hiwa hospital and 200 as a control group involves non-cancer patients, were admitted for medical reasons at Sulaimani Teaching Hospital, both breast cancer, and control groups were involved in the sample study. The Control group was closely matched to breast cancer patients in age, no family history with breast cancer and marital status.

Inclusion Criteria

The study samples of both groups must be 20 to 60 years old, married women.

Exclusion Criteria

Family history with breast cancer, women who were previously diagnosed with colon and ovarian cancer, women who were not willing to participate, personal history with breast cancer and previous radiation exposure as a treatment for another disease. Women over 60 years of age were excluded during data collection. This decision was because of potential recall bias, principally regarding the rise in carcinoma incidence in older age.

The setting of the Study

To conduct the study and facilitate the data collection, official permission was taken by the directors of both Hiwa hospital and Sulaimani Teaching Hospital.

Tools and Data Collection Techniques

When a patient fulfills the study criteria, the data collection process was performed from July 1st to October 3rd, 2019. The interviewing technique was used by the investigator. Cases and controls interviewed and answered a constructed questionnaire, as well as socio-demographic, lifestyle factors, reproductive history.

The women's agreement for participation in the present study was obtained and the consent was taken verbally and the interview was carried out individually which took 20 to 30 minutes. The variable BMI was done by the researcher, by calculating the weight and height of women, according to World Health Organization WHO for the BMI calculation [2]. Content validity determined through a panel of experts who were 12 experts and also the reliability was measured by using the correlation coefficient was r 88.4 (statistically adequate).

Data Analysis

The data of the study were analyzed through the applied statistical package of social sciences (SPSS) version 22 through descriptive and inferential statistical analyses. There were criteria of probability levels to determine the significance of the test [highly significant ($p \leq 0.001$), Significant ($p \leq 0.05$) and Nonsignificance ($p > 0.05$)].

Ethical Considerations

Ethical approval from the University of Sulaimani and the ethics committee was granted. Study participants gave informed consent and participated without being elicited or coaxed.

Results

Table 1 shows the difference between a case and control groups related to Sociodemographic characteristics. No significant difference present regarding age, occupation, economic status through both the case and control group.

Table 1. Difference between the case and control group with Socio-Demographic characteristics.

Variables	Items	Case group (N=100)		Control Group (N=100)		Total	Significance test
		n	%	n	%		
Age	years 20 – 29	12	6.0	16	8.0	28	χ^2 =3.72 p= 0.29
	years 30 -39	48	24.0	66	33.0	114	
	years 40 -49	88	44.0	78	39.0	166	
	years 50 -59	52	26.0	40	20.0	92	
Education	Illiterate	32	16.0	66	33.0	98	χ^2 =8.31 p= 0.040
	Primary	82	41.0	62	31.0	144	
	Secondary	42	21.0	30	15.0	72	
	Institute-College	44	22.0	42	21.0	86	
Occupation	Housewife	132	66.0	136	68.0	268	χ^2 =3.71 p= 0.44
	Employee	56	28.0	58	29.0	114	
	Retired	4	2.0	2	1.0	6	
	Student	8	4.0	4	2.0	12	
Residence	Rural	2	1.0	10	5.0	12	χ^2 =23.10 p= <0.001
	Urban	102	51.0	156	78.0	258	
	Suburban	96	48.0	34	17.0	130	
Economic status	Sufficient	50	25.0	48	24.0	98	χ^2 =0.198 p= 0.90
	Barely sufficient	106	53.0	112	56.0	218	
	Insufficient	44	22.0	40	20.0	84	

On the other hand, statistically significant differences were found between both groups in education and residence area because the result of the p-value was less than the common alpha 0.05. Thus, the sample in the study group was more educated than the sample in the control group.

Table 2 shows the difference between a case and control group about some lifestyle factors, there were no statistically significant differences in Smoking cigarettes and regular exercise between the study group and the control group. Besides, there were highly statistically significant differences between the study group and the control group in the body mass index.

Table 2. Difference between the case and control group in related to some lifestyle factors.

Variables	Items	Case group (N=100)		Control Group (N=100)		Total	Significance test
		N	%	N	%		
Body Mass Index (BMI)	(Underweight) < 18.5	0	0.0	6	3.0	6	χ^2 =14.99 p= 0.002
	(Normal range) 18.5-24.9	22	11.0	58	29.0	80	
	(Overweight) 25-29.9	80	40.0	76	38.0	158	
	(Obese) ≥ 30	98	49.0	60	30.0	158	
Smoking cigarette	An active smoker	2	1.0	2	1.0	4	χ^2 =2.38 p= 0.49
	Passive smoker	72	36.0	58	29.0	130	
	Both active and Passive smoker	6	3.0	2	1.0	8	
	Never smoked	120	60.0	138	69.0	258	
Regular exercise	Yes	44	22.0	50	25.0	94	χ^2 =0.25 p= 0.61
	No	156	78.0	150	75.0	306	

Table 3 shows the difference between the study and the control group about reproductive history. There were statistically significant differences between both groups in Abortion, contraceptive method, duration of contraceptive use, benign breast disease, infertility history and age at first pregnancy. Finally, there were no statistically significant differences between both groups to age at menarche, gravida, para, and Hormonal Replacement Therapy (HRT) use.

Table 3. Difference between the case and control group about reproductive history.

Variables	Items	Case group (N=100)		Control Group (N=100)		Total	Significance test
		%	N	%	N		
Age at menarche	< 12	16	8.0	10	5.0	26	χ^2 =0.74 p= 0.39
	≥ 12	184	92.0	190	95.0	374	
(Gravida) previous pregnancies	0	12	6.0	0	0.0	12	χ^2 =8.86 p= 0.11
	1	8	4.0	6	3.0	14	
	2	22	11.0	32	16.0	54	
	3	28	14.0	38	19.0	66	
	4	28	14.0	20	10.0	48	
	≥ 5	102	51.0	104	52.0	206	
Para	0	12	6.0	0	0.0	12	χ^2 =7.75 p= 0.17
	1	14	7.0	10	5.0	24	
	2	34	17.0	44	22.0	78	
	3	36	18.0	38	19.0	74	
	4	32	16.0	26	13.0	58	
	≥ 5	72	36.0	82	41.0	154	
Abortion	Do not have (0)	110	55.0	136	68.0	246	χ^2 =5.78 p= 0.055
	1- 2	46	23.0	36	18.0	82	
	≥ 3	44	22.0	28	14.0	72	
Contraceptive methods	Pills	42	21.0	28	14.0	70	χ^2 =17.16 p= 0.02
	Injection-patch	6	3.0	0	0.0	6	
	IUCD	20	10.0	36	18.0	56	
	Natural	70	35.0	108	54.0	178	

	≥ two hormonal Method	62	31.0	28	14.0	90	
Duration of contraception used	Natural	70	35.0	108	54.0	178	χ^2 =17.83 p= 0.00
	< 1 year	46	23.0	10	5.0	56	
	1- 5 years	36	18.0	24	12.0	60	
	≥ 6	48	24.0	58	29.0	106	
Benign Breast disease	Yes	36	18.0	12	6.0	48	χ^2 =10.01 p= 0.02
	No	164	82.0	188	94.0	352	
Hormonal Replacement Therapy (HRT)	Yes	8	4.0	2	1.0	10	χ^2 =1.86 p= 0.174
	No	192	96.0	198	99.0	390	
Infertility history	Yes (Primary Infertility)	12	6.0	0	0.0	12	χ^2 =7.053 p= 0.029
	Secondary infertility	18	9.0	4	2.0	22	
	No	85	85.0	98	98.0	366	
Age at first pregnancy	< 30	194	97.0	180	90.0	374	χ^2 =8.9 p= 0.011
	≥ 30	6	3.0	20	10.0	26	

Discussion

In general, the current study highlights the contributions of some demographic variables for women attending Hiwa Hospital and Teaching Hospital in Sulaymaniyah city.

This study shows no statistically significant difference regarding age, occupation, economic status among the study group and control group. Whereas there have been statistically significant between both groups in education and residence area. Balekouzou et al. [10] disagrees with the results of this study in occupation and economic status but agrees with the present study in keeping with the educational level, and residential area, there have been significant differences among cases and controls with relevance to the occupation ($p = 0.001$), economic status $p = 0.01$, education level $p < 0.001$, area of residence $p < 0.001$, and over 69% (121/174) of the cases as compared to 82% (287/348) of controls were housewives with a moderate economic status 56.9% and 66.4%.

Ogunsina et al. [11] found that socioeconomic status and breast cancer screening, having a college degree will probably have an impact on early detection and treatment methods In agreement with the present study, some researchers studied the danger factors in breast cancer in north Iran in which 250 breast cancer cases and 500 controls enrolled, in their study higher education, history of induced abortion and higher BMI have been the risk factor of breast cancer [12].

Regarding the association between a case and control group in relevancy some lifestyle factors, there have been no statistically significant differences in smoking cigarettes and regular exercise, between the study group and the control group. Also, there has been a significantly higher percentage related to the study group and the control group in body mass index p=0.002. Cheraghi et al. showed in an exceedingly statistical procedure that higher BMI (OR=1.02, 95%CI: 1.01-1.03) was a risk factor for breast cancer [13]. Lawlor et al. performed a meta-analysis study to seek out the effect of body mass index on breast cancer during premenopausal and postmenopausal periods [14]. There was an inverse, however, the non-significant association between BMI and breast cancer risk throughout the premenopausal period. Smoking is a negative health behavior. In the present study, there is no significant relationship between smoking cigarettes and breast cancer among women. This was due to a small number of women are smokers in our culture. Macacu et al. agree with the current study results, in which they mentioned that smoking cigarettes do not affect breast cancer [15].

Sadri et al. showed inconsistent results have been found among active and passive smoking and breast cancer which is in contrast with present study findings [16]. Key et al. conducted a study in Iran, whose

results concluded that both passive and active smoking equally increase the risk of female breast cancer [17].

Hosseinzadeh et al. calculated that the rise of BMI is taken into account as a crucial breast cancer risk factor, and the present study had the same finding also [18]. It appears that the definition and the viewpoint of physical activity and regular exercise in our region differ from the other settings and studies which can most likely have influenced our findings as compared to others.

In consensus with present study findings, this comparison isn't significant with another study in Iran, in which they failed to show a vital effect of physical activity upon breast cancer [19]. While in the recent study [20], there is a conclusion that physical activity can reduce the risk of breast cancer, reducing the rate of recurrence, and increasing the survival rate of patients with breast cancer. The inverse association between physical activity and breast cancer could also be a lot of pronounced in women with no family history of breast cancer. This study wasn't ready to determine the crucial period during a woman's life once the exercise is that the most helpful, and present study couldn't verify that the activities or intensity of activities confer the best risk reduction.

In consensus with the present study, other researchers examined the link between a lifespan history of physical activity and breast cancer risk. Among premenopausal women, the total physical activity wasn't considerably related to reduced risk [21].

Regarding the association between study and control group in relevancy reproductive history, there have been statistically significant differences between both groups in abortion, contraceptive method, duration of contraceptive use, benign breast disease, infertility history and age at first pregnancy. Finally, there have been no statistically significant differences between both groups concerning the age at menarche, gravida, para, and Hormone replacement therapy (HRT) use.

Several studies recommended that physiological and reproductive factors, notably at an early age at menarche and at first pregnancy, parity and breastfeeding could cut back breast cancer risk in women, although the results were inconsistent [12, 22-24]. A Matched Case-Control Study in Vietnam conducted [25], in which they enrolled 492 incident breast cancer cases unselected for family history or age at diagnosis and 1306 control women age 25-75 were recruited analysis included 294 matched pairs and mean age at diagnosis was 46.7 years.

In agreement with present study results, older age at first parity, and increasing BMI at diagnosis were positively correlated with breast cancer cases compared to controls. The relationship between the history of benign breast disease and breast malignancy has been determined in numerous studies [26].

A Meta-Analysis study has shown that having a first child after age 30 years old increases the risk of breast cancer by 48% [27]. In this study, those who had aged more than 36 years old increases the risk of breast cancer by 1.8 and 2.3 times respectively. It should be noted that the age of the first pregnancy more than 36 years old was recorded in a very low number of women (less than 1% in both case and control groups) and it is similar to other studies [19, 28].

The results of Farahnaz et al. study agree with present study results, in which they have shown that oral contraceptive use was associated with breast cancer. Two studies concluded there is no association between oral contraceptive use and cases of breast cancer [30, 31], but prolonged use of Oral Contraceptive (OCP) more than 16 years was considered as predictive factors. This is consistent with a study in Saudi women [32].

Demchig, D., et al. [33] study results indicated that combined HRT may raise breast cancer risk. There have been almost no associations of significance between BC and exogenous hormone exposure, HRT. But it agrees with the current study about the income that showed no association with breast cancer. The results of this study show an increase in breast cancer rates in higher socioeconomic status with higher levels of hormonal risk factors for the disease. In the present study, the role of HRT is not significant with breast cancer because of a small number of menopausal women and their uses of HRT were less. Further research needed to specialize in the sort of therapy, the way it is taken and when treatment started, because those factors can produce different results [33].

Conclusions

There was an association between education level and residence area and breast cancer. Body mass index in the present study is considered as a highly significant association between case and control groups and breast cancer. It means that women with higher BMI had a higher risk to develop breast cancer in their lives. There was an association between both groups about Abortion, contraceptive method, duration of contraceptive use, age at menopause, benign breast disease, infertility history, age at first pregnancy and breast cancer. Further research recommended focusing on the type of therapy, the way it is taken and when treatment started because those factors can produce different results.

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