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RISK FACTORS OF FIBROCYSTIC BREAST CONDITIONS IN A SAMPLE OF IRAQI WOMEN

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ABSTRACT

Background: Fibrocystic breast disease is the most prevalent benign type of breast condition, affecting millions of people worldwide. Certain hormonal factors influence how this condition appears, and how it is treated. These benign lesions are not associated with an elevated risk of malignancy; although they have been associated with a 50% risk of developing breast cancer under specific histological and clinical conditions. **Objectives:** Is to evaluate the main risk factors of the fibrocystic breast condition in women attending breast clinic at Al- Qudis primary health care center in Mosul city. **Methods:** This is a case control study. The study included a total of 100 female diagnosed as fibrocystic breast condition (cases) and another 100 females free from fibrocystic breast condition (controls). Participants were assessed at Al Qudis Primary Health Care Center from January 2025 to October 2025. The questionnaire includes information about; the age, body mass index, education, marital status. menstrual history. obstetric history. hormonal use, family history of breast disease, life style including breast lactation, smoking and diet. **Results:** The study found several risk factors for developing of breast fibrocystic conditions. These factors are; female at age of (20-24) years (OR = 3.5), fruit intake of once a week is (OR = 18.76), primary educational level (OR = 1.907), BMI of (30-39.9), low educational level (OR = 1.907), nulliparity (OR = 4.697), menarche onset of 12-14 years (OR = 2.843) and never used oral contraceptive pills (OR = 2.746). **Conclusion:** It's recommended for women to do regular visits into primary health centers to detect any abnormality in the breast as early as possible.

KEYWORDS: Benign, Breast, Iraq, Mosul, Risky.

1- INTRODUCTION

Fibrocystic breast disease is the most prevalent benign type of breast condition, affecting millions of people worldwide.[1] Certain hormonal factors influence how this condition appears, and how it is treated. Benign breast condition refers to a variety of non-malignant diseases, including tumors, injuries, mastalgia, and nipple discharge.[2-3] These benign lesions are not associated with an elevated risk of malignancy; although they have been associated with a 50% risk of developing breast cancer under specific histological and clinical conditions.[4] Clinical examination reveals a palpable mass in both benign and malignant breast diseases in addition to dimpling of the skin (peau d'orange), thickness, discomfort, and nipple discharge.[4-6] Mammograms and ultrasounds are the most often used methods of investigation to evaluate these conditions.[7]

Hormonal imbalances can cause fibrocystic alterations in the major components of the breast. The breast's lobules, ducts, and stroma are some of these parts.[8] Glandular breast tissue throughout reproductive age is directly correlated with periodic increases in progesterone and estradiol plasma levels.[9]

Patient's age, occupation/radiation exposure, genetic predisposition, body habit, alcohol consumption, smoking, and hormonal influences like early menarche,

late menopause, nulliparity, late first live birth, and hormonal therapy are all factors that contribute to the development of breast cancer.[10] The triple assessment, which consists of radiographic evaluation (mammograms), histological evaluation (breast biopsy), and clinical evaluation (breast and axillary inspection), should be followed when evaluating clinically identified breast condition.[11]

At 2000, the Ministry of Health (MOH) in Iraq, working with the World Health Organization (WHO), the Ministry of Higher Education and Scientific Research (MOHESR), and other organizations, established a national program for the early detection and downstaging of breast cancer. Since then, referral centers and specialist breast clinics have been established by the major hospitals in every governorate in Iraq to aid in the early detection of breast cancers.[12]

A comprehensive program called Early Detection and Down Staging aims to reduce breast cancer mortality rates by providing high-quality primary and secondary healthcare services, performing early detection and examinations for all women 20 years of age and older, and moving away from diagnosing the disease at a later stage when recovery is most likely.[13]

The aim of this study is to evaluate the main risk factors of the fibrocystic breast condition in women attending breast clinic at Al- Qudis primary health care center in Mosul city.

PATIENT AND METHODS

After taking the ethical approval from the directorate of Health in Nineveh. A case control design was adopted in order to achieve of the present study aim. In order to examine the possible association between exposure to a certain risks factor and the development of the disease, a group of people with a disease (cases) and another group of people without the disease (controls) are collected and number of cases and controls with history of exposure to the risk factors are determined. Participants were assessed at Al Qudis Primary Health Care Center from January 2025 to October 2025. Both cases and controls were randomly collected during period of the study.

The questionnaire form included information in regard to: Age, body mass index, education, marital status. menstrual history. obstetric history. hormonal use, family history of breast disease, life style including breast lactation, smoking and diet.

The Kolmogorov-Smirnoff test was used to assess parameter normality, while the Odds ratio was calculated as a measure of association between risk factors and the disease. 95% confidence interval (CI) of the result will be calculated, it quantifies the uncertainty in measurements, it is usually reported as 95% sure that the true value for the whole population lies. CI is calculated by using the following equation: for the upper value = OR $^{1+1.96}\sqrt{x^2}$ and for the lower value =OR $^{1-1.96}\sqrt{x^2}$. Chi square test was used for categorical variables. P value of less than 0.05 was considered statistically significant.

3-RESULTS

A total of 100 female diagnosed as fibrocystic breast condition were considered to represent cases & another 100 females free from fibrocystic breast condition were taken as controls. The study shows that female at age (20-24) years have a risk for developing of fibrocystic breast condition (OR = 3.5), fruit intake of once a week is another risk (OR = 18.76) and primary educational level is a later risk (OR = 1.907). As shown in table 3.1.

Table (3.1): Sociodemographic distribution of fibrocystic breast condition cases and their controls.

Age Group (Year)	Cases		Controls		O.R.	95% of C.I.	P-Value
	No.	%	No.	%			
20-24	28	28%	10	10%	3.5	1.614 – 7.571	0.001
25-29	11	11%	12	12%	0.906	0.387 – 2.123	0.825
30-34	7	7%	12	12%	0.552	0.214 – 1.427	0.228
35-39	16	16%	8	8%	2.190	0.910 – 5.261	0.082
40-44	14	14%	18	18%	0.804	0.384 – 1.684	0.568
45-49	11	11%	14	14%	0.759	0.332 – 1.737	0.521
50-54	8	8%	18	18%	0.396	0.167 – 0.942	0.057
55-59	3	3%	2	2%	1.515	0.295 – 7.746	0.651
60≤	2	2%	6	6%	0.158	0.025 – 1.028	0.054
Smokers	4	4%	10	10%	0.375	0.120 – 1.176	0.092
Not smokers	96	96%	90	90%			
Fruit intake Once/week	62	62%	8	8%	18.76	8.305 – 42.234	<0.001
Fruit intake 2/week	12	12%	12	12%	1.000	0.434 – 2.307	1
Once/week 3/ week	8	8%	28	28%	0.224	0.098 – 0.512	<0.001
Fruit intake Daily	18	18%	52	52%	0.203	0.107 - .384	<0.001
Positive family history	16	16%	14	14%	1.170	0.544 – 2.516	0.692
Negative family history	84	84%	86	86%			
Primary education	58	58%	42	42%	1.907	1.090 – 3.338	0.024

Secondary + Higher education	28	28%	20	20%	1.556	0.811 – 2.981	0.185
Uneducated	14	14%	38	38%	0.266	0.134 – 0.528	<0.001
Married	77	77%	98	98%	0.068	0.017 -0.271	<0.001
Unmarried	23	23%	2	2%			

Table (3.2) shows that BMI of (30-39.9) prone a woman to develop fibrocystic breast condition 2.9 times than others.

Table (3.2): The distribution of cases & controls according to BMI.

BMI (kg/m^2)	Cases		Controls		O.R.	95% of C.I.	P-Value
	No.	%	No.	%			
< 18.5	1	1%	2	2%	0.459	0.064 – 3.855	0.561
18.5 – 24.9	3	6%	14	14%	0.098	0.030 – 0.319	0.0001
25 – 29.9	41	41%	47	47%	0.784	0.449 – 1.370	0.393
30 – 39.9	52	52%	27	27%	2.929	1.627 – 5.274	<0.001
≥40	3	3%	0	0%	Inf.	0.790 – Inf.	0.036

Table (3.3) shows that women with low educational level had 1.9 risks to develop fibrocystic breast condition (OR = 1.907), nulliparity (OR = 4.697), menarche onset of 12-14 years (OR = 2.843).

Table (3.3): The distribution of cases & controls according to their gyne-obstetric information.

Variable	Cases		Controls		O.R.	95% of C.I.	P-Value
	No.	%	No.	%			
Age of mother at first child birth Nulliparous	29	29%	8	8%	4.697	2.056 - 10.696	<0.001
Age of mother at first child birth ≤ 24	59	59%	52	52%	1.328	0.761 – 2.319	
Age of mother at first child birth 25-29	7	7%	34	34%	0.146	0.062 – 0.343	
Age of mother at first child birth ≥ 30	5	5%	6	6%	0.825	0.258 – 2.640	
Menarche onset <12 years	3	3%	20	20%	0.124	0.038 – 0.406	<0.001
Menarche onset 12-14 years	89	89%	74	74%	2.843	1.331 – 6.058	
Menarche onset ≥15 years	8	8%	6	6%	1.362	0.474 – 3.912	
Menopause	8	8%	24	24%	0.275	0.119 – 0.637	0.002
Not menopause	92	92%	76	76%			
No lactation	37	37%	30	30%	1.370	0.762 – 2.464	0.294
Duration of lactation	8	8%	4	4%	2.087	0.644 – 6.736	
Duration of lactation	40	40%	36	36%	1.185	0.671 – 2.094	
Duration of lactation	15	15%	30	30%	0.412	0.207 – 0.820	

Table (3.4) shows women who never used oral contraceptive pills had 2.7 folds increased risks to develop fibrocystic breast condition (OR = 2.746).

Table 3.4: The distribution of cases & controls according to oral contraceptive pills use.

Duration of OCP (Year)	Cases		Controls		O.R.	95% of C.I.	P-Value
	No.	%	No.	%.			
0	83	83%	64	64%	2.746	1.423 – 5.294	0.002
≤1	6	6%	14	14%	0.392	0.149 – 1.036	0.059
>1	11	11%	22	22%	0.438	0.203 – 0.950	0.036

4-DISCUSSION

The study found that younger ladies (20-240 years, had more fibrocystic conditions than other ladies, which is consistent with other study findings.[14] While other study found fibrocystic condition is most prevalent and symptomatic in the older age group closer to menopause.[15] Anyhow, different sample size might lead to these disparities. Moreover, the study found that taken little amount fruit is risky for having fibrocystic conditions. Conversely, a diet rich in fruits and vegetables is associated with a reduced risk. Multiple studies have suggested that diet plays a role in benign breast disease.[16-17] This might due to the fact that, fruits provide fibers, which aids in estrogen metabolism and

the elimination of excess hormones and toxins.[18] Additionally, the study illustrates that primary educational level associated with higher risk for having fibrocystic breast condition, which is not in agreement with other study which found that women with a higher education level are more likely to be diagnosed with breast conditions[19], but this is thought to be related to associated lifestyle factors, such as having fewer children or having them later in life.

Regarding anthropometric findings of the current study. Grade II obesity (35-39) kg/m^2 found to be risky for having breast fibrocystic condition which agrees Chen et al study findings.[20] As obesity affects hormone levels, including estrogen synthesis in adipose (fat) tissue, which is a key causal pathway linking obesity to breast fibrocystic changes.

Concerning different gynaecological and obstetrical variables of the study participants. The study found, having nulliparity is risky for breast fibrocystic conditions. In contrast to having multiparity appears to decrease the risk. Opdahl et al showed comparable findings.[21] This might due to, nulliparous women experience uninterrupted hormonal cycles, which is associated with an increased likelihood of developing fibrocystic changes. In the same way, the study found that menarche onset 12-14 years is risky for having breast fibrocystic conditions, which is not directly supported by other published literature; instead, earlier menarche (before age 12) is generally cited as a risk factor for the condition.[22] Anyhow, more studies are needed to find the exact association.

The study found patients who not received oral contraceptive pills had more risk for breast fibrocystic conditions, which is consistent to other study findings.[23] This might due to the fact that oral contraceptives likely provide protection by inhibiting ovulation and moderating the natural hormonal fluctuations of the menstrual cycle, which can otherwise cause changes and discomfort in breast tissue.

The study limitations are; as the study findings were based solely on the population who attend Al Qudis Primary Health Center in Mosul, it is yet unknown whether researchers would find the same outcomes in a different region. Additionally, the study had small sample size due to time shortage, which might affect the study results.

4- CONCLUSION AND RECOMMENDATION

A lot of risk factors associated with breast fibrocystic conditions. These factors are, younger ages, taking little amount of fruits, having primary educational level, grade II obesity, nulliparity and didn't use oral contraceptive pills. It's recommended for women to do regular visits into primary health centers to detect any abnormality in the breast as early as possible.

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Conflict of intertest

About this study, the authors disclose no conflicts of interest.

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