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# A Study On The Effects Of Risk Factors On The Pathology And The Development Of Breast Cancer In Iraqi Women

Natherah Mohammad Ali AL- Nuaimee*1,
Ajwad Awad Muhammad2, Najwan Kaisar Fakree3

1,2,3 Department of Clinical Laboratory Science,
College of Pharmacy, University of Baghdad, Iraq
Corresponding Author: nathera16@yahoo.com

## ABSTRACT

Breast cancer is one of the most important malignant diseases all over the world. The incidence of breast cancer is increasing around the world and it is still the leading cause of cancer mortality An Approximately 1.3 million new cases were diagnosed worldwide last year. With areas rising increasing, risk factors for breast cancer including obesity, early menarche, alcohol and smoking, environmental contamination and reduced or late birth rates become more prevalent. In Iraq, breast cancer ranks first among types of cancers diagnosed in women. This study was conducted on one hundred twenty women with breast cancer that was evaluated and investigated for the possible role of the risk factors on the development of breast cancer in females. The work had been conducted in Baghdad Medical City Hospital. Information on data includes woman's age of breast cancer, marital status, number of complete births, time of lactation, feminine education, menarche age, social activity of women, such as smoking, hormone treatment, and breast cancer history was collected by self-administered questionnaires. Data were collected and analyzed statistically. Differences were significant at ($p<0.05$). It is concluded that there is a strong correlation between breast cancer and the risk factors among most of the parameters used.

**Keywords:** Breast cancer, Investigation, marital status, lactation period

**Correspondence**:
Natherah Mohammad Ali AL- Nuaimee
1Department of Clinical Laboratory Science, College of Pharmacy, University of Baghdad, Iraq

*Corresponding author: Natherah Mohammad Ali AL- Nuaimee email-address: nathera16@yahoo.com

## INTRODUCTION

Breast tumors can be either benign or malignant. Typically, benign forms are due to overgrowth of the breast canals; cells are abnormally developing and creating an irregular bump. They are not spreading to other areas of the body, however. A fibroadenoma, which is often removed by procedure, is the most common form of benign breast tumor. Cancer cells can spread beyond the breast in malignant tumors if left untreated. It can become the muscles below the breast. The skin that protects the breast may also develop into it. Sometimes the cells migrate to other organs in the body, breaking away from the initial (primal) cancer. The bloodstream or lymph system can spread. They can break up and form a new tumor when these cells enter a new region. Sometimes, a secondary or metastasis is considered the new tumor. Breast carcinogenicity occurs as cancer of cells in breast canals and lobules. When caught at an early stage, it is also possible to heal breast cancer. Typically it can not be cured if cancer spreads to other parts of the body but can typically be managed successfully for a long time. Women have 1.38 million new cancer cases diagnosed in 2008, which is the most common cancer of women worldwide and constitutes 23% of all cancer cases by women. Currently, it is the most common cancer in developed and developing countries. In the developing world, there is the largest prevalence of breast cancer. The incidence and mortality of breast will decrease to 50 percent, with the biggest increase in developed worlds, is projected between 2002 and 2020. The main focus of low-income remedies is on communicable diseases but because they become more regulated, the population lives lonely and the burden of cancer is increasing. The main emphasis on low-income remedies is the use of communicable diseases. There are several obstacles to the early identification and prevention via consciousness and education [1, 2, 4, 9, 15].

Breast cancer is a complex disease and it is often associated with many different contributing causes. The risk factors for breast cancer will increase the probability of a woman developing the condition. With one or more of the risk factors, however, a woman would not necessarily get cancer of the breast, and no single cause can explain any case of breast cancer. Certain of the risk factors women have control over, such as consuming alcohol, weight gain after menopause, and exercise; others, such as age, menopause or age, are not regulated by a woman. The DNA damage markers such as comet length are significantly increased in Breast cancer patients. Also biochemical markers such as SOD and CATinsignificantly high in patients and MDA was significantly elevated in the patients while GPx and GSH decreased [13, 26]. Some causes for breast cancer include Hodgkin's lymphoma radiotherapy, dense breasts, and some forms of breast disease that is not cancer. Exposure to radiation ionizing, such as X-rays, has also been shown to increase cancer risk, but that should not be prevented because people with mammograms are likely to benefit even more than the possible benefit from the early detection of a breast tumor [5]. At least some of the unexplained proportion (50 percent) of cases is assumed to be the environmental considerations. Even women with a high probability of having the disease due to their 'breast cancer' genes may affect the environment strongly. In the last 50 years, synthetic chemicals have evolved substantially and are an integral part of the 21st century's daily lives. Chemicals that mimetic estrogen is part of a body of chemicals known as

hormone disruptors (endocrine glands secrete hormones in the body) or "endocrine disrupting" chemicals. Scientists around the world have been more worried about these chemicals in recent years [5, 11, 12].

Some chemicals found in our environment and have estrogen-disrupting properties are several pesticides (e.g. some pyrethroid insecticides and methoxychlor), Dioxins, Bisphenol A (used in plastic and resin for water storage and food containers, denture sealants as well as baby bottles), parabens, and antioxidants used for the manufacture of the toilet and cosmetic items, for example, under-armed deodorants, UV filters (for example, benzophenone and 4MBC). Many chemicals in sun creams can disturb estrogen and cause animal symptoms, certain oestrogenic UV filters can be absorbed by the skin. Breast cancer is Iraq's most common female cancer. Breast cancer is the leading site for women, according to the latest Iraqi Cancer Registry, represented approximately a third of the registered women cancers in Iraq. In an attempt to reduce the death rate for breast cancer, Iraq established national early cancer screening services, as suggested by the World Health Organization (WHO) [10, 18].

**The aims of the study**

Since there are limited previous studies about the effects of risk factors included in this study as woman's age of having breast cancer, marital status, number of full pregnancies, lactating period, woman's education, woman's social habit like smoking, use of hormonal drugs, family history of breast cancer and the age at menarche on breast cancer incidence in Iraqi women. This study was developed to study the effects of the selected risk factors on the development and the pathology of breast cancer in Iraqi women.

## MATERIALS AND METHODS

The study was carried out in the medical city hospital in Baghdad. One hundred and twenty women with breast cancer were tested for breast cancer risk and methods. Auto-administered questionnaires collected data. Data on the age of women who have breast cancer, marital status, number of complete embarkations, lactation, the education of women and menarche age, social habits of women including smoking, hormones use, and a family history of breast cancer are given in the questionnaire. Women's age groups were distributed into three groups. The first group was between 18 years and below, the second group was between 18years and 45 years and the third was 45 years and above when they had been found to have breast cancer. Women education was divided into the uneducated group, the group had primary education, the group had secondary education and the last group was university educated. According to age at menarche, women were dividing into three groups as the first group had menarche between 10-12 years, the second group had menarche between 13-15 years and the third group had menarche at the age between 16-17 years. Regarding the lactation period tested women were divided into five groups as a group with no lactation, a group with less than 6months of lactation, the group with 7-12 months of lactation, a group with 13-18 months of lactation, group with more than 18 months of lactation. Using hormonal therapy was divided as hormone replacement therapy only, oral contraceptive only, both of them, none of them. Concerning the marital status, women were divided into married and unmarried groups. On the subject of a family history of breast cancer, women were divided into two groups, positive family history of breast cancer and negative family history of breast cancer. Concerning the number of full-term pregnancies, it was distributed as, zero, 1-2, 3-5, and 6 or more. Relating to the smoking habit, patients were divided into two groups, smoking and nonsmoking. Data were collected and analyzed statistically using the chi-squared test and differences at $p<0.05$ were considered as significant.

## RESULTS AND DISCUSSION

Results showed that the most common age group of incidence was that of above 45 years old, it accounts for 80% of women, and showed significant difference at ($P<0.05$) compared to other age groups and followed by the age group of 18-45 years which account for 15% of women while the age group of below 18 years accounts for 5% of women only (Table 1, figure 1**).** These results are explained by several known and suspected causes of an age-dependent susceptibility to cancer as, mutations increase with age, aging tissue and cellular microenvironment, a tumor suppressor and longevity assurance genes, lifetime carcinogenic exposure, decreased ability to repair DNA, oncogene activation, and amplification, decrease tumor suppressor gene activity, microenvironment alteration, including hormonal alterations or exposures and decreases immune surveillance due to immune senescence [16, 23]. Uneducated women were comprised of 60%, while 20% had primary education, 15% had secondary and university-educated women were comprised only 5%. The difference between groups was significant at ($P<0.05$) (Table 2, figure 2). Some studies have shown that higher social and higher levels of education correlate with cancer of the breast. [6, 14, 24]. Nevertheless, in the present study, results showed a significant relationship between low education levels and increased incidence of breast cancer. In addition, education-related factors may impact breast cancer survival, including the stage of diagnosis, timeliness, and form of cancer treatment, psychosocial support, and post-menopausal hormone therapy. [20]. Regarding age at menarche, 60% of women had menarche between 10-12 years, 30% of women had menarche between 13-15 years and only 10% of them had menarche at age 16-17 years. There was appeared a significant difference among groups at ($P<0.05$) (Table 3, figure 3). The most compelling reason for this above is the hormonal impregnation during the operation cycle of the ovaries. This hypothesis is consistent with high levels of estrogen after menstruation in women at an early age [3, 12].

The findings of this study show that the probability of breastfeeding is inverse. Results showed that 55% of women had no lactation at all, 15% of women had lactation periods less than 6 months, 10% of women had lactation period between 7-12 month, 10% of women had lactation period between 13-18 month and 10% of patient women had lactation periods more than 18 months. According to results, it appeared that The risk for breast cancer with declining lactation periods was significantly increased in patients with breast cancer (Table 4, figure 4). The difference was significant at ($P<0.05$) between groups. Results showed that the risk of breast cancer is increasing with reducing lactation period; Different hormonal or non-hormonal factors can contribute to the mechanisms. Schedin, 2006, has shown that the ways that lactation and pregnancy affect some subtypes of breast cancer can be linked with the postpartum phase of involution. Data indicates that breastfeeding facilitates mammary cell differentiation during birth, and that differentiating cells are less vulnerable to cancer. Also, the risk of disease by removing cells with initial DNA damage from breast tissue can be decreased by breastfeeding and the processes involved during the cessation of breastfeeding. Several mechanisms have been recommended to promote a lower risk of breast cancer associated with prolonged lactation: lower exposure to cyclic reproductive hormones due to prolonged breastfeeding occurring ovulatory suppression; protective effect from direct physical breast

changes associated with milk production; lower toxicity levels [17, 19, 23].

However, our results showed that neither hormone replacement therapy nor oral contraceptive alone increases the risk of breast cancer, and 65% of women with breast cancer have used both therapies. A significant statistical relationship between hormonal use and breast cancer at (P<0.05) (Table 5, figure 5). Incentives of genotoxic stress and mutations in the breast tissue lead to the growth of brain cancer. External hormones (e.g. OCs and HRT) that contain estro linear medication may also be at risk for breast cancer [8]. Exposure period can also impact whether the exposure time is 10 years or longer. The effect of HRT was 2% versus 1% respectively, higher than the effects of OCs. Progesterone may also lead to the risk of breast cancer, as the combined HRT indicated (i.e., estrogen plus progesterone). According to our results, positive relationships appeared between married women and breast cancer and the difference between married and not married women was significant (P< 0.005). Certain trials have shown an equivalent higher risk of breast cancer than parous women of the same age for single or nulliparous married women. Thus, one potential reason is that marital status or null parity is not a significant determinant of increased or decreased risk of breast cancer, and the key consequence is age pregnancy or parity of the first full year of childhood. [15]. The association between a favorable family history of breast cancer and an increased risk of breast cancer was statistically significant (P <0.05), as shown in (Table 7, figure 7). In this study, positive family history was noted in 80% of patients. Women with a strong family history of breast cancer could inherit genetic alterations that modify their risk and clinical presentations. BRCA1 and BRCA2 are two primary genes related to breast sensitivity and ovarian cancer. In 40% of families with proof of legacy susceptibilities to breast and ovarian cancer, BRCA1, and BRCA2 mutations are identified [24, 25]. In regards to the number of full-term pregnancies, 60% of patients had no full-term pregnancies, 15% of patients had only 1-2 full-term pregnancies, 15% of patients had 3-5 full-term pregnancies and 10% of patients with breast cancer had 6 or more full-term pregnancies. The risk of breast cancer was decreased with an increased number of full-term pregnancies. There was a significantly increased risk of breast cancer with a reducing number of pregnancies (P<0.05) (Table 8, figure 8). The risk of breast cancer decreased with an increased number of full-term pregnancies. Interestingly, pregnancy has a long-term protective effect. Multiparity multipartisan pathways are suspected of impacting the risk of breast cancer. Reproduction duration tends to be double-effect; immediately after delivery, the risk is elevated and then decreased slowly. Pregnancy contributes to accelerated breast-tissue differentiation and rapid epithelial proliferation. Each subsequent pregnancy improves the alteration initiated during the first pregnancy, particularly if it occurred before, and breast cancer develops at a rate of proliferation of epithelial mammalian cells and inversely at a rate of differentiation [9] There was a statistically significant difference in breast cancer risk between smokers and not smoked patients (P<0.05) (Table 9, figure 9). Smoker women showed an increased incidence of breast cancer. Our results showed that there was a statistically significant difference in breast cancer risk between smokers and not smoker's patients. Fumes are thought to contribute to the development and growth of many cancers, including breast cancer. The contribution of nicotine to tumor growth and metastasis is accumulated through experimental evidence. Nicotine effect may be mediated through nicotine acetylcholine-receptors expressed in human breast cancer cells, which regulate various pathways of signaling involving cell proliferation, angiogenesis, apoptosis as well as in primary tumor metastatic dissemination. Such results indicate that the prevalence and course of cancer of smoking may be affected. Smoking is related to an increased breast cancer incidence by the epidemiological findings. [7, 21].

**Table 1: The proportion of women with breast cancer according to age**

| Age group | Proportion |
|---|---|
| 18 years and below | 6 **(5%)** |
| 18-45 years | 18 (15%) |
| Above 45 years | 96 (80%) |

**The Chi$^2$ value 19.539. The P-value is < 0.001.**

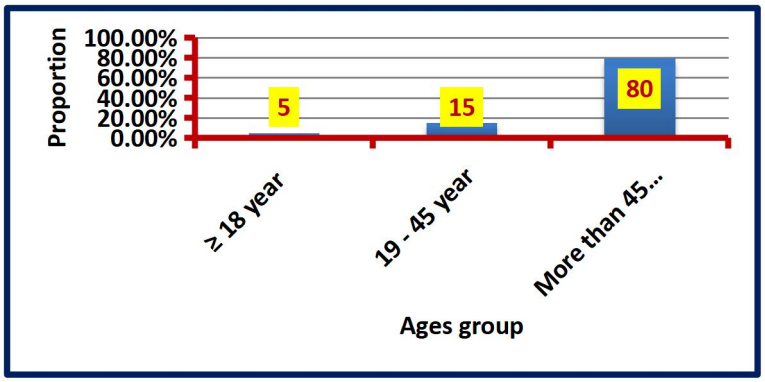


**Figure 1: The proportion of women with breast cancer according to age.**

**Table 2: Education of patients**

| Women education | Number of women |
|---|---|
| Not educated | 72 (60%) |
| Primary schools | 24 (20%) |
| Secondary schools | 18 (15%) |
| university | 6 (5%) |

The Chi$^2$ value 14.00. The P-value is 0.003.

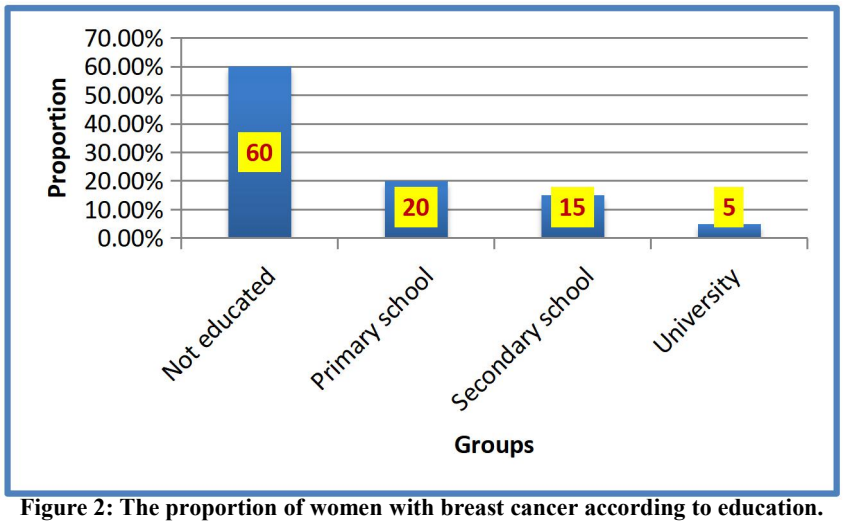


**Figure 2: The proportion of women with breast cancer according to education.**

**Table 3: Age at menarche in patients with breast cancer.**

| Age of menarche | Number of women |
|---|---|
| 10-12 years | 72 (60%) |
| 13-15 years | 36 (30%) |
| 16-17 years | 12 (10%) |

The $Chi^2$ value 4.847 The P-value is 0.003.

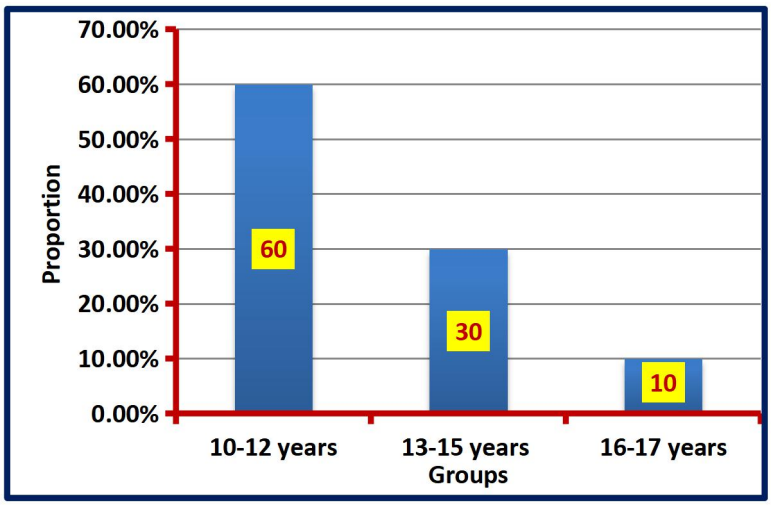


**Figure 3: The proportion of women with breast cancer according to age at menarche.**

**Table 4: Periods of lactation in patients with breast cancer.**

| Lactation period | Number of women |
|---|---|
| No lactation | 66 (55%) |
| Less than 6months | 18 (15%) |
| 7-12 months | 12 (10%) |
| 13-18 months | 12 (10%) |
| More than 18 months | 12 (10%) |

The $Chi^2$ value 15.5. The P-value is 0.004.

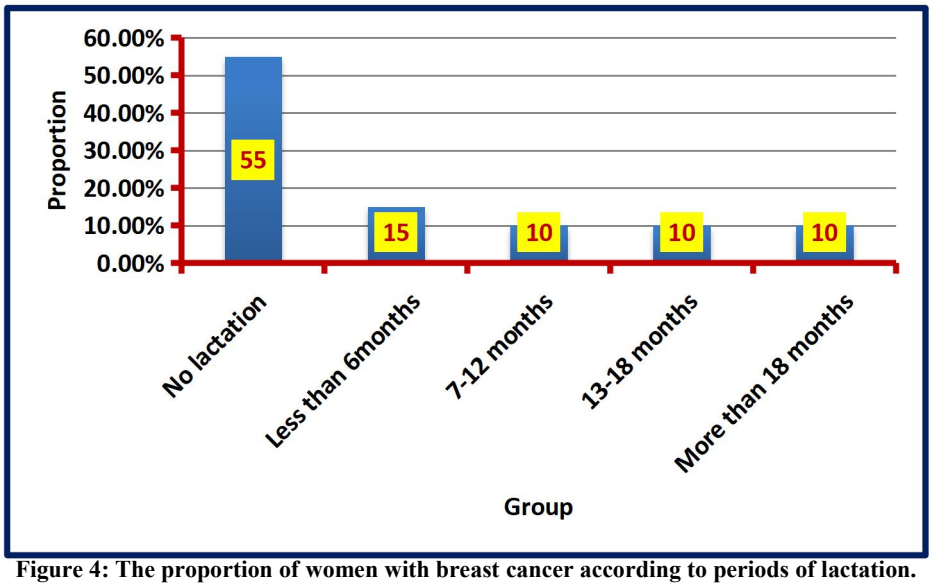


**Figure 4: The proportion of women with breast cancer according to periods of lactation.**

**Table 5: Hormonal treatment used.**

| Types of hormones used | Number of women |
|---|---|
| Hormone replacement therapy only | 12 (10%) |
| Oral contraceptive only | 6 (5%) |
| Both of them | 78 (65%) |
| None of them | 24 (20%) |

The $Chi^2$ value18.00 The P-value is < 0.001.

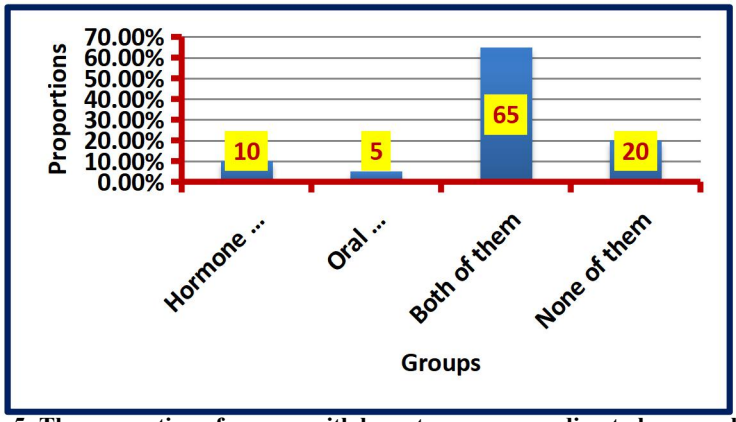


**Figure 5: The proportion of women with breast cancer according to hormonal used.**

**Table 6: Marital status.**

| Marital status | Number of women |
|---|---|
| Married | 96 (80%) |
| Unmarried | 24 (20%) |

The $Chi^2$ value7.20 The P-value is 0.007.

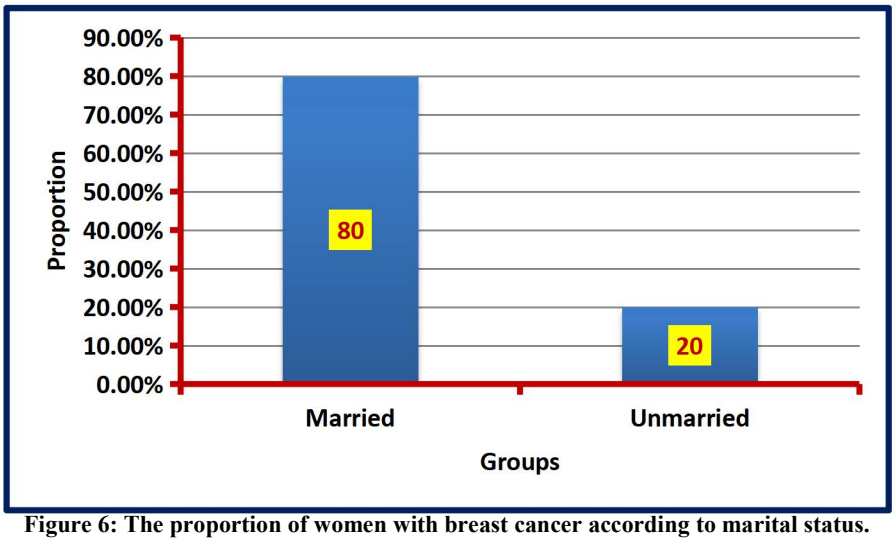


**Figure 6: The proportion of women with breast cancer according to marital status.**

**Table7: Family history of breast cancer.**

| Family history of breast cancer | Number of women |
|---|---|
| Positive Family history of breast cancer | 96(80%) |
| Negative Family history of breast cancer | 24(20%) |

The $Chi^2$ value7.20 The P-value is 0.007.

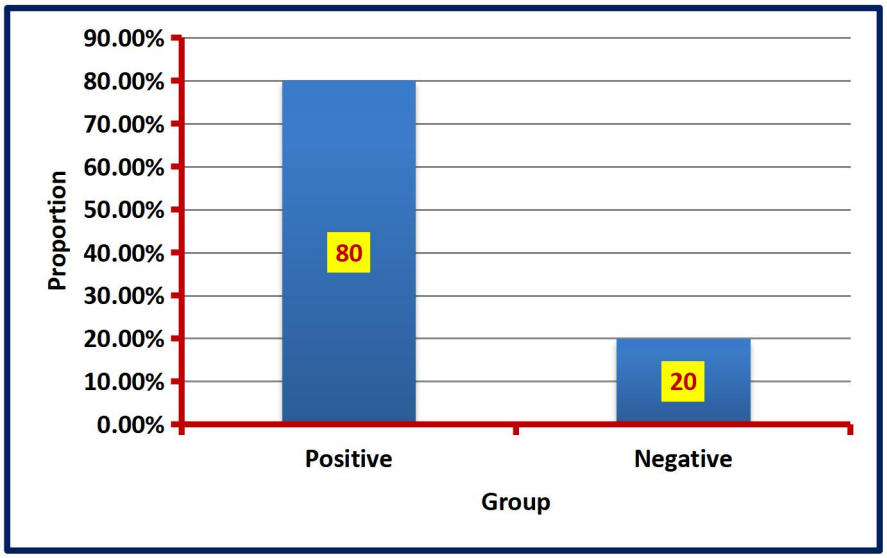


**Figure 7: The proportion of women with breast cancer according to the family history of breast cancer.**

**Table 8: Number of full-term pregnancies.**

| Number of full-term pregnancies | Number of women |
|---|---|
| 0 | 72 (60%) |
| 1-2 | 18 (15%) |
| 3-5 | 18 (15%) |
| 6 or more | 12 (10%) |

The $Chi^2$ value 13.20. The P-value is 0.004.

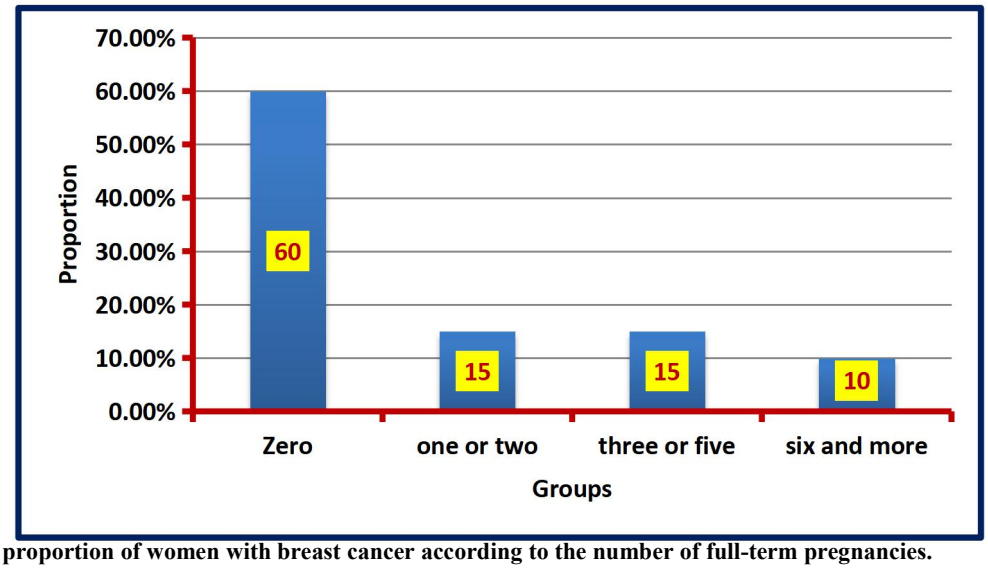


**Figure 8: The proportion of women with breast cancer according to the number of full-term pregnancies.**

**Table 9: Smoking habit.**

| Smoking status | Number of women |
|---|---|
| smoking | 108 (90%) |
| non-smoking | 12 (10%) |

The $Chi^2$ value 12.80 The P-value is < 0.001.

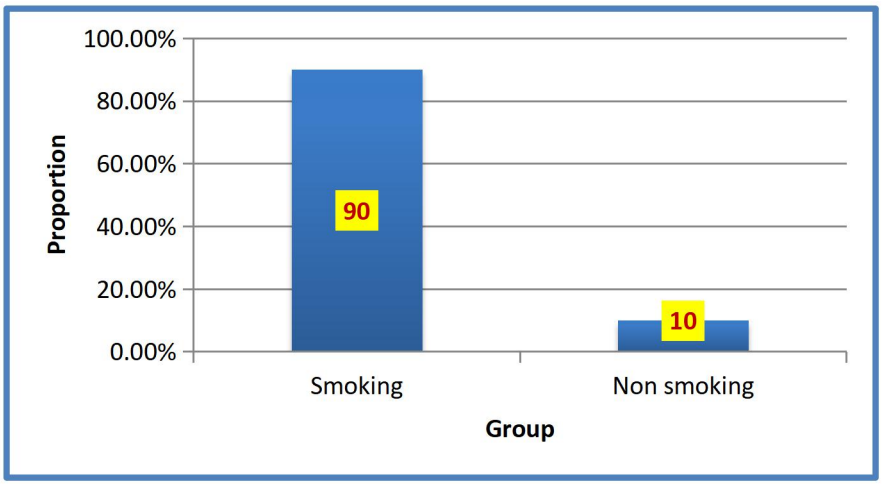


**Figure 9: The proportion of women with breast cancer according to the smoking habit.**

## CONCLUSION

In this study, the most significant risk factors appearing to be for breast cancer were studied. The research results showed that the most common patients group was above 45 years old. Risk factors such as Smoking, breastfeeding, marital status, family history, age at menarche, education state have a significant association with breast cancer, while there was a statistically non-significant relationship between breast cancer and hormonal use. Better identification of risk factors and risk reduction of breast cancer may allow the implementation of useful strategies for the prevention of the disease.

## RECOMMENDATIONS

Several constraints, including the limited sample size and patient selection, may influence the way we interpret our findings. Although the findings can not be widespread, the results indicate that the associations between some established breast cancer risk factors could be different between Iraqi women and others. Another significant risk factor for these populations can be found in comprehensive studies of breast cancer risk factors in developing countries.

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