Potential Risk Factors of Breast Cancer among Women
Attending Teaching Hospitals in Babylon Province

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Abstract

Background: Breast cancer is the most common cancer among women worldwide and the leading cause of cancer deaths among Iraqi women.

Objective: To determine the potential risk factors associated with breast cancer.

Methodology: This was a hospital based case control study which was conducted at Merjan and Al-Hilla teaching hospitals. A sample of three hundred women participants who were selected and divided into 100 patients with established breast cancer (cases) and 200 healthy women without breast cancer who were considered as healthy control group. Data were collected by interviewing both groups using a structured questionnaire which includes information about(tobacco smoking, economic status, age of menarche ,age of menopause , use of contraceptives level of education ,family history of breast cancer). medical records of patients and control group were reviewed to complete the data needed ,chi square statistical test and Odds Ratios were calculated.

Results: Results of this study showed that the following factors like low economic status, late age of menopause ,positive family history, use of contraceptives were significantly associated with breast cancer(Unadjusted Odds Ratios more than one ,p values <0.05).Exposure to cigarette tobacco smoking, levels of education, and age of menarche did not show significant association with breast cancer in this study.

Conclusion: Breast cancer was associated positively with the presence of positive family history, Low socioeconomic status, late menopause and using contraceptive pills regularly.

Keywords: Potential risk factors ,breast cancer , women, teaching hospitals, Iraq.

Introduction

Breast cancer is the most common cancer among women worldwide (1-7), and the leading cause of cancer death in women worldwide (2,6, 10) ‘and the second leading cause of females’ deaths after lung cancer 2. Globally, breast cancer is the commonest cancer among women, comprising 23% of the 1.1 million female cancers that are newly diagnosed each year 4. It was estimated that 1.7 million people were diagnosed with breast cancer, accounting for around twelve percent of all new cancers.

Statistics shows between 2008 to 2012 a brisk increase in the incidence of morbidity and mortality of breast cancer among women 8. Breast cancer was the most common cancer in 2012 with incidence of 43.4% and a mortality rate of 12.9%1 9. Incidence rates vary widely across geographic regions, with the highest rates in North America, Australia, and northern and western Europe and the lowest rates in large parts of Africa and Asia. Mortality rates do not differ as much due to better survival in developed countries, where incidence rates are also the highest 3. In Iraq, breast cancer is very common type of malignancy among the population in general; responsible for about one third of the registered female cancers and almost one quarter of females’ deaths from the disease (2,4). The peak age incidence rates are
noted among middle aged women who often present with advanced stages documenting high mortality incidence ratios\(^8\). Breast cancer is a multi-factorial disease where genetic susceptibility, environment, and other lifestyle risk factors interact. Better identification of modifiable risk factors and risk reduction of breast cancer may allow implementation of useful strategies for prevention. In Iraq, there is a continuous rise in the incidence rate which is associated with an obvious potential risk factors which may act together or in sequence to initiate or promote carcinogenesis\(^1\). This study was conducted to determine potential risk factors associated with breast cancer.

**Method**

This hospital based case control study was conducted at oncology units in Merjan teaching hospital and Al-Hilla teaching hospital. A sample of Three hundred participants was conveniently selected and divided into 100 patients with confirmed breast cancer(cases) and 200 women without breast cancer who were considered as a healthy control group. Data were collected by interviewing participants (both cases and control groups) using a structured pretested questionnaire which includes information about (tobacco smoking, economic status, age of menarche, age of menopause, use of contraceptives, level of education, family history of breast cancer), women with primary school level and below considered as women with low educational level. Women who use oral contraceptive pills for more than two years are considered (contraceptive users). Data collection from medical records were reviewed to confirm the diagnosis. Control group was selected from women who were examined in the mammogram unit, and from women attending primary health care centers or hospitals. The data were obtained from patients with breast cancer who were registered in breast tumor center/ Merjan teaching hospital and Al Hilla teaching hospitals from different age group and selected according to these criteria:

1. Women who have cancer according to confirmed diagnosis based on pathological diagnosis.
2. Patients who agreed to participate in the study and give verbal consents.

**Statistical Analysis**

Data analysis was done by using Spss version 21 to calculate Odds Ratios(OR) and chi square, p.value<0.05 was considered to be statistically significant.

**Ethical considerations**

1. Approval of ethical committee in Babylon university- College of Nursing was obtained.
2. Acceptance of ministry of health(ethical committee of Babylon Health directorate was taken), together with the acceptance of authorities of the teaching hospitals.
3. Verbal consents of all participants were obtained after explaining the objective of the study, the privacy and confidentiality issues.

**Results**

Table (1) shows that the percentage of tobacco smoking habit among cases and control group were (6% and 3.5% respectively the un matched Odds Ratio was (1.78) this means that there is a weak positive relationship between smoking and breast cancer the difference did not reach significant level p > 0.05.

<table>
<thead>
<tr>
<th>Groups</th>
<th>Case(n=100) Number (%)</th>
<th>Control(n=200) Number (%)</th>
<th>Chi-square</th>
<th>OR</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>cigarette smoking</td>
<td>6 (6 %)</td>
<td>7 (3.5%)</td>
<td>1.005</td>
<td>1.759</td>
<td>0.3161</td>
</tr>
<tr>
<td>Not cigarette smoking</td>
<td>94 (94%)</td>
<td>193 (96.5%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100 (100)</td>
<td>200 (100)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table (2) reveals that there is a highly significant difference between cases and control groups, regarding the income level cases with not enough income (poor) they constituted (47%) while the low economic level among healthy control is (23.5%) \( p < 0.001 \).

<table>
<thead>
<tr>
<th>Economic status</th>
<th>Case(n=100) Number (%)</th>
<th>Control(n=200) Number (%)</th>
<th>Chi-square</th>
<th>OR</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not enough</td>
<td>47 (47%)</td>
<td>47 (23.5%)</td>
<td>17.112</td>
<td>2.88</td>
<td>0.0000</td>
</tr>
<tr>
<td>Enough</td>
<td>53 (53%)</td>
<td>153 (76.5%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100 (100)</td>
<td>200 (100)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table (3) shows that the age of menarche has no significant association with breast cancer \( p > 0.05 \).

Table (3) Frequency distribution of cases and control group by age of menarche.

<table>
<thead>
<tr>
<th>Age of menarche</th>
<th>Case(n=100) Number (%)</th>
<th>Control(n=200) Number (%)</th>
<th>Chi-square</th>
<th>OR</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;12 year</td>
<td>45 (45%)</td>
<td>80 (40%)</td>
<td>0.686</td>
<td>1.22</td>
<td>0.4076</td>
</tr>
<tr>
<td>12 year Or More</td>
<td>55 (55%)</td>
<td>120 (60%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100 (100)</td>
<td>200 (100)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table (4) depicts that there is a significant association between late age of menopause and carcinoma of the breast \( p < 0.05 \), the Odds Ratio (2.48), this means that those with late menopause are three fold more liable to have breast cancer than those with menopausal period of less than (45) years of age.

Table (4) Frequency distribution of cases and control group by age of menopause.

<table>
<thead>
<tr>
<th>Age of menopause</th>
<th>Case(n=100) Number (%)</th>
<th>Control(n=200) Number (%)</th>
<th>Chi-square</th>
<th>Odd Ratio</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;45 year</td>
<td>45 (45%)</td>
<td>44 (22%)</td>
<td></td>
<td>2.48</td>
<td>0.05</td>
</tr>
<tr>
<td>45 year &amp; Less</td>
<td>7 (7%)</td>
<td>17 (8.5%)</td>
<td>3.483</td>
<td>2.48</td>
<td></td>
</tr>
<tr>
<td>*Below the age</td>
<td>48 (48%)</td>
<td>139 (69.5%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100 (100)</td>
<td>200 (100)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table (5) explains that the positive family history of carcinoma of breast is significantly associated with the development of this disease \( p < 0.05 \), OR = (2.25).
Table (5) Frequency distribution of cases and control group according to the family history of breast cancer.

<table>
<thead>
<tr>
<th>Family history</th>
<th>Case(n=100) Number (%)</th>
<th>Control(n=200) Number (%)</th>
<th>Chi-square</th>
<th>OR</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>20 (20%)</td>
<td>20 (10%)</td>
<td>5.769</td>
<td>2.25</td>
<td>0.0163</td>
</tr>
<tr>
<td>Negative</td>
<td>80 (80%)</td>
<td>180 (90%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100 (100)</td>
<td>200 (100)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table (6) reveals that level of education has no significant relationship with breast cancer in this study p >0.05, OR= (1.27).

Table (6) Frequency distribution of cases and control group by the level of education.

<table>
<thead>
<tr>
<th>Level of education</th>
<th>Case(n=100) Number (%)</th>
<th>Control(n=200) Number (%)</th>
<th>Chi-square</th>
<th>OR</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not educated</td>
<td>32 (32%)</td>
<td>54 (27%)</td>
<td>0.815</td>
<td>1.27</td>
<td>0.3666</td>
</tr>
<tr>
<td>Educated</td>
<td>68 (68%)</td>
<td>146 (73%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100 (100%)</td>
<td>200 (100%)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Discussion

The problem of breast cancer was studied through identifying some risk factors (both modifiable and non-modifiable ones) to pay attention to the prevention actions of this high priority public health problem in our country. The findings of this study show that tobacco smoking habit was not associated significantly with breast cancer, this finding is in agreement with a study conducted among Jordanian Women during the year 2017, but disagrees with the finding of a local study done in Baghdad province /Iraq during 2013. This disagreement may be due to the small sample size of this study or due to embarrassment of women during the interview to speak about smoking habit which is considered as social stigma among women in our society, this finding is also disagreed with the finding of other reporters such as the work done in 40 clinical centers in the United States which showed that active smoking was positively associated with an increase in the incidence breast cancer among postmenopausal women.

Regarding economic status, this study reveals that low family income status was more prevalent among cases as compared to control group, this finding is similar to the finding of other study conducted in Missan province /Iraq during the year 2012, and in a study done in Eastern India and disagrees with the finding of other study in Jordan.

The current study depicts that early menarche is not association with breast carcinoma, this finding goes in lines with the finding of other studies but disagreed with a study done in Eastern India and other study conducted in Dhaka city.

A high proportion of cases in this study were having their age at menopause more than or equal to 45 years, compared to controls, this result is statistically significant and agree with other study conducted in India that showed higher risk was found for women who
experienced menopause after 45 years of age (14,18), this can be explained by the long period of exposure of cases to estrogen hormone which is blamed as a potential risk factor (18-20).

There is a statistically significant association between positive family history and breast cancer; this finding is similar to the findings reported by other local and international studies (1, 17, 8, 21-26).

This indicates the importance role of genetic factors (inheritance) in the etiology of breast cancer among Iraqi women.

The finding of this study explains that the level of education of patient has no significant relation with breast cancer, this finding agrees with the finding of other local case control study conducted in Al-khadumia district /Baghdad province (16) And disagrees with the study done in Baghdad during the year 2013 (1) and other studies conducted outside Iraq (11, 14, 27, 28).

**Conclusion**

The current data support that various factors like economic status, late age of menopause, family history, use of contraceptives, are significantly associated with breast cancer among women in Babylon province. Exposure to cigarette tobacco smoke, women levels of education, and age of menarche, do not show a significant association with breast cancer in this study.

**Financial Disclosure:** There is no financial disclosure.

**Conflict of Interest:** None to declare.

**Ethical Clearance:** All experimental protocols were approved under the Babylon University-Hammurabi College of Medicine and all experiments were carried out in accordance with approved guidelines.

**References**


