



BREAST CANCER; FREQUENCY OF RISK FACTORS

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INTRODUCTION

Breast cancer is the single largest cause of death among women^{1,2}. According to World Health Organization (WHO) estimate, about 1.2 million people are diagnosed with breast cancer every year worldwide³. The chances of breast cancer increase with age. A woman who lives to age 90 has one in eight chance of developing breast cancer⁴.

Breast cancer occurs in male and female patients although male cancer is rare⁵. In 2008, about 182,460 new cases of female breast cancer was reported in US out of which about 40,480 died⁴. The probability of American woman of developing breast cancer in her life is 7 in 11. The studies from subcontinent show that the incidence of breast cancer is increasing, with an estimated 80,000 new cases diagnosed annually. The incidence of breast cancer increased by approximately 50% between 1965 and 1985⁵.

Breast cancer is the second most common type of cancer after lung cancer in Pakistan and ranked first in

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ABSTRACT... Objective: To assess the risk factors for breast cancer in patients attending oncology OPD of civil hospital Karachi, Pakistan. **Introduction:** Breast cancer is the single largest cause of death among women^{1,2}. The probability of American woman developing breast cancer in their life is 7 in 11. Studies from subcontinent show that the incidence of breast cancer is increasing, with an estimated 80,000 new cases diagnosed annually. Breast cancer is the second most common type of cancer after lung cancer in Pakistan and ranked first in women. Only 10% women are diagnosed, out of them, 75% women do not get treatment and die within 5 years⁶. Data from Pakistan about the risk factors or association is not only scanty but also does not comment on the use of fatty diet in breast cancer patients. **Method:** A cross-sectional descriptive study conducted at Oncology OPD of civil hospital Karachi (CHK) from October 2009 -April 2011. One Hundred and Fifty consecutive patients having histopathological diagnosis of breast cancer were assessed for different risk factors that included marital status, parity, age, menopausal status, family history of breast cancer, prolong use of oral contraceptives, breast feeding, , early menarche, trauma to the breast and fatty diet. **Result:** Mean age of patients was 48 years. Three fourth (73%) of these female were above the age of 40 years. Consumption of fatty diet was found in 62.67% while positive family history of breast cancer was present in 34% of the cases. Early menarche and being nulliparous were not as strong risk factors as in previous studies. **Conclusions:** Our study has highlighted the need of further exploration in this area that would not only help this population but also enhance our understanding of different risk factors. This will have important implications for the overall management of breast cancer.

Key words: Breast cancer patients, breast feeding

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women. There is a significant increase in the number of cases and at least 90,000 women suffering from breast cancer every year in Pakistan. In a study from Punjab, only 10% women were diagnosed, out of them 75% women do not get treatment and die within 5 years⁶. The incidence of breast cancer is also high in Sindh; according to a study conducted in Karachi, breast cancer accounts for 35% of all cancer in female⁷.

The exact pathogenesis and the cause of development of breast cancer are still unclear. A number of factors have been related to breast cancer in different epidemiological studies. These factors include early age menarche, late age menopause and late age of first full-term pregnancy. There are studies suggesting that the earlier full-term pregnancy will decrease the susceptibility of breast tissue to develop neoplastic changes. Furthermore, after the age of 40 years the risk of breast cancer increased in Nulliparous while it is decreased in those having multiple full-term pregnancies⁸. A study from India found, age at puberty and pregnancy-related factors, such as parity, age at

giving birth to the first baby, and number of children, are possible risk factors for breast cancer⁸. While another study from Nepal found high incidence of breast cancer among middle-aged, married multiparous females who had early menarche or family history of breast cancer⁹.

The role of fatty diet has been the subject of numerous epidemiological studies¹⁵, specially the relationship with dietary fat. However, case-control and cohort studies that have examined the relationship between dietary fat and breast cancer risk in humans have given inconclusive results¹². A meta-analysis published in 2003 found a significant positive relationship in both control and cohort studies between saturated fat and breast cancer¹³. Support for an influence of dietary fat on breast cancer rates comes from its effect on mammary carcinogenesis in animals, and humans. Studies from North America have shown a strong correlation (0.7 or more) between dietary fat intake, estimated from national food balance data, and incidence and mortality of breast cancer worldwide^{14,15}. The differences in dietary practices among different countries could therefore contribute to the differences in breast cancer risk.

Data from Pakistan about the possible risk factors is limited. Although association between breast cancer and different risk factors e.g. nulliparity, infertility, old age, early menarche, late menopause and positive family history¹⁰ have been identified yet to our knowledge no study have commented on the role of dietary fat as the possible etiological factors of breast cancer in our population.

The purpose of this study was to identify risk factors including those that have not been studied in our population in earlier studies in a public sector hospital.

MATERIALS AND METHODS

The study was conducted in the outpatient department of oncology department, Civil Hospital Karachi (CHK) from October 2009 to April 2011. Civil Hospital Karachi is a 1900- bed tertiary care teaching hospital. It caters not only to all areas of the province of Sindh but also for the neighboring province of Balochistan. Most of the people attending CHK belong to low socioeconomic class.

One Hundred and Fifty consecutive patients having histopathological diagnosis of breast cancer were assessed. These patients were referred by the histopathologist for inclusion in the study. The patients

under the age of 18, having pregnancy or suffering from any other cancer were excluded. We collected the data on a questionnaire that recorded socio-demographic variables and probable risk factors of breast cancer.

These possible risk factors included; age, marital status, parity, breast feeding history, use of oral contraceptives (Taken regularly for 6 months or more), history of trauma to the breast, age of menarche and use and nature of dietary fat (like eggs, beef, butter, meat, deep fried like samosas, parathas and pakoras, chips, nimcos and ghee).

Ethical committee of Dow University of Health Sciences gave approval of this study. Consent was taken from each patient before conducting research interview.

RESULTS

Mean age of participants in study was 47.5 ± 11.5 . Majority of the participants were married and three fourth (73.3%) of sample were having age above 40. Average income of the patients was about 8400 per month.

The rest of the results are recorded in the following Table.

Risk factors for breast cancer	Frequency
Age Above 40	110 (73.33%)
Use of Fatty Diet	94 (62.67%)
Positive Family History of Breast Cancer	51 (34.00%)
Breastfeeding	50 (33.33%)
Early Menarche	39 (26.00%)
Use of Contraceptives	38 (25.33)
History of breast trauma	23 (15.33%)
Nulliparous	15 (10.00%)

DISCUSSION

To our knowledge, this is the first study that has examined the association between breast cancer and the risk factors including the use of dietary fat in Pakistani population.

We found a very high frequency of use of diet rich in saturated fats. A study from Japan highlighted the incidence of breast cancer, mortality and effects of changing dietary practices of migrants from Japan to United States. Hirayama¹⁶ reported in his cohort that frequency and amount of dietary consumption of meat, eggs, butter and cheese by Japanese women was associated with increased risk of dying of breast cancer¹⁷. A similar study was conducted on Singapore

Chinese women in 2003 found the positive association of breast cancer with high intake of animal proteins and red meat¹⁸. The explanation for this correlation of the fatty diet with development of breast cancer is that high fatty diet (saturated fats) broadly operating as co-carcinogens. This effect of fatty diet to promote carcinogenesis may be mediated through endocrine, immunological and other biochemical mechanisms¹⁹. The dietary fat obesity may enhance responsiveness of target tissue to develop cancer^{20,21}. The nutrition guidelines follow the World Cancer Research Fund recommendations that advocate having a diet containing vegetables and fruits in large amounts, reducing the intake of saturated fats, and increasing physical activity. Therefore, a lower fat intake may reduce the incidence of breast cancer²².

Although our results are consistent and suggest a strong positive association between breast cancer risk and saturated fat intake yet the sources of saturated fats in our study are different. The patients have consumed a diet rich in hydrogenated oils in the form of deep fried food rather than processed meat, cheese, butter, cream etc. The use of this highly saturated fatty deep fried food is understandable in this lower socioeconomic status due to non-affordability. However the high frequency of association warrants a deeper look into the differences between deep fried and processed food among same population of affluent strata of the society. This could provide a unique opportunity to consider the etiological role of changing environmental factors and might enhance of understanding of the pathogenesis of breast cancer.

Only one third of our patients had a history of breast-feeding to their babies. Studies have consistently suggested that breast feeding is found to be very protective against the development of breast cancer^{23,24}. Breast-feeding may reduce the risk of breast cancer by causing hormonal changes, such as decrease in estrogen level. It suppresses ovulation, remove possible carcinogens that are stored in adipose tissue of breast and causes physical changes in the cells that line the mammary ducts²⁵. An earlier study from Pakistan has also regarded breast-feeding as protective against cancer of breast²⁶. The biology underlying a protective effect of breast-feeding remains unknown, although several mechanisms have been postulated (hormonal changes, such as reduced estrogen; removal of estrogens through breast fluid; excretion of carcinogens from breast tissue through breast-feeding; physical changes in the mammary epithelial cells, reflecting maximal differentiation)²⁷.

Thus the practical implication of reduced breast cancer risk among women who have history of breast-feeding is of high importance as it adds another angle to the campaign of breast feeding that it is not only beneficial for the baby but also protects the mother from breast cancer.

Breast cancer poses a serious public health problem, and it is hoped that identification of genetic and environmental factors that contribute to the development of breast cancer will enhance prevention efforts³¹. Two breast cancer susceptibility genes have been identified (BRCA1 and BRCA2) and germ line mutations of these genes are thought to account for 5-10% of all breast cancer cases³². Among the Pakistani breast cancer patients, family history has been associated with total 4-47.3%³³. One third of our patients had a positive family history. Therefore, family history in particular is a critical and generally accepted predictor of breast cancer which should be an important consideration in the management of young women³⁴. A routine question about the family history of breast cancer in at risk patients by health professional might assists them to make a timely assessment and decision.

As in other studies, we also observed a relationship between increasing age and risk of breast cancer (73.3%). Increasing age of women and high estrogen level has been shown in various studies to increase the risk of breast cancer³⁰.

Trauma to the breast in the past five years was found in 15% of patients of our participants and the results are consistent with a UK³⁵. Models of epithelial cell generation have also indicated that the causal link between physical trauma and cancer is plausible³⁶.

The prospective data indicated an association between past use of oral contraceptives for at least 6 months to one year regularly and breast cancer. In a United States study, premenopausal women who were using oral contraceptives have an overall increased risk of breast cancer compared with women who had never used them²⁸. The risk of cancer increases with the duration of contraceptive use²⁹. Unstopped estrogen, either exogenously administered or endogenously produced stimulates breast epithelial proliferation similar to uterine endometrial proliferation, thereby increasing the risk of malignancy³⁰. This observation is further enhanced by the findings that early menarche is an important risk factor for breast cancer. A European study has suggested that women whose menarche

occurs early, not only have a longer duration of exposure to estrogens during years which are probably important in the initiation of breast cancer, but also, their exposures are at a higher level during those years³⁷. This hypothesis by the studies from USA and from Pakistan as well^{38,39}. Our study did not replicate these findings as only 26% of our patients had early menarche as compared to previous figures as high as 75%. Nulliparity is associated with increased risk compared to women who have children, in a meta-analysis of eight studies from Nordic countries⁴⁰. However in our study, only 10% of the women were nulliparous and it could therefore either be considered as a weak risk factor or even a protective factor. What factors contribute to this finding remained unanswered. A different genetic make-up, internal or external environmental factors need to be studied.

Breast cancer is a concern for all women. Better diagnostic procedures, enhanced patients' awareness and better understanding of risk factors is likely to lead to early diagnosis, improved survival and ultimately towards the goal of prevention of breast cancer.

LIMITATION OF STUDY

There was no control and all the samples were taken from one tertiary care hospital of Karachi.

CONCLUSIONS

Our study has highlighted the need of further exploration in this area that would not only help this population but also enhance our understanding of different risk factors. This will have important implications for the overall management of breast cancer.

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