

# CLINICO-EPIDEMIOLOGICAL PROFILE OF FEMALE BREAST CANCERS AND ITS IMPORTANT CORRELATES: A HOSPITAL BASED STUDY

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## ABSTRACT

**Background:** Breast cancer is second most frequent cancers in females in India. Public health prevention measures requires an understanding of burden of disease and its epidemiology including risk factors.

**Aims:** To study the clinico-epidemiological profile of breast cancer by conducting a detailed enquiry into its qualitative and quantitative magnitude.

**Study design and Setting:** Hospital-based, cross-sectional study conducted at Shri Siddhivinayak Ganapati Cancer Hospital, Miraj, Maharashtra.

**Material and Methods:** Pre-structured and pilot tested questionnaire was administered to all one hundred and twenty three (123) confirmed cases of female breast cancer cases diagnosed in the hospital from March 2005 to February 2006) to understand their clinico-epidemiological profile.

**Statistical analysis used:** Standard deviation, mean, mode and median were applied to select observations.

**Results:** Majority of the female breast cancer cases were above 40 years of age. Mean age of the patients was found to be 51 years with Standard deviation (SD) of 14 years. 97% cases were married. Mean age of menarche was 12.35 years (SD 1.25). Mean age at 1st full term pregnancy was 23.1 years (SD 2.56). 2% cases were nullipara. 45% women were in menopause. Only 8% subjects had history of taking oral contraceptive pills. Familial breast cancer was uncommon. Lump in breast was the dominant symptom. Most common histology was infiltrating ductal carcinoma. Majority of the subjects presented in advanced stages of disease.

**Conclusion:** Majority of the female breast cancer cases were infiltrating ductal carcinoma and were presented in advanced stages of disease. One fourth of all cases were below forty years of age.

**Key words:** Female breast cancers, younger age group, epidemiology, risk factors, Western Maharashtra.

## INTRODUCTION

Breast cancer is a highly heterogenous disease globally. Based on Cancer statistics, breast cancer is second most frequent cancers in females in India.<sup>1</sup> Public health prevention measures requires an understanding of burden of disease and its risk factors. The non-formal enquiries (especially from the local oncologists) regarding the magnitude of cancers in the area of Sangli-Miraj-Kupwad municipal corporation area in Maharashtra (India) revealed that the female breast cancers are seen at an increasingly

earlier age in certain cases. This observation is of a recent origin perceptibly noted by these oncologists since last few years. When this observation was explored further, it was found to be worth verifying. Therefore, this study on female breast cancers was pursued. The purpose of this study was to describe the clinical, pathologic and epidemiological characteristics including the risk factors of female breast cancer patients in a leading cancer hospital of Western Maharashtra (India) as the review of the available literature indicated no such study in this part of Maharashtra.

## MATERIAL AND METHODS

The present Hospital-based and Cross-sectional study was carried out in the department of Oncology at a tertiary cancer care hospital of Miraj, Maharashtra (India). This hospital is a tertiary cancer care center situated in Sangli-Miraj-Kupwad municipal corporation area having patient drawn within and beyond Maharashtra state. Approval of hospital ethical committee was taken before conducting the study. The study was carried out between March 2005 to February 2006. Out of one thousand eight hundred and ninety one (1891) malignant cases registered in the hospital during the study period, one hundred and twenty three (123) female patients were detected to have breast cancer. Thus the final sample for the present study comprised of 123 patients suffering from female breast cancer reported in the hospital during the study period. Pre-structured and pilot tested questionnaire was administered to these 123 confirmed cases of female breast to understand their clinico-epidemiological profile.

**Inclusion criteria:** Subjects having female breast cancer diagnosed till last day of the study in the hospital.

Patients diagnosed to have non-malignant conditions; patients diagnosed to have malignancy other than female breast cancer and patients opting not to participate in the study were excluded from this interview based questionnaire study. However, no patient refused to participate. Thus there was 100% response. The information collected comprised of socio-demographic factors, family history, reproductive factors (like age at first delivery, parity, age at menarche, age at menopause, oral contraceptive use.) and clinico-pathological characteristics including staging and treatment modality. Data obtained were analyzed in microsoft excel and results presented in percentages and proportions. Standard deviation, mean, mode and median were applied to select observations.

Time utilization calendar was designed for effective time management by pilot-testing on small sample of subjects as well as case records for time consumption. All data entered were checked, cross-checked and randomly double checked for correctness. Data entry was done by the investigators themselves. A strict 2-stage Quality Check mechanism was instituted -

- In-built checks and balances were introduced in the data entry tool at the time of development.
- 10 % random check of entered data against actual forms.

Software used was Microsoft excel. The analysis of the data was conducted by the investigators.

**Ethical aspects:** In order to maintain the confidentiality of patients following steps were ensured-

- Written informed consent of all patients was obtained.
- Participating patients were informed that all their information would be kept secret. Only their initials were used in the questionnaires.

## RESULTS

**Table 1: Distribution of Study Subjects according to Demographic characteristics and family history (n=123)**

Age group in years	Number of subjects (%)
20-30	9 (7.31)
30-40	23 (18.09)
40-50	32 (26.01)
50-60	28 (22.76)
60-70	24 (19.51)
Above 70	7 (5.69)
Mean	51
SD <sup>^</sup>	14
Mode	40
Median	50
<b>Religion</b>	
Hindu	106 (86.17)
Muslim	12 (9.75)
Christian	3 (2.43)
Others	2 (1.62)
<b>Marital status</b>	
Married	119 (96.74)
Unmarried	4 (3.25)
<b>Occupation</b>	
Housewife	113 (91.87)
Service	9 (7.31)
Self employed	1 (0.81)
<b>Family History</b>	
Yes	6 (4.88)
No	117 (95.12)

<sup>^</sup> SD- Standard Deviation

Out of the total 123 cases majority were above 40 years age. Nearly 26% cases occurred in the younger age group (below 40 years). About 50% cases occurred between the age group 40-60 years of age. The minimum age of the patient was 27 years while maximum age of the patient was 100 years. The frequency of cancer cases reduced at the extremes of ages. The mean age was 51 years with standard deviation (SD) of 14.

About 86% female breast cancer cases were Hindu by religion, 97% were married while 92% were housewife. Only 3% were unmarried and 8% worked outside. Family history was present only in six cases. All the 6 study subjects were less than 45 years and mothers of all 6 subjects were affected. Among the 123 cases, 4 were unmarried while 2 were nullipara. 75% of cases had their 1<sup>st</sup> delivery after the age of 21 years. Additionally, 25% of cases had between 18-21 years of age. The mean age at 1<sup>st</sup> delivery was 23.1 years with standard deviation of 2.56 years. 52% of the cases had only 1 child, 40% cases had two children. Only four cases had three children.

70% cases (86) had their menarche started below age of 13 years, while rest 30% (37) started beyond 13 years. The mean age of starting menarche was 12.35 years with SD of 1.25 years. Only 56 cases out of 123 were in menopause. The mean age of menopause was 53 years with SD of 1.87 years. The age at menarche subtracted from age at menopause gives us the years the breast cancer cases had experienced menstrual cycles. The mean age of these years were calculated to be 41 years with SD of 2.2 years. Only 8 cases (out of the total 123) had used oral contraceptive pills (OCP). The average duration of use was 3.5 years. All of them started using OCP after the age of 30 years.

All the 123 cases (100%) presented with lump in the breast. Breast pain along with lump was present in 23 cases. Histopathological examination was used in all cases (100%) as a diagnostic tool. The most common histopathology was infiltrating ductal carcinoma followed by medullary carcinoma and Infiltrating lobular carcinoma. 50 cases (41%) were in stage II followed by 43 cases (35%) in stage III, 23 cases in stage I while 7 cases in stage IV. Radical mastectomy was the most common surgical intervention used.

## DISCUSSION

Age is an important factor both for occurrence, management and prognosis of a breast cancer case.

**Table 2: Distribution of Study Subjects according to Reproductive factors and Clinico-pathological characteristics**

Characteristics	Subjects(%)
<b>Age at 1<sup>st</sup> Delivery (yrs)(n=117)</b>	
15-18	0(0.00)
18-21	29 (24.78)
21+	88 (75.27)
Mean (SD)	23.1 (2.56)
Median	23
<b>Parity (n=123)</b>	
0	6 (4.9) <sup>@</sup>
1	64 (52)
2	49 (39.8)
3	4 (3.3)
4	0
<b>Age of Menarche (yrs) (n=123)</b>	
Less than 13	86 (69.91)
More than 13	37 (30.08)
Mean (SD)	12.35 (1.25)
Mode	12
Median	12
<b>Age at Menopause (yrs) (n=56)</b>	
>50	56 (100) <sup>#</sup>
Mean (SD)	53 (1.87)
Mode	53
Median	53
<b>OC Pill use(n=119)<sup>@</sup></b>	
Used	8 (6.72)
Not used	111 (93.28)
<b>Clinical presentation (n=123)</b>	
Lump in breast	123 (100)
Lump in breast + breast pain	23 (18.70)
<b>Diagnostic tool used (n=123)</b>	
Microscopic examination	123 (100)
<b>Histopathology (n=123)</b>	
Infiltrating ductal carcinoma	107 (87)
Infiltrating lobular carcinoma	6 (4.88)
Medullary carcinoma	19 (8.13)
<b>Stage (n=123)</b>	
I	23 (18.70)
II	50 (40.65)
III	43 (34.95)
IV	7 (5.69)
<b>Treatment (n=123)</b>	
Surgery+Radiotherapy+Chemotherapy	100 (81.30)
Surgery+Radiotherapy	23 (18.70)

<sup>@</sup>4 subjects were unmarried, 2 were nullipara, <sup>#</sup> Even though 59 women were above 50 years, 3 were not in menopause. Hence n=56.

Mean age of the patients seen in the five hospital based cancer registries for the period of 2004-06 was found to range from 46.4 years in Dibrugarh to 50.6 years in Chennai<sup>2</sup>. In the present study the mean age of the breast cancer case at presentation was found to be 51 years with SD of 14 years. Our findings are in agreement with the HBCR across the country.<sup>2</sup>

Similarly, the mean age of breast cancer patients has been reported to be 50 to 53 years in various population based cancer registries located in different parts of the country.<sup>3</sup> The mean age of occurrence of breast cancer amongst US white females has been reported to be 61.0 years.<sup>4</sup> The mean age of occurrence of the breast cancer in India divulges that the disease occurs a decade earlier, as compared to western counterparts. The reason needs to be evaluated further.

Various epidemiological studies conducted in India have shown variation in the incidence of breast carcinoma among different religious groups such as Hindus, Muslims, Christians and Parsis. A study conducted among Parsi community in Bombay (Mumbai) indicated highest incidence rates among Christians and Parsis and lowest rates among Jains.<sup>5</sup> The reason mentioned by Paymaster et al for high incidence of breast cancer in Parsi community are their more westernized life-style, conserved genetic pool, high frequency of consanguineous marriages and higher age at the time of marriage and child birth.<sup>5</sup> In another study conducted at Trivandrum, Kerala, the incidence rates have been reported to be highest among Christians followed by Hindus and Muslims.<sup>3</sup> In our study, on comparison of relative frequencies of cancer cases by various religious groups with that of population distribution of Miraj (study area) by these religious groups revealed that Christians had a slightly higher percentage of cancer cases. Although Christians accounted for only 0.95% in the general population but relative frequency of cancer cases in the present study were 2.43 %. The other two religions had more or less similar proportions. A case-control study to identify risk factors for breast cancer carried out in Mumbai, India indicated that single women compared to married women had 4-5 fold higher risk for development of breast cancer in the age group of 40-54 years and 55 and above.<sup>5</sup> In our study only four cancer cases (3.25%) were found to be unmarried.

Family history is another important risk-factor for breast carcinoma. It has been noted that

women who have first degree relative with breast cancer have a risk two to three times that of general population, the risk further increased if the relative was affected at an early age and/or had bilateral disease.<sup>6</sup> In the present study, only 4.88% cases revealed a positive family history of breast cancer. Mothers of the study subjects were affected in all of them.

Various epidemiological studies carried out in India and western populations have identified various reproductive factors generally associated with breast cancer. The studies have consistently identified a number of risk factors, each of which is associated with increased exposure to endogenous estrogens. Early age at menarche, nulliparity, late age at 1<sup>st</sup> delivery, late age at menopause increase the risk of breast cancers.<sup>7, 8, 9, 10</sup> Age at menarche and the establishment of regular ovulatory cycles are strongly linked to breast cancers risk. Early age at menarche especially below 13 years is associated with an increased risk of breast cancer; there appears to be a 20% decrease in breast cancer risk for each year that menarche is delayed.<sup>11</sup> In the present study 70% cases had their menarche started below 13 years. The mean age at menarche was 12.35 years with SD of 1.25 years. In another study it has been shown that nulliparous women had 2.2-fold higher risk than parous women.<sup>10</sup> In our study only 6 (4.9%) cases were nullipara. Epidemiological studies have consistently demonstrated that late age at menopause is associated with greater breast cancer risk.<sup>12</sup> In the present study 56 cases were in menopause. The mean age at menopause was 53 years with SD of 1.87 years. The age at menarche subtracted from age at menopause gives us the years the breast cancer cases had experienced menstrual cycles. The mean age of these years were calculated to be 41 years with SD of 2.2 years in these 56 cases. In a study it was found that the early age at 1<sup>st</sup> full term pregnancy had a protective effect against breast cancer.<sup>13</sup> In our study 25% (out of 117) cases had their 1<sup>st</sup> full term pregnancy below 21 years, while 75% were above 21 years at the time of it. A case control study reported that long term use before age of 25 years of combination type oral contraceptive pills carry a substantial risk of breast cancer. In the present study only 8 cases had the history of oral contraceptive pills starting after age of 30 years averagely for 3.5 years.

Breast cancer usually presents with a single hard lump as was evident in few studies.<sup>3, 14</sup> In our

study we found that all the cases (100%) presented with lump in breast. Additionally, 23 cases (18.70%) had breast pain also. All the cases had unilateral breast lump. It emphasizes that breast cancer is amenable to secondary level of prevention. All the 123 cases had lump in their breast and so very much sensitive to methods of early detection such as, BSE (Breast Self Examination), clinical examination. It reinforces the need for health education regarding the early warning sign of cancer and also about the importance of screening of breast cancer. Histopathological examination was used in all cases (100%) as a diagnostic tool. It is well documented that histological type is one of the major prognostic factor for breast cancer.<sup>14</sup> The most common histopathological pattern in our study was infiltrating ductal carcinoma. Laishram et al also reported similar findings in Manipur, India.<sup>14</sup> Stages in which disease presented were mostly in stage II and III which accounted for 75% cases. It means that breast cancer is presenting at relatively late stage making prognosis poorer. The reasons could be multiple. Lack of awareness, fear of disease, trying to ignore or hide the disease is among them. Studies in India and Pakistan reveal that breast cancer presents at higher stage.<sup>15</sup>

## CONCLUSION

Majority of the female breast cancer cases were infiltrating ductal carcinoma and were presented in advanced stages of disease. Breast cancer occurs in most easily accessible parts of body. The current study again highlights the possibility of easy and early detection of cancers in the population thus decreasing the cancer burden in the community. Current knowledge on breast cancer offers little prospect of primary prevention. What we need are efforts to be made to detect breast cancer at the very early stage through periodic screening of high-risk groups either by physical self-examination or by self-breast examination as number of affected individuals is rising and the age of onset is shifting towards younger age groups. Majority of the women with breast cancers in Western Maharashtra (India) are diagnosed in advanced disease stages and the most common histology is infiltrating ductal carcinoma. It reflects the poor awareness regarding the early warning signals of cancer. This study reinforces the need to support health education regarding the warning signals of breast cancer and its early screening so that more patients can be

diagnosed at an early stage and effective treatment can be given to these women and their lives can be saved. Nearly 26% cases were below forty years in our study. More, larger in-depth studies are needed to investigate the etiology of breast cancer in such younger patients.

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