

## A Study Of Risk Factors Of Carcinoma Breast Presenting At Rims, Ranchi, Jharkhand

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**Abstract:-** Breast cancer is the most common cause of death in middle aged women in western countries. In 2010, approximately one and three quarter million patients were diagnosed world wide. Breast cancer is the most common site specific cancer in women and is the leading cause of death from cancer for women aged 20 to 59 years. It accounts for the 26% of all newly diagnosed cancers in females and is responsible for the 15% of the cancer related deaths in women. An observational study was conducted in the Department of Surgery, Rajendra Institute of Medical Sciences, Ranchi to assess the different risk factors of carcinoma breast. 74 patients were included in this study. Maximum breast cancer cases were in the age group 40-59 years. The risk factors such as occupation, diet, late attainment of menopause, history of Haria (a local made beverage made by fermentation of rice) intake, were associated with increased risk of breast cancer.

**Key Words:-** Breast Cancer, Risk factor, female.

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### I Introduction

Breast cancer is the most common cause of death in middle aged women in western countries. In 2010, approximately one and three quarter million patients were diagnosed world wide.<sup>1</sup>

Breast cancer is the most common site specific cancer in women and is the leading cause of death from cancer for women aged 20 to 59 years. It accounts for the 26% of all newly diagnosed cancers in females and is responsible for the 15% of the cancer related deaths in women.<sup>2</sup>

Globally every 3 minutes a woman is diagnosed with breast cancer, amounting to one million cases annually. According to World Cancer Report the incidence could go up to 1.5 million by 2020.<sup>3</sup> Breast cancer causes 5,19,000 deaths in a year worldwide, about 9,00,000 women are diagnosed each year. Incidence of breast cancer is 20.01/1,00,000 in females and 0.26/1,00,000 in males. While mortality associated with breast cancer is 4.32/1,00,000 in females and 1.20/1,00,000 in males. Mortality rates from breast cancer have increased during the past 60 years in every country.<sup>4</sup>

The incidence of breast cancer in India is rising and is rapidly becoming the number one cancer in female pushing the cervical cancer to the second spot. It is reported that one in 22 women in India is likely to suffer from breast cancer during their lifetime. The rise is being documented mainly in the metros but it can be safely said that many cases in rural India go unnoticed.<sup>5</sup>

Breast cancer is a disease of the old age with peak incidence in the 5<sup>th</sup> and 6<sup>th</sup> decades, but in India the disease is seen a decade earlier, probably because of shorter longevity of life in Indian women (about 65.3 years as per Indian data in 2005) as compared to the counterparts in USA.<sup>6</sup>

It is most often observed that due to lack of knowledge and ignorance, patients of carcinoma breast clinically present in a late stage of the disease.

Based on the results of systematic review and meta-analysis study of 13 cohort studies, significant relationship between the use of OCPs and the risk of breast cancer incidence was not observed. However, in another systematic review and meta-analysis study on the risk factors of breast cancer, it was derived that hormone therapy and use of OCPs increase the risk of breast cancer incidence, whereas breast feeding decreases the breast cancer incidence.<sup>7</sup>

Identification of factors associated with an increased incidence of breast cancer development is important in general health screening for women. Risk factors for developing breast cancer includes being female, obesity, lack of physical exercise, drinking alcohol, hormonal replacement therapy during menopause,

ionising radiations, early age at first menstruation, having children late or not at all, older age, positive family history.<sup>8</sup>

## II Aims And Objective

1. To study various risk factors associated with development of carcinoma breast.
2. To study modifiable risk factors of carcinoma breast.

## III Material And Methods

**Study design:** This was an observational study conducted in tertiary care hospital, Jharkhand, India.

**Source of data:** The study was conducted at the Department of Surgery of Rajendra institute of medical sciences, after receiving approval from Institutional Ethics Committee.

**Place:** Department of General Surgery, Rajendra Institute of Medical Sciences, Ranchi, Jharkhand, India.

**Duration:** November 2015 to October 2017.

**Study sampling:** The study sample included those women who admitted in the Department of Surgery, RIMS, Ranchi and diagnosed as case of carcinoma breast. After taking written consent from patients, a sample of 74 persons (n=74) were recruited for the study. A detailed clinical history was taken with pre defined proforma.

**Inclusion criteria:**

1. Patients admitted in Department of Surgery who were diagnosed case of Carcinoma Breast
2. Female patient

**Exclusion criteria:**

1. Male breast carcinoma
2. Benign breast diseases
3. Carcinoma breast with pregnancy

## IV Results

**Table 1- Age distribution of patients**

| Age group (years) | No. of patients | Percentage |
|-------------------|-----------------|------------|
| <20               | 0               | 0%         |
| 20-29             | 2               | 3%         |
| 30-39             | 16              | 22%        |
| 40-49             | 35              | 47%        |
| 50-59             | 13              | 18%        |
| >60               | 8               | 11%        |
| Total             | 74              |            |

Above table shows age distribution of patients of carcinoma breast. Age group 40-49 years has 47% patient; 30-39 has 22%; 50-59 has 18%; >60 has 11%; 20-29 has 3%; and <20 has 0%. Minimum age of patient was 27 years and maximum age was 70 years. Average age of patients was 45.66 years.

**Table 2 - Ethnicity of patients**

| Ethnicity  | No. of patients | Percentage |
|------------|-----------------|------------|
| Tribal     | 39              | 53%        |
| Non-tribal | 35              | 47%        |
| Total      | 74              |            |

Above table shows percentage of tribal and non-tribal patients of carcinoma breast. Percentage of tribal patient is 53%; and of non-tribal patient is 47%

**Table 3- Marital status**

| Marital status | No. of patients | Percentage |
|----------------|-----------------|------------|
| Married        | 63              | 85%        |
| Widow          | 9               | 12%        |
| Unmarried      | 2               | 3%         |
| Total          | 74              |            |

Above table shows the percentage of married patient is 85%; of widow patient is 12%; and of unmarried patient is 3%.

**Table 4- Parity**

| Parity | Frequency | Percentage |
|--------|-----------|------------|
| 0      | 4         | 5%         |
| 1      | 7         | 9%         |
| 2      | 23        | 31%        |
| 3      | 19        | 26%        |
| 4      | 8         | 11%        |
| 5      | 5         | 7%         |
| 6      | 5         | 7%         |
| ≥7     | 3         | 4%         |

Above table shows percentage of patients of carcinoma breast with respect to parity. Percentage of patients having 2 issues 31%; having 3 issues is 26%; having 4 issues is 11%; having 1 issue is 9%; having 5 issues is 7%; having 6 issues is 7%; having no issue is 5%; and having ≥7 is 4%.

**Table 5- Age of menopause**

| Age of menopause | Frequency | Percentage |
|------------------|-----------|------------|
| Not achieved     | 33        | 45%        |
| <35              | 2         | 3%         |
| 35-40            | 8         | 11%        |
| 41-45            | 10        | 14%        |
| 46-50            | 13        | 18%        |
| >50              | 7         | 9%         |
| Hysterectomy     | 1         | 1%         |

Table 5 shows percentage of patients of carcinoma breast age of menopause and its graphical representation. Percentage of patients not achieving menopause is 45%; achieving menopause at 46-50 year is 18%; achieving menopause at 41-45 year is 14% ; achieving menopause at 35-40 year is 11%; achieving menopause at >50 year is 9%; achieving menopause at <35 year is 3%; and percentage of hysterectomised patient is 1%.

**Table 6- Age of menarche**

| Age of menarche | No. of patients | Percentage |
|-----------------|-----------------|------------|
| <8 years        | 0               | 0%         |
| 08-10 years     | 3               | 4%         |
| 11-13 years     | 53              | 72%        |
| >14 years       | 18              | 24%        |

Table 6 shows percentage of patients of carcinoma breast with respect to age of menarche. 72% of patient had menarche at 11-13 year of age; 24% had menarche at ≥14 year; and 4% had menarche at 8-10 year. Average age of menarche was 12.46 years. Average of menarche among non-tribal patients was 12.05 years and among tribal patients was 12.82 years.

**Table 7- Age at first child birth**

| Age at first child | No. of patients | Percentage |
|--------------------|-----------------|------------|
| <18                | 7               | 9%         |
| 18-25              | 56              | 76%        |
| 26-34              | 6               | 8%         |
| 35-44              | 1               | 1%         |
| >45                | 0               | 0%         |
| Nil                | 4               | 5%         |

Table 7 shows percentage of patients of carcinoma breast with respect to age at first child birth. Percentage of patients having first issue at 18-25 year is 76%; at <18 year is 9%; at 26-34 year is 8%; having no issue is 5%; and >45 year is 0%.

**Table 8- Breast feed**

| Breast feed | No. of patients | Percentage |
|-------------|-----------------|------------|
| Yes         | 63              | 85%        |
| No          | 11              | 15%        |

Above table shows percentage of patients of carcinoma breast with respect to breast feeding. Percentage of patients of carcinoma breast with history of breast feeding is 85% and with no history of breast feeding is 15%.

**Table 9- Use of oral contraceptive pills (OCP)**

| OCP use | No. of patients | Percentage |
|---------|-----------------|------------|
| Yes     | 8               | 11%        |
| No      | 66              | 89%        |

Table 8 shows percentage of patients of carcinoma breast with history of oral contraceptive pill (OCP) use. Percentage of patients of carcinoma breast having history of OCP use is 11% and having no history of OCP use is 89%.

**Table 10- History of tobacco addiction**

| Tobacco addiction | No. of patients | Percentage |
|-------------------|-----------------|------------|
| Yes               | 28              | 38%        |
| No                | 46              | 62%        |

Above table shows percentage of patients of carcinoma breast with history of addiction of tobacco chewing. 38% patients had history of addiction of tobacco chewing and 62% patients had no history of tobacco chewing.

**Table 11- History of smoking**

| Smoking | No. of patients | Percentage |
|---------|-----------------|------------|
| Yes     | 22              | 30%        |
| No      | 52              | 70%        |

Table 11 shows percentage of patients of carcinoma breast with history of smoking. 30% patients had history of smoking and 70% patients had no history of smoking.

**Table 12- History of alcohol addiction**

| Alcohol addiction | No. of patients | Percentage |
|-------------------|-----------------|------------|
| Yes               | 1               | 1%         |
| No                | 73              | 99%        |

Above table shows percentage of patients of carcinoma breast with history of addiction of alcohol. 1% patient had history of alcohol addiction and 99% were non-alcoholic.

**Table 13- History of haria addiction**

| Haria addiction | Tribal |      | Non-Tribal |      | Total | %    |
|-----------------|--------|------|------------|------|-------|------|
|                 | No.    | %    | No.        | %    |       |      |
| Yes             | 23     | 59%  | 4          | 11%  | 27    | 36%  |
| No              | 16     | 41%  | 31         | 89%  | 47    | 64%  |
| Total           | 39     | 100% | 35         | 100% | 74    | 100% |

Table 13 shows percentage of patients of carcinoma breast with history of Haria addiction. 36% of patients had history of Haria addiction and 64% of patients had no history of Haria addiction. Among tribal patients, 59% had history of haria addiction and among non-tribal patients, 11% had history of haria addiction.

**Table 14- Dietary habits**

| Diet           | No. of patients | Percentage |
|----------------|-----------------|------------|
| Vegetarian     | 6               | 8%         |
| Non-Vegetarian | 68              | 92%        |

Table 14 shows percentage of patients of carcinoma breast with respect to type of diet (vegetarian/non-vegetarian). 92% patients were non-vegetarian and 8% were vegetarian.

**Table 15- Occupation**

| Occupation | No. of patients | Percentage |
|------------|-----------------|------------|
| Housewife  | 58              | 78%        |
| Labourer   | 14              | 19%        |
| Employee   | 2               | 3%         |

Above table shows percentage of patients of carcinoma breast with respect to type of occupation. 78% percent were housewife; 19% patients were labourer and 2% patients were office worker.

**Table 16- Type of carcinoma**

| Type of carcinoma              | No. of patients | Percentage |
|--------------------------------|-----------------|------------|
| Infiltrative ductal carcinoma  | 62              | 84%        |
| Infiltrative lobular carcinoma | 9               | 12%        |
| Ductal carcinoma in-situ       | 2               | 3%         |
| Acinic cell carcinoma          | 1               | 1%         |

Above table shows percentage of histological type of carcinoma breast. 84% patients had infiltrative ductal carcinoma; 12% had lobular carcinoma; 3% had ductal carcinoma in-situ; and 1% had acinic cell carcinoma.

## V Discussion

This study included 74 newly diagnosed cases of breast cancer and a comparison of the present study and other studies in relation to breast cancer and related risk factors are given in following tables.

### Association between age distribution and breast cancer (Table 1)

In our study, 47% breast carcinoma cases were in between 40 to 49 years age group followed by 22% were in between 30 to 39 years of age group, 18% were in between 50 to 59 years of age group, 11 % were more than 60 years, 3% were in 20 to 29 years of age group and 0% in less than 20 years. Mean age of breast cancer patients were 45.66 years. The greatest risk factor for developing breast cancer is aging, but the rate of increase is not linear. The risk doubles every 10 years until menopause, when the rate of increase slows dramatically. SEER incidence data<sup>9</sup> showed that from 2006 to 2010, the median age at diagnosis for breast cancer was 61 years in USA. But the median age is 10–15 years earlier in other parts of the world where life expectancy is shorter. The peak incidence rates of breast cancer in East Asian women occurs typically 1 or 2 decades earlier compared to their Western counterparts.<sup>10</sup> In Asia, breast cancer incidence peaks among women in their 40s.<sup>11</sup> Mean age of our breast cancer patients was 45 years; which is 16 years earlier than women of USA, but as per with other Asian women.

### Association between ethnicity and breast cancer (Table 2)

The result clearly point out that among the breast cancer patient 53% were tribal and 47% were non-tribal. Although this type of study currently not present that we can compare directly, but it is clear that risk of carcinoma breast is more among tribal population. In a study done by Lipi B Mahanta et al. in Assam population on June 2012 shows that among breast cancer patient 43.3% were Assamese and 36.7% were Bengali considering that Assamese population were 57.81% and Bengali were 21.6% population in Assam.<sup>12</sup>

### Distribution of study participants according to marital status (Table 3)

In our study 85% of cases were married, 12% were widow and 3% unmarried. A study done in Brazil showed that among hospital cases and controls 76.0% and 84.0% respectively were married. More number of cases (24.0%) was unmarried as compared to controls (16.0%). Among community cases and controls 77.0% and 88.0% respectively were married. 23.0% and 12.0% were single. They did not find any association.<sup>13</sup>

### Association between parity and breast cancer (Table 4)

Our results showed 5% nulliparous women and 95% parous woman has carcinoma breast similarity with Another study (33) showed only 2.4% of patients were nullipara and 43.5% of patients had parity 1-2 and 54.1% had parity >3 which were consistent with our results. A large study comprising 55,537 women, reported that nulliparity, low parity, and late age at first pregnancy were all associated with increased risk in Japanese women.<sup>14</sup>

### Distribution of study participants according to attainment of menopause (Table 5)

In our study 45% of our cases had not attained menopause, 27% had achieved menopause at age more than 45 years and 28% had achieved less than 45 years, and 1% were undergone hysterectomy. A Study conducted in Nagpur, showed similar findings that Majority of cases 54% had attained menopause and 46% had not attained menopause. Among controls 61% participants had attained menopause, 39% had not attained menopause. None had undergone hysterectomy. Risk was 7.9 times more among women who had menopause at or after 50 years of age compared to women who had menopause before 45 years. (O.R. =7.91, CI=2.86-19.15). Association between attainment of menopause and breast cancer was found statistically significant with  $p < 0.001$ .<sup>1</sup>

#### **Distribution of study participants according to age of menarche (Table 6)**

In our study, among cases 72% were in between 11 to 13 years age group, 24% were more than 14 years, 4% were in between 8 to 10 years of age group and 0% was less than 8 years. Average age of menarche was 12.46 years. Average of menarche among non-tribal patients was 12.05 years and among tribal patients was 12.82 years.

In a study conducted in Nagpur showed that, among 105 cases majority of participants i.e. 73% were between 13 and 15 years followed by 22% <12 years and 5% in >16 years, when they attained menarche. Among 210 controls 79% were 13-15 years, 5% <12 and 16% were >16 years, when they attained menarche.<sup>1</sup> These findings showed that Women who had menarche at early ages ( $\leq 12$  years) were at increased risk compared with women who had menarche between 13-15 years of age (O.R. = 4.99, CI =2.26-10.99,  $p < 0.001$ ).

#### **Distribution of study participants according to age at first child (Table 7)**

At the time of 1st child, among cases, majority of women 76% were in between 18 to 25 years of age group, 9% were less than 18 years, 8% were in between 26 to 34 years of age group, 5% had not borne children, 1% were in between 35 to 44 years of age group and 0% were above 45 years.

In a study done in Nagpur, among 105 cases, majority of participants i.e. 54% gave birth to 1st child between 21-25 years, 35% before <20 years and 11% after >25 year, among 210 controls 57% give birth to 1<sup>st</sup> child before were <20 years, 36% between 21-25 years and 7% after >25 years.<sup>1</sup> difference was found to be statistically significant for women who had first child after 25 years (O.R.=2.59, CI = 1.01- 6.55,  $p < 0.01$ ).<sup>15</sup>

#### **Association between History of breast feeding and carcinoma breast (Table 8)**

Our study shows that 85% cases had history of breast fed and 15% had no history of breast feeding. A study done by Paul Augustine et al. on 2014<sup>16</sup> in Kerala shows that Participants with at least one child were asked whether they had ever breast-fed their babies; 87.5% of cases and 96.5% of controls had breast fed their babies. 12.1% of the cases had never breast-fed. Crude OR - 2.83 (95% C.I-1.98-4.04 and adjusted OR - 0.463 (95% C.I-0.316-0.680) (Table-2). Compared to those who had never breast fed their children those who breast-fed had significant protection which increased with duration of breast feeding. This agrees with many studies that shows breast-feeding as a protective factor against breast cancer (Nelson et al).<sup>17,18</sup>

#### **Association between OCP and carcinoma breast (Table 9, Figure 9)**

Among carcinoma breast patients 89% didn't use OCP and 11% used OCP. This is against the common finding that OCP use contributes to breast cancer risk.<sup>17,19</sup>

#### **Association between tobacco chewing and breast cancer (Table 10)**

We have found that 62% had no history of tobacco chewing and 38% had history of tobacco chewing. A study done by Rajsinh V Mohite et al. in Maharashtra, 2016 showed that smokeless form of tobacco is a risk factor for carcinoma breast among the woman residing in rural Maharashtra.<sup>20</sup>

#### **Association between smoking habit and breast cancer (Table 11)**

In our study 70% were non smoker and 30% were smoker. The relationship between cigarette smoking and breast cancer risk is complicated. Epidemiological studies have reported positive, inverse and null associations between cigarette smoking and breast cancer. At least three critical reviews that examined the published literature on smoking and breast cancer concluded that cigarette smoking might be associated with a small increase in breast cancer risk, particularly for smoking of long duration.<sup>21,22,23</sup>

#### **Association between alcohol habit and breast cancer (Table 12)**

This study showed that 99% of cases were non-alcoholic and rest were alcoholic i.e. 1%. This is may be due to the fact that alcohol consumption among female is very low. Many studies have reported alcohol intake as a risk factor for breast cancer.

Similar findings were obtained from a pooled analysis of six prospective cohort studies of 322,647 women followed for up to 11 years, including 4335 women with breast cancer.<sup>24</sup> The relative risk for breast cancer increased by 9% (RR 1.09, 95% CI: 1.04-1.13) for every additional standard drink per day. Adjustment for a range of breast cancer risk factors did not modify the findings of either study, and findings differed minimally by study design characteristics.<sup>25</sup>

### **Association between Haria addiction and breast cancer (Table 13)**

Out of 74 cases, 34% had history of Haria (a local made beverage made by fermentation of rice) intake and 64% had no history of such. Among tribal cases 59% had history of Haria intake and 41% had no such history. Among non-tribal cases 11% had history of Haria intake and 89% had no such history. Although this type of correlation study is missing, but from the said observation we can state that chances of carcinoma breast is more with increase in Haria consumption.

### **Distribution of study participants according to type of Diet (Table 14)**

In our study, about 92% of women with breast cancer consumed non vegetarian diet and 8% consumed vegetarian diet. This showed vegetarian diet had protective effect on breast cancer.

Unlike our study a study done in Manipal, Udupi District, showed that 2/3 consumed non vegetarian and 1/3 consumed vegetarian diet. Among 94 controls, about 50% consumed non vegetarian diet. Difference was found to be statistically significant with  $p = 0.03$ , Unadjusted (OR 1.93, CI 1.05- 3.44) and adjusted risk (OR 2.80, CI 1.15-6.81) vegetarian diet showed protective factor against breast cancer.<sup>26</sup>

Similar to our study, a cohort study done in USA and Canada showed that, 53% of cases and 52% of controls were vegetarian.<sup>27</sup>

### **Association between occupation and breast cancer (Table 15)**

In our study, among breast cancer cases most were housewife i.e. 78%, 19% were labourer and 3% were employee. A study conducted in New Delhi, showed a significant difference between breast cancer in relation to occupation ( $p=0.01$ ).<sup>28</sup> Whereas In contrast to our study, a study conducted in Isfahan, Iran had not found association between breast cancer and occupation ( $p=0.085$ ).<sup>7</sup>

### **Percentage of histological type of breast cancer (Table 16)**

Our study depicts that histopathological report suggest that 84% cases had infiltrating ductal carcinoma, 12% cases had lobular carcinoma, 3% had ductal carcinoma in situ and 1% had acinic cell carcinoma. According to Schwartz's principal of surgery (10<sup>th</sup> edition), This results are closed to the type of carcinoma found commonly in the patient i.e. 80% invasive breast carcinoma, 10% invasive lobular carcinoma, 5-10% ductal carcinoma in situ.<sup>29</sup>

## **VI. Conclusion**

The present observational study revealed that maximum breast cancer cases were in the age group 40-59 years. The risk factors such as occupation, diet, late attainment of menopause, history of Haria intake, were associated with increased risk of breast cancer.

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