International Journal of Community Medicine and Public Health
*Gupta A et al. Int J Community Med Public Health. 2026 Feb;13(2):769-774*
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20260305

**Original Research Article**

# Clinico epidemiological profile and trends of breast cancer over a decade: a study from UT of J&K, India

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**Received:** 03 November 2025
**Revised:** 19 December 2025
**Accepted:** 07 January 2026

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## ABSTRACT

**Background:** Breast cancer remains one of the leading causes of malignancy related deaths in women. Understanding the burden of disease and its epidemiology including risk factors are fundamental to public health preventive measures. The study explored the clinic-epidemiological profile and trends of breast cancer in Jammu province of UT of J&K, India.
**Methods:** Hospital Based Cancer Registry (HBCR) has been in operation since 2014 in Government Medical College Jammu. The data from 2014-2024 was collected as per socio demographic variables, district wise residence and detailed information about clinical profile of the patients. The data was represented as frequency and proportions while trends were reflected using line diagram.
**Results:** Almost one-third of the patients (30.3%) were in the 45-54 years age group. Similar proportion of the patients was found to be in premenopausal age group. 91% of the patients were married and 63.11% of the total were illiterate. District wise distribution of the patients revealed that almost half (51.60%) of the total belonged to Jammu district. Majority (94.8%) has infiltrating ductal carcinoma on histopathology. At the time of presentation 41.36% were in Stage-II of the disease.
**Conclusion:** The trends of breast cancer reveal that disease has a steady path with peaks in 2018 and 2019. One third of patients in pre-menopausal age group is a cause of concern. Authors recommend continuous health education regarding warning signals of breast cancer and it's early screening so that these patients can be diagnosed and treated at an earlier stage.

**Keywords:** Breast cancer, Clinico epidemiological profile, Trends

## INTRODUCTION

The global incidence of breast cancer is showing a rising trend and is currently the most common cancer of females in India. As per WHO estimates, breast cancer caused 670000 deaths globally in 2022 and it was the most common cancer in women in 157 countries out of 185 in 2022. Over the past decade, changes in the reproductive patterns, lifestyle factors, population ageing have significantly influenced the clinic-epidemiological profile of Breast cancer. It remains an important global health challenge having an intricate pathogenesis and diverse clinical manifestations which pose many challenges to effective treatment and prevention.[1-3] Evidence has shown

that interplay of genetic, environment and lifestyle factors contribute to the genesis of this disease.[4-6] The understanding about role of these risk factors is likely to help in both prevention as well as early detection of the disease. Higher incidence rate of breast cancer is reported from high income countries as compared to low- and middle-income countries. The mortality rates are lower in high income countries due to better access to early detection and treatment.

The present study aimed to assess the trends as well as clinico-epidemiological profile of breast cancer patients in last one decade in Jammu division of UT of J&K. The authors analysed the data from HBCR from 2014 to 2024 for the said purpose. HBCR study is a part of India's National Cancer Registry Program (NCRP) under the ICMR. Data is collected on all the cancer patients attending the hospital regarding clinical care, treatment and outcomes. The registries contribute to patient care, administrative management and to some extent epidemiological research. It provides insight into treatment patterns, cancer types and regional variations to aid clinician's, researchers and policy makers in cancer control efforts.

### *Aims and objectives*

To explore the clinic-epidemiological profile and trends of breast cancer in Jammu province of UT of J&K, India.

## METHODS

The present hospital-based study was conducted in the departments of Radiotherapy and Community Medicine, Government Medical College (GMC) Jammu. Government Medical College Jammu is a tertiary care hospital which caters to patients not only from Jammu division of UT of J&K but also from adjoining states. HBCR has been in operation in GMC Jammu since 2014.

### *Sampling technique*

This was a retrospective, record-based hospital study, hence all eligible breast cancer cases in the hospital records during the specified study period fulfilling the inclusion criteria were included. So, no specific sampling technique was adapted.

### *Inclusion criteria*

All patients diagnosed with breast cancer and registered in the Hospital-Based Cancer Registry (HBCR) of Government Medical College, Jammu from January 2014 to December 2024 were included in the study.

### *Ethical approval*

It was sought from the Institutional Ethics Committee (IEC) of GMC Jammu vide no. IEC/GMCJ/2025/2666. The data of breast cancer patients from 2014 to 2024 was collected from registry as per socio-demographic characteristics which included age, gender, religion, marital status, literacy and mother tongue and district they reside in Jammu division of UT of J&K. It was followed by collection of information regarding clinical extent, histopathology and TNM staging of the disease. The data after analysis was represented as frequency and proportions. Year wise representation of breast cancer cases was done by line diagrams.

## RESULTS

Table 1 shows the distribution of study subjects according to socio-demographic characteristics. It is evident from the table that almost one-third of participants (30.34%) belonged to 45-54 years age group. Almost equal proportion (22%) of subjects were in the age bracket of 35-44 years and 55-64 years. Only 2 subjects were <19 years old. About four-fifth (79.32%) of the subjects were Hindu by religion. 91.04% of the participants were married. As per the literacy status, more than half (63.11%) of the subjects were illiterate. Only 5% (86/1697) were graduate & above. Most of the subjects (79.37%) were having Dogri language as their mother tongue, followed by Kashmiri (8.1%), Punjabi (7.4%) and Hindi ((5.1%).

Table 2 reveals the gender wise distribution of subjects in different districts of Jammu Province. It was found that in all the districts, females constituted the majority of study population, with proportion >95%. Almost half (51.6%) of the subjects belonged to Jammu district. Least number of study participants (1.2%) were from Ramban district.

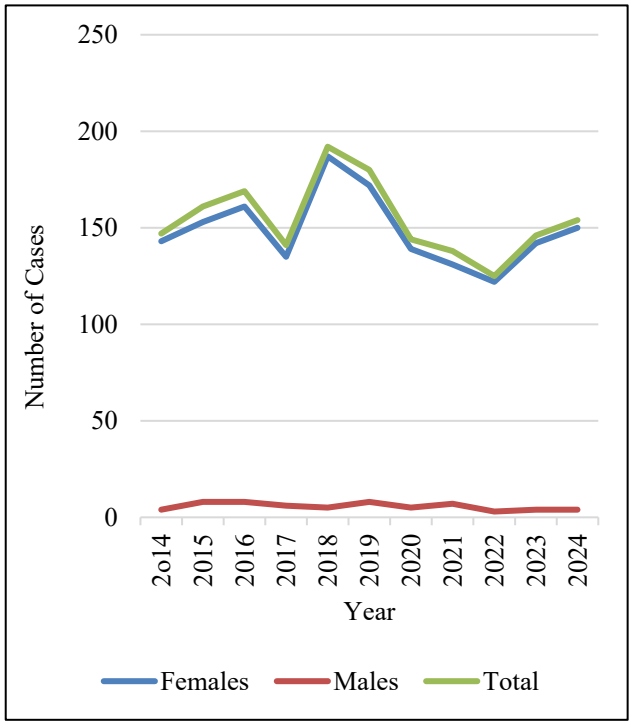


**Figure 1: Trend of cases of breast cancer over a decade.**

On the basis of clinico-pathological characteristics (Table 3), it was revealed that infiltrating ductal carcinoma was the most common presentation (94.8%) in study subjects on histopathology. Most of the tumors spread by direct extension (40.12%) with distant metastasis seen in 11.07% of subjects. Only 5.89% of the subjects reported with recurrence. Majority (41.36%) of the subjects were in Stage II of cancer at the time of presentation with only 4.94% in Stage I. Figure 1 depicts the trend of cases of breast cancer from the year 2014-2024 which shows that the maximum no. of cases reported in 2018.

**Table 1: Distribution of study subjects according to socio demographic characteristics.**

| Details | Numbers | % |
|---|---|---|
| **Age group (in years)** | | |
| <19 | 2 | 0.12 |
| 20-34 | 125 | 7.37 |
| 35- 44 | 388 | 22.86 |
| 45-54 | 515 | 30.35 |
| 55-64 | 374 | 22.04 |
| >65 | 293 | 17.27 |
| **Total** | 1697 | |
| **Religion** | | |
| Hindu | 1346 | 79.32 |
| Muslim | 253 | 14.91 |
| Sikh | 98 | 5.77 |
| Total | 1697 | |
| **Marital status** | | |
| Married | 1545 | 91.04 |
| Unmarried | 30 | 1.77 |
| Widowed | 117 | 6.89 |
| Divorced | 05 | 0.29 |
| Total | 1697 | |
| **Educational status** | | |
| Illiterate | 1071 | 63.11 |
| Up to middle | 327 | 19.27 |
| Up to secondary | 162 | 9.55 |
| Graduate and above | 86 | 5.07 |
| **Total** | 1697 | |
| **Mother tongue** | | |
| Dogri | 1347 | 79.38 |
| Kashmiri | 138 | 8.13 |
| Punjabi | 126 | 7.42 |
| Hindi | 86 | 5.07 |
| Total | 1697 | |

**Table 2: Distribution of study subject on the basis of Gender and district they reside.**

| District | Male | Female | Total |
|---|---|---|---|
| **Jammu** | 27 | 850 | 877 |
| **Samba** | 3 | 102 | 105 |
| **Udhampur** | 5 | 93 | 98 |
| **Kathua** | 6 | 140 | 146 |
| **Rajouri** | 3 | 87 | 90 |
| **Kishtwar** | 1 | 35 | 36 |
| **Poonch (Haveli)** | 4 | 64 | 68 |
| **Reasi** | 4 | 59 | 63 |
| **Ramban** | 2 | 18 | 20 |
| **Doda** | 6 | 63 | 69 |

Continued.

| District | Male | Female | Total |
|---|---|---|---|
| **Others** | 1 | 124 | 125 |
| **Total** | 62 | 1635 | 1697 |
| **Percentage** | 3.65 | 96.34 | |

**Table 3: Distribution of study subject according to clinico-pathological characteristics.**

| Details | Number | % |
|---|---|---|
| **Histopathology** | | |
| Infiltrating ductal | 1609 | 94.81 |
| Ductal carcinoma in situ | 2 | 0.12 |
| Lobular | 23 | 1.36 |
| Medullary | 2 | 0.12 |
| Mucinous | 12 | 0.71 |
| Others | 24 | 1.41 |
| Papillary | 9 | 0.53 |
| Phyllode | 9 | 0.53 |
| Sarcoma | 7 | 0.41 |
| Grand total | 1697 | |
| **Clinical extent of disease before treatment** | | |
| Direct extension | 681 | 40.13 |
| Direct extension with regional nodes | 376 | 22.16 |
| Distant metastasis | 188 | 11.08 |
| Not applicable / unknown primary | 352 | 20.74 |
| Recurrent | 100 | 5.89 |
| Total | 1697 | |
| **Staging** | | |
| Stage-I | 84 | 4.95 |
| Stage-II | 702 | 41.37 |
| Stage-III | 498 | 29.35 |
| Stage-IV | 413 | 24.34 |
| Total | 1697 | |

## DISCUSSION

The results have revealed that 96.34% of the respondents were females. Majority belonged to Hindu religion. 91.04 % of the respondents were married and two third (63.11 %) of them were illiterate. The incidence of cancer breast among the males was found to be 3.65 % which seems to be higher than 1.4% and 0.45 % reported by Caughlein et al and Thomas et al, respectively.[7,8] The results clearly point out that breast cancer is predominantly a disease among females.

The most predominantly affected age group was 45-54 years comprising almost one-third (30.34 %) of the total respondents followed by 22.86% and 22.03% respondents in 35-44 years' age group and 55-64 years age group respectively. In a hospital-based study conducted in Miraj, Maharashtra, Agarwal KH et al, reported that about 50 % of cases were in age group 40-60 years. Population based cancer registries in India have reported mean age of breast cancer patients to be 50-53 years.[9,10] Mean age of breast cancer occurrence among females in USA has been reported at 61 years.[11] So, the disease presentation almost a decade earlier than in the West is of concern as earlier age presentation of breast cancer is an independent adverse prognostic factor.[12]

In the current study, premenopausal women comprised almost one-third of the total respondents. On the contrary Thomas et al, and Raina et al, reported premenopausal cohort to be 72 % and 50 % in their respective studies.[8,13] These findings highlight increasing incidence of breast cancer in premenopausal women in India. Rising incidence of adolescent and young adult breast cancer probably suggests growing prevalence of hormonal and life style risk factors in the setting of socio-economic transformation.

Jammu province has ten districts with Jammu district having the largest population. District wise analysis of breast cancer patients revealed that Jammu district reported more than half of the total cases (51.67 %)

followed by Kathua (8.50 %) and Samba (6.18 %). All these three districts one in plains of Jammu region while rest of the districts are located in hilly regions. The likely reason for most of the cases being in Jammu district are better access to tertiary care health centre, increased awareness among the population and increased dietary transition wherein processed and fast-food intake has increased. The population residing in hilly regions of the province is more likely to have traditional dietary and non-sedentary lifestyles which are both considered beneficial for overall quality of health.

More than two third of the respondents in the present study were in post-menopausal age group and this is consistent with the results reported by Winer et al and Agarwal et al.[14] Histopathological examination, which is one of the major prognostic factors in breast cancer, was used in all cases as a diagnostic tool. It was found that majority (94.81%) had infiltrating ductal carcinoma presentation and these results are agreement with those reported by Laishram et al, Agarwal et al and Thomas et al.[8,9,15] The results have revealed that 41.67% of the respondents presented in stage-II while 53.67% of the participants reported in stage-III and stage-IV. These results are similar to those reported by Agarwal et al, Thomas et al and Naeem et al.[16] Among the probable reasons for late presentations are social inhibitions, Lack of health education, absence of breast self-examination as well as absence of screening modalities.

### *Limitations*

The present study was hospital-based and relies on data from a single tertiary care center, which may limit the generalizability of findings to the wider community. Information on lifestyle, genetic factors and treatment outcomes were not available hindering the prognostic assessment.

## CONCLUSION

The study highlights that breast cancer in Jammu province predominantly affects middle-aged women, with a considerable proportion presenting in the premenopausal age group and at advanced stages. Infiltrating ductal carcinoma was the most common histopathological type and a steady rising trend was observed over the decade. These findings underscore the urgent need for strengthening awareness, early detection and screening strategies to facilitate timely diagnosis and improved outcomes in the region.

*Funding: No funding sources*
*Conflict of interest: None declared*
*Ethical approval: The study was approved by the Institutional Ethics Committee*

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**Cite this article as:** Gupta A, Gupta RK, Sharma R, Kumari R, Kour S, Katoch SS, et al. Clinico epidemiological profile and trends of breast cancer over a decade: a study from UT of J&K, India. Int J Community Med Public Health 2026;13:769-74.