Demographic Profile, Receptor Status and Stage of Breast Cancer Patients Attending Our Institute in Last 2 Years

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ABSTRACT

BACKGROUND

In Indian women one of the most commonly diagnosed cancer is breast cancer. We wanted to analyse the demographic parameters, receptor status and stage of breast cancer patients in Indian scenario.

METHODS

A cross sectional study was performed and information was collected from 300 breast cancer patients on demographic profile, socioeconomic status, history of breast cancer in family, religion, and address of patients including data on hormonal status and stage. Anthropometric assessment of BMI was done. Data was collected, analysed, and presented in frequency tables and figures.

RESULTS

The mean age of diagnosis of patients of breast cancer was 45±10 years with majority (75%) being Sikhs and 57% belonging to rural areas. Only 9% were from upper socioeconomic status and 32% from lower socioeconomic status. About 15% had positive family history. About 39% were overweight and 22% were obese. 53% had stage 2 and 36% had stage 3 at the time of diagnosis. The prevalence of ER, PR and HER- 2/neu expression were 45.6%, 35.7% and 14.4% respectively.

CONCLUSIONS

Breast carcinoma in our population is present at a younger age than western population. Other than the established risk factors, socioeconomic status and higher BMI were included in our study. A higher percentage of women present in late stages thereby pointing towards the need for educating women about breast cancer and its early detection by screening programmes.

KEYWORDS

Breast Cancer, Body Mass Index, Socioeconomic Status, Progesterone Receptor, Oestrogen Receptor, HER-2/neu

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DOI: 10.18410/jebmh/2020/212

Financial or Other Competing Interests: None.

How to Cite This Article:
Gupta R, Mahajan A, Kaur M, et al. Demographic profile, receptor status and stage of breast cancer patients attending our institute in last 2 years. J. Evid. Based Med. Healthc. 2020; 7(20), 971-974. DOI: 10.18410/jebmh/2020/212

Submission 28-03-2020,
Peer Review 01-04-2020,
Acceptance 17-04-2020,
Published 13-05-2020.

BACKGROUND

In Indian women one of the most commonly diagnosed cancer is Breast cancer. Relocation from rural to urban areas, change in lifestyle, and population growth are major contributing factors causing increase in number of patients diagnosed with breast cancer in developing world.[1] In 50% cases risk factors like age, parity, and duration of breast feeding, age of menarche/menopause, hormone factors, environment and genetics come into play.[2] Mutation in BRCA-1 and BRCA-2 is present in 5-10% of breast cancers. Since breast cancer is a tumour prototype dependent on hormone, response to endocrine therapy is seen in one third patients. Human epidermal receptor-2/neu (HER-2/neu) gene amplification occurs in 20-30% of breast cancers and it is associated with poor prognosis, lower response to hormone therapy and chemotherapy. HER-2/neu positive breast cancer predicts response to anti-HER-2/neu antibody.[3] Asian countries have shown the largest increase in breast cancer incidence.[4] Due to obstacles to health services, lack of education, unconscious of early detection and inadequacy of screening programmes, breast cancer is diagnosed in late stages in most women in low and middle income countries.[5] The goal was to determine the status of receptors, stage and other morphological prognostic parameters in an Indian population.

METHODS

This cross-sectional study included patients of breast cancer patients visiting a tertiary care hospital for treatment. The patients were enrolled between 2017 and 2019. The purpose of study was explained and informed consent was taken excluding terminally ill patients. A total of 300 patients with breast cancer undergoing treatment were included. Data on sociodemographic profile such as age, religion, and address along with socioeconomic profile such as education, occupation, and family income was collected from each patient via a questionnaire. Modified Kuppuswamy socioeconomic classification system was used to determine socioeconomic status.[6] the data on family history of breast cancer and body mass index (BMI) was also collected. BMI was calculated from anthropometric assessment for weight (Kg) and height (cm). The cut-offs' provided by the Word Health Organization for defining overweight (25-25.9 Kg/m2) and obesity (>30 Kg/m^2) were used.[7] Staging was done as per American joint committee on cancer (AJCC) 8th edition. Expression of ER, PR and Her-2/neu were analysed in the breast cancer tissue specimens. Equivocal findings of HER-2/neu for this analysis were deemed negative. Data was collected, analysed and presented as frequency tables and figures.

RESULTS

The majority of patients of breast cancer were in 3rd to 4th decade at the time of diagnosis. Showing 62% of patients were 35-55 years of age. The distribution parameters for breast patients are presented in Figure 1.

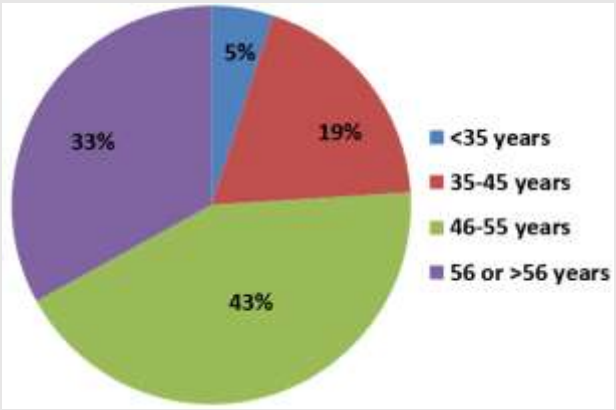

Figure 1. Age Distribution

The socio demographic profile revealed that 57% (n=171) of patients were from rural areas. Majority of the patients (75%) were from Sikh religious group. About 15% (n=45) of patients were reported to have a family history of breast cancer as shown in Figure 2.

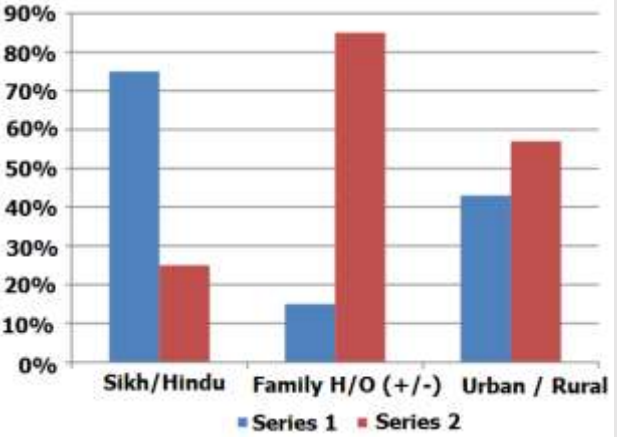

Figure 2. Sociodemographic Profile

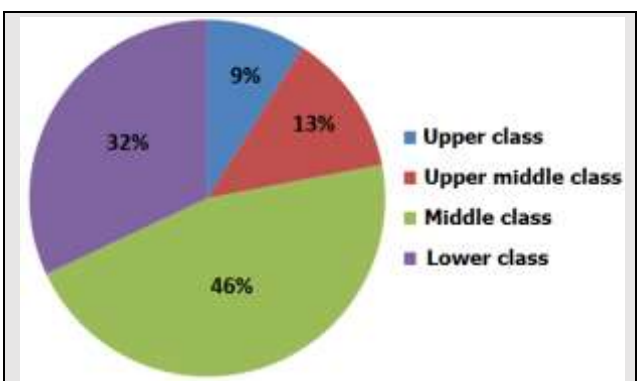

Figure 3. Socio-Economic Status

About 9% (n=27) of patients were from upper socioeconomic status, followed by 13% (n=39) from upper middle, 46% (n=138) from middle, and 32% (n=96) from lower socio-economic status as presented in Figure 3.

The clinical presentation of breast cancer revealed that 53% (n=159) of patients had stage II, followed by 36% (n=108) with stage III, 8% (n=24) with stage I, and 3% (n =9) with stage IV of breast cancer as shown in table 1.

Stage	% (n)
I	3% (9)
II	53% (159)
III	36% (108)
IV	8% (24)

Table 1. Association with Stage

The BMI revealed that 39% (n=117) of patients were overweight and 22% (n=66) were obese as shown in Figure 4.

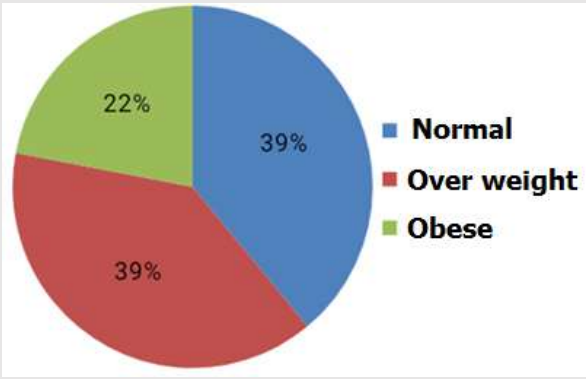

Figure 4. Association of BMI

Estrogen receptor studies showed that overall ER was positive in 46.5%, PR in 35.7% and HER- 2/neu in only 14.4% cases as shown in figure 5. A significant proportion of tumors 84 of 300 (28.0%) were triple negative.

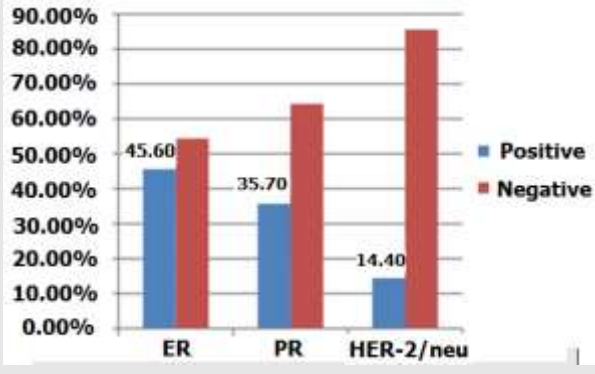

Figure 5. Distribution of Receptor Status

ER= estrogen receptor, PR= progesterone receptor

DISCUSSION

In Asian countries the peak age of breast cancer is 40-50 years as compared to 50-60 years in Western countries.[8] Breast cancer incidence peaks at a younger age in Indian women as compared to women from western countries.[9] our present study showed similar results. Sikhs constituted majority i.e. 75% (n=225) of our population.

The sociodemographic profile revealed that majority (57%) of patients of breast cancer belonged to rural areas. In future the incidence of breast cancer is likely to become more frequent in rural areas due to shift in demographic trends from rural to urban areas.[10] Results on socioeconomic status from our study revealed that 9% (n =27) of patients were from upper socioeconomic status, followed by 13% (n = 39) from upper middle, 46% (n = 138) from middle, and 32% (n = 96) from lower socioeconomic status. Around two-third patients with cancer belong to the lower or upper-lower socioeconomic status as per hospital cancer registry from northern India.[11] Earlier studies reported that patients of breast cancer were from low socioeconomic conditions.[12] One of the major reasons for the disparity in the outcomes of cancer between high, middle and low income countries is attributed to the delay in detection and diagnosis of cancer.[13]

There is increase in cancer risk by two or three folds if family history of breast cancer is positive.[14,15,16] History of breast cancer in family was observed in 15% of patients in the present study. Similar results have been documented in earlier studies.[14,17] There are greater number of irregular menstrual cycles, with decreased exposure to ovarian hormones in obese women thereby signifying the importance of BMI in breast cancer.[16]

Studies have shown positive association between breast cancer risk and increased anthropometric variables for both pre-menopausal and post-menopausal women.[18] in our study 39% patients were overweight and 21% were obese. Previous research studies showed similar results.[19,20]

CONCLUSIONS

The clinical presentation for breast cancer in our study revealed that 53% (n = 159) of patients had stage II, followed by 36% (n = 108) with stage III, 3% (n = 9) with stage I, and 8% (n = 24) with stage IV of breast cancer. More than 50% of newly diagnosed patients present with stage III or IV breast cancer as per previous studies.[21,22] Earlier studies have implicated the factors like lack of education, lack of funding, lack of infrastructure, and low priority in public health schemes for late diagnosis of breast cancer.[9] 20%–50% patients are diagnosed at earlier stages in low and middle income countries according to earlier studies.[23]

The prevalence of ER, PR and HER-2/neu expression was 45.6%, 35.7% and 14.4% respectively. Previous studies have reported a higher rate of receptor expressions.[24,25,26] These results are nearly similar to previous studies in India.[27] Showing that the trigger of low expression of receptors amongst breast cancer patients of India could be attributed to racial and geographical differences, higher grade and younger age of patients of breast cancer.

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