

Breast Cancer In India: Current trends and Challenges

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ABSTRACT

Breast cancer is the most common female cancer worldwide including India, but in Indian scenario it has different challenges than developing countries. Breast cancer is a global disease. Majority of underlying causes, and other features of breast cancer are usually uniform around the world but every region has its own uniqueness and trends. Our aim is to provide an overview of the available data and views on breast cancer care in India. We used data from the various cancer registries and publications/presentations from individual institutions.

KEYWORDS: Breast Cancer, Mastectomy, Breast conservation surgery, Adjuvant treatment.

INTRODUCTION

Breast cancer is the commonest cancer in urban Indian females, and the second commonest in the rural Indian women^{1,2} and incidence of breast cancer in India is rising. Breast cancer is still considered social stigma. There are numerous myths and ignorance in the Indian society which results in unrealistic fear of the disease³. Breast cancer awareness programs are more concentrated in the cities and have not reached the remote and rural parts of the country^{3,4}. Women often do not present for medical care early enough due to various reasons such as illiteracy, lack of awareness, and financial constraints. Majority of breast cancer patients in India are still treated at locally advanced and metastatic stages^{3,5,6}.

The various reasons for delayed diagnosis of breast cancer in Indian population are lack of an organized breast cancer screening program, paucity of diagnostic aids, and general indifference towards the health of females in the predominantly male dominated Indian society. A multidisciplinary approach to breast cancer treatment is standard of care in western countries but it is available only at a few select regional cancer centers in India. This review aims at providing an overview of breast cancer care in India. We used data from the various cancer registries, publications/presentations from individual institutions to assess the trends in breast cancer care in India and first thing we realized is that the data available on various issues relating breast cancer care in India is limited. There is no central cancer registry to provide comprehensive nationwide data. The only credible data on a large proportion of population is available from the population-based cancer registries (PBCRs) – both urban and rural – and the various

hospital-based cancer registries which work under the national cancer registries program of the Indian Council of Medical Research (ICMR). There are numerous other non-ICMR cancer registries organized and run by hospitals and institutions. Other major problem in collation of data from these diverse registries is the lack of uniform methods of data collection and storage which limits the overall assessment of the problem but still provides enough data to understand the trends of the breast cancer care in India.

TRENDS AND CHALLENGES IN INDIA

The incidence of breast cancer in India is rising. Over 100,000 new breast cancer patients are estimated to be diagnosed annually in India^{2,5}. As per the ICMR-PBCR data, breast cancer is the commonest cancer among women in urban registries of Delhi, Mumbai, Ahmedabad, Calcutta, and Trivandrum where accounts for > 30% of all cancers in females⁶. As per PBCR in rural areas breast cancer is the second commonest cancer in women after cancer of the uterine cervix³. The age standardized incidence rates (AARs) range from 6.2 to 39.5 per 100,000 Indian women. The AARs vary from region, ethnicity, religion, with the highest incidence reported at 48.3 per 100,000 women in the Parsi community of Mumbai³.

The rise in incidence of 0.5–2% per annum has been seen across all regions of India and in all age groups but more so in the younger age groups (< 45 years)⁷. According to recent reports, India has 17 percent of the world's population suffering from breast cancer. More recent data from Globocan⁸ showed that for India for the year 2012; 144,937 women were newly detected with

breast cancer and out of those 70,218 women died of breast cancer. So roughly for every 2 women newly diagnosed with breast cancer, one patient is dying compared to US every 5-6th women diagnosed with breast cancer; only one of those dying.

These ratios are not the best way of assessing the situation, but it gives us the glimpse of the breast cancer trends. One of the reasons for high mortality in Indian patients is due to delayed presentation and not amenable to treatment. There are lots of reasons for late presentations including lack of awareness, cultural and

religious belief, shyness on part of patients, social stigma, ignorance of doctors and support staff.

In India, the overall incidence of breast cancer is less in comparison to the US but actual number of cases in the year 2012, were about 1,45,000 compared to 2,32,000 breast cancer cases reported in the US. This implies that because of India's population, the percentage of total women affected seems less, the breast cancer burden in India has almost reached about 2/3rds of that of the US and is steadily rising.

Breast Cancer

SOURCE: [HTTP://GLOBOCAN.IARC.FR](http://globocan.iarc.fr)

Estimated Incidence, Mortality and Prevalence Worldwide in 2012

Estimated numbers (thousands)	Cases	Deaths	5-year prev.
World	1677	522	6255
More developed regions	794	198	3224
Less developed regions	883	324	3032
WHO Africa region (AFRO)	100	49	318
WHO Americas region (PAHO)	408	92	1618
WHO East Mediterranean region (EMRO)	99	42	348
WHO Europe region (EURO)	500	143	1960
WHO South-East Asia region (SEARO)	240	110	735
WHO Western Pacific region (WPRO)	330	86	1276
IARC membership (24 countries)	940	257	3614
United States of America	233	44	971
China	187	48	697
India	145	70	397
European Union (EU-26)	307	91	1407

In general, breast cancer has been reported to occur a decade earlier in Indian patients compared to their western counterparts¹. While the majority of breast cancer patients in western countries are postmenopausal ;In India premenopausal patients constituting about 50% of all breast cancer patients¹. More than 80% of Indian patients are younger than 60 years of age. The average age of patients in 6 hospital-based cancer registries ranged from 44.2 years in Dibrugarh, 46.8 years in Delhi, 47 years in Jaipur, to 49.6 years in Bangalore and Chennai. According to various population-based studies done in different parts of the country the average age of breast cancer patient has been reported to be 50-53 years^{3,9}. In the more recent reports a trend towards shift in age group has been noticed . Young age has been associated with larger tumor size, higher number of metastatic lymph nodes, poorer tumor grade, low rates of hormone receptor-positive status, earlier and more frequent locoregional recurrences, and poorer overall survival¹¹.

Marriage at an early age, early and multiple childbirths, and breastfeeding of all children for a long period of time is the norm in most Indian societies. However, the urban educated class is moving away from this trend, with late-age childbirth and little or no breastfeeding due to changing social values and the demands of jobs on working women. These changes may be partly

responsible for the increasing trend of breast cancer incidence. Nulliparity and late age at first childbirth are consistently observed reproductive risk factors. A case control study in Mumbai indicated that compared to married women, single women had a 4-5-fold higher risk for developing breast cancer in the age group of 40-54 and above¹². In another study, nulliparous women had a 2.2-fold higher risk than parous women¹³.

HEREDITARY BREAST CANCER IN INDIAN POPULATION:

Almost a third of all breast cancer patients are believed to have familial disease pattern, and some 5% are believed to be hereditary, with the BRCA1 and BRCA2 gene mutations having been identified as the major genetic causes. Genetic screening/diagnosis is not routinely performed in most Indian center due to paucity of funds and facilities. As a result, there is scarce data on the genetic composition and BRCA1/2 mutations in Indian patients. In an Indian study on 226 breast cancer patients, 20.7% had a positive family history¹⁴. On the contrary, numerous other studies have reported a low rate of familial pattern of breast cancer in Indian patients^{15,16}. This is particularly interesting given the relatively young age of Indian breast cancer patients. The available studies hint at a rather low incidence of BRCA mutations^{17,18}.

BREAST CANCER SCREENING AND AWARENESS IN INDIA

No national or regional breast cancer screening program exists in India. At present, a dedicated breast cancer screening by clinical breast examination or mammography is not available outside research studies at a few institutions, or to women self-presenting to specialist hospitals to have these services provided for a fee. Mammography is available in a large number of public and private hospitals in almost all towns as a diagnostic service, which also provides a means for opportunistic screening for women willing to pay for it. Mammography is not advocated for mass screening, and it is generally felt that it may not be cost-effective in India¹⁹.

General assumption is that breast self-examination and clinical examination are perhaps the right tools for screening the huge population of India, but no data is available to support this. Breast awareness and virtues of periodic breast self-examination are being promoted for early detection of breast cancer through print, electronic media, as well as through health personnel in various settings. Numerous governmental non-governmental and charity organizations lend a helping hand to breast cancer patients in coping with the suffering of treatment and lifestyle issues after treatment. In the coming years, the most important steps needed are creating awareness about breast cancer risk factors, early detection, along with making screening available to the population at risk, and providing multimodality treatment available to the majority at an affordable cost. The needs of the coming decades would perhaps be better served by small community cancer centers which are cost-effective and can manage most cancer patients in their own localities.

BREAST CANCER TREATMENT IN INDIA

The ICMR/WHO national breast cancer management protocols are still at a primitive stage, and far from being operationalized on a country-wide basis. The quality of breast cancer treatment is dictated by many factors like patient's own beliefs, financial situation, accessibility to the right institution and social condition. Few patients are treated at well-equipped centers in a protocol-based manner, with numerous compromises made in the multimodality therapy, based on factors such as the economics, tolerance, nutritional deprivation, etc. There is a huge discrepancy between the number of treatment facilities and number of patients which makes this situation more difficult. Even after approaching the right health care facility the noncompliance to the treatment is very high. The poor compliance to treatment and follow-up is due to the social stigma attached to the disease, and the high cost of treatment⁷. Though there is no shortage of skills and expertise in cytology, the use of fine needle aspiration cytology is under-utilized. Pre-operative diagnosis is still based predominantly on clinical and

incisional or excisional biopsy.

A large proportion of Indian patients are treated with inadequate/inappropriate initial surgical procedures before they are seen and managed by specialists. In a study from a major North Indian teaching hospital, almost 75% of the patients referred for management of operable early breast cancers (EBC) had had an incisional or excisional biopsy not intended for treatment of breast cancer²⁰. The quality of pathology reporting on breast lumpectomy/biopsy specimens and even on mastectomy and axillary clearance specimens is another big hurdle. The lack of information on histological details, margins, number of axillary lymph nodes sampled results in considerable difficulty in interpretation of the extent of surgical treatment already performed.

The choice of systemic chemotherapy and hormone treatment is dictated by the paying capacity of the patient, as the majority have to buy the medicines by themselves in absence of governmental or insurance support. There are multiple chemotherapy regimens in use. Though anthracycline-based combination chemotherapy is the appropriate first line chemotherapy for most patients, based on acknowledgement of the fact that anthracycline-based regimens (5-fluorouracil (5-FU), doxorubicin, cyclophosphamide- FAC) result in survival benefit when compared to the cyclophosphamide-methotrexate-5FU combination (CMF) with improvement in annual odds of recurrence and death by 11 and 12%, respectively. The Anthracycline based regimen is substantially costlier than CMF, and the cost difference is even more contrasting in view of the need for management of anthracycline toxicity. As a result, CMF is still preferred for a large number of patients. Recently the federal and state governments as well as from numerous charitable organizations have started giving support to the patient requiring chemotherapy. A study²¹ conducted in a community hospital in Southern India on 122 patients reported IDC in 96.7% of patients, 27% being in the premenopausal age group, EBC as well as metastatic breast cancer in 6.8% each; mastectomy was done in 93.8% and BCS in 6.3% of patients. Chemotherapy regimens used were FAC in 51.2% and CMF in 48.8% of patients. Use of taxanes is limited by their high costs and higher toxicity. Tamoxifen is the most widely used endocrine therapy for breast cancer in India, and the proportion of post-menopausal patients treated with aromatase inhibitors, though increasing, is very small. Radiation ablation and medical ablative treatment such as goserlin are seen as expensive and relatively less effective. Surgical oophorectomy still widely practiced as a rapid and valid choice in the vast majority of premenopausal and advanced stage breast cancer patients. Targeted biological therapies like trastuzumab which is standard of care in western countries for HER2 positive

tumors; are out of reach for most Indian patients. There are very few dedicated radiation therapy units and It is estimated that only about 20% of patients are offered post-mastectomy radiation therapy. The paucity of radiation therapy set-ups is a deterrent in setting up more breast conservation therapy programs. The high cost, long time duration, high toxicity, and the impaired wellbeing systemic cytotoxic due to chemotherapy and radiation therapy are the major factors for noncompliance of adjuvant treatment amongst Indian patients outside major institutions.

SURVIVAL ESTIMATES FOR INDIAN BREAST CANCER PATIENTS

Chopra⁴ from New Delhi reported a 5-year overall survival rate of 55%, with 80% EBC, 45–60% locally advanced, and 20% MBC patients estimated to be alive at 5 years⁴. The 5-year actuarial survival has been 90% for stage I patients, 78% for stage II, 57% for stage III, and 22% for stage IV, though the survival data is available based on the follow-up information for 75% patients only. The 5-year overall survival rate in the Bangalore PBCR has been reported at 42.3%²⁴. The Madras Metropolitan Tumor Registry reported survival rates of 80, 58 and 48% at 1, 3, and 5 years, respectively²⁵. A study from Kerala showed a 5-year survival rate of 40%²⁶.

CONCLUSION

The incidence of breast cancer in Indian women is rising but there is not much change in awareness of breast cancer. There is still lack of breast cancer screening programs, and delay in seeking advice for a recognized health problem due to financial and social reasons, along with general indifference towards women health which result in delayed diagnosis. Consequently not only Indian breast cancer patients present with advanced disease stage but also presents with numerous poor prognostic factors such as large tumor, lymph node metastases, high pathological grade and poor hormone receptors status. There are very few treatment facilities which provides protocol based treatment so there is a need for reinforcement of standard protocols by health care providers to provide standard of care treatment to breast cancer patients. Other challenge is scarcity of financial resources for the patients as well as the health care providers leading to compromised quality of care to patients with established disease. That is one of the main reasons that Indian breast cancer patients have higher locoregional recurrences and poorer overall survival. Although in recent years due to emphasis by governmental agencies, institutions, and non-governmental and charity organizations on breast cancer awareness, promotion of early detection, providing comprehensive multimodality treatment in a protocol-based manner, and providing support for breast cancer

management as well as for screening and rehabilitation have resulted in an improving trend with early stage cancers being diagnosed and appropriate management. All these efforts resulting in improving survival and quality of life but there is still huge requirement of awareness programs and educating the patients about breast cancer.

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