Available Online at http://www.recentscientific.com

ISSN: 0976-3031

International Journal of Recent Scientific Research
Vol. 5, Issue,7, pp.1226-1230, July,2014

International Journal of Recent Scientific Research

RESEARCH ARTICLE

EPIDEMIOLOGY OF BREAST CANCER IN MYSORE, INDIA: CHALLENGES AND IMPLICATIONS

[1]*Madhu B*, Ashok N C [2] and Balasubramanian. S [3]

[1*,2]Department of Community Medicine, JSS University, Mysore

[3]Director Research, JSS University, Mysore, Karnataka, India

ARTICLE INFO

Article History:

Received 11th, June, 2014
Received in revised form 23rd, June, 2014
Accepted 14th, July, 2014
Published online 28th, July, 2014

Key words:

Breast Cancer, Mysore, Clinico-epidemiological pattern Cancer care, India

ABSTRACT

Background: Non Communicable diseases like cancer is a major public health problem worldwide and in India, due to disease burden, fatality and loss of DALYs. In India, among women, the burden of cervical cancer is reducing and incidence of breast cancer is increasing. Objectives: This descriptive study was conducted to describe the clinic-epidemiological pattern and care received by breast cancer patients in a cancer hospital in Mysore. Methodology: The data of breast cancer patients for 5 years (2007-2011) was obtained from BHIO, Mysore. Socio-demographic, clinical, his topathological, diagnostic and treatment details were obtained from the case record. Results: A steady increase in the proportion of breast cancer cases over years in observed. Majority (60.3%) of the cases were reported from women in their 4th or 5th decade of life and nearly one third of the patients had breast cancer before 40 years of age. Fifty –two percent of the patients were from rural areas, seventy- five percent of them were either illiterate or had less than 10 years of schooling, eighty –seven percent of them belonged to middle-low income families and half of them did not have any form of health insurance. Majority of the women took 3 to 6 months duration of time to seek advice from a hospital for complains of lump in the breast and more 75% of the women presented at Locally Advanced Breast Cancer (LABC) i.e Stage 2 and Stage 3, less than half of them received some cancer directed treatment at the Cancer hospital and 30% of them were lost to follow up.

Conclusion: To Combat the increasing burden of breast cancer, improvement in breast cancer care is essential and strategies like increasing awareness of women regarding breast cancer, empowering women for breast self examination, improving access to mammographic screening services and ensuring availability and accessibility to cost effective surgical, chemotherapy and Radiotherapy facilities for breast cancer cases is vital.

INTRODUCTION

Information on the trends and pattern of cancer is essential for health planners and policy makers. (Parkin *et al*, 2001) According to IARC reports, the world wide cancer burden rises to 14.1 million new cases and 8.2 million cancer related deaths in the year 2012. (IARC, 2013) .The commonest cancer that was diagnosed worldwide was lung cancer followed by breast cancer.(Globocan, 2012)

In spite of worldwide increase in breast cancer incidence, there is high inequalities between rich and poor countries. Incidence rates are highest in more developed regions but morality is relatively much higher in less developed countries due to lack of early detection and access to treatment facilities. (Global Health Estimates, WHO 2013)

Breast Cancer management is heterogenous in character and requires multi-disciplinary approach (Sandhu D S *et al*, 2010) .The information on the epidemiology of breast cancer in India is very limited except for few reports. There is no central cancer registry to provide comprehensive nationwide data. The existing cancer registries in India represent less than 5% of the total Indian population and are predominantly from urban areas and majority of the rural areas remain uncovered (Agarwal G and Pooja R, 2008).

Within India, there exist diversity in ethnicity, culture , religion, economy and variation in the health care infrastructure and cancer services. Sporadic epidemiological studies on breast cancer do provide useful information on breast cancer incidence and pattern of care. Major hindrance in the collation of data, from the individual hospital registries, is the lack of uniformity in collection of data and storage.

Keeping in view of the existence diverse pattern of breast cancer occurrence and paucity of published data from Southern Karnataka. Objectives of this paper was to study the epidemiology, clinical presentation, risk factors and management strategies for breast cancer patients in a cancer hospital situated in southern Karnataka, which could help in developing early detection and cost effective treatment strategies which is suitably appropriate for culture and economic status .

* Corresponding author: **Madhu B**
Department of Community Medicine, JSS University, Mysore

METHODOLOGY

The present study is a retrospective study that was done by obtaining the breast cancer data from Bharath Hospital and Institute of Oncology, Mysore, Karnataka. Being a leading cancer institute in the Southern region of Karnataka, provides cancer diagnosis and treatment facilities for the people of Southern districts of Karnataka, namely Mysore, Mandya, Hassan, Chamarajnagar and Kodagu and also to the adjoining districts of Kerala and Tamil Nadu. For the present retrospective hospital based study, the breast cancer cases reported to the BHIO from January 2007 to December 2011 were scrutinised for details from the inpatient case record that is maintained by the Medical Records Department of Bharath Hospital Institute of Oncology. The Cases identified include all case records with ICD code C.50.Analytical framework of the study is given below in Figure 1

Medical case sheets of identified cases were reviewed individually and information on socio-demographic details like name, age , sex, education, marital status, occupation, socio-economic status, health insurance facilities, details of residence like urban or rural, which taluk and district they come from. Clinical, histopathological and treatment details were noted. Duplicate cases were eliminated by cross checking name, age, sex and address. Data were entered into excel sheet and analysed using SPSS 17.0 (SPSS Inc) and relative percentages were calculated and graphs were plotted.

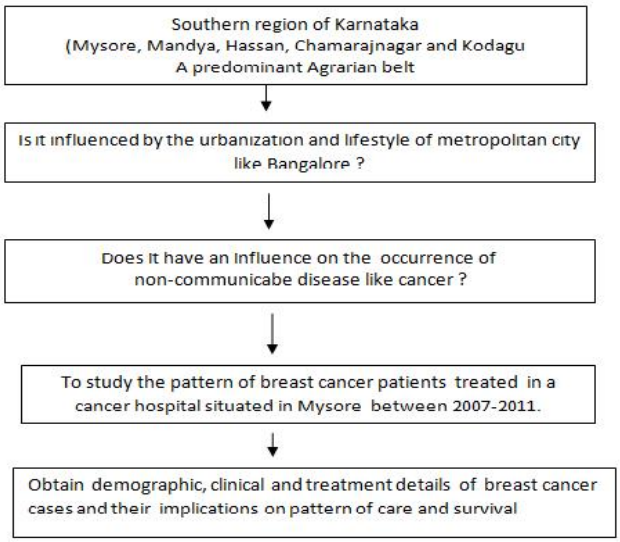

Figure 1 Analytical Frame work of the study

Ethical Considerations

The study was approved by Institutional Human Ethics Committee of JSS Medical College and necessary permission from Bharath Hospital and Institute of Oncology, BHIO, Mysore was also obtained.

RESULTS

Demographic pattern

A total of 909 cases of breast cancers cases were reported to the BHIO during year 2007-2011. There has been a steady increase in the proportion of breast cancer cases that are being reported to the BHIO (Figure 2). Majority of the cases that are being reported in women in their 4^{th} and 5^{th} decade of life and nearly one third of the patients have breast cancer before 40 years of age (Figure 3). Table 1 indicates that, Out of the 909 patients, 52.4 percent of the patients were from rural areas. Eighty eight percent of the women were Hindus, 9.1 percent were Muslims and 4.6 percent were Christians. Seventy three percent of the affected women were married. One tenth of the women were nulliparous. Fifty – eight percent were from nuclear families More than three fourth of the women had less than 10 years of schooling and 73 percent were not employed in any form of earning. Nearly ninety percent belonged to medium or low socio-economic status and surprisingly half the patients did not have any form of health insurance facilities and had to spend out- of- pocket for the treatment facilities.

Table 1 Demographic profile of breast cancer cases reported between 2007-2011 (N=909)

Variable	Category	Frequency	Percentages
Area of residence	Urban Areas	433	47.6
	Rural/ Non Urban Areas	479	52.4
Religion	Hindu	784	86.2
	Muslim	83	9.1
	Christian	42	4.6
Marital status	Single	45	4.9
	Married	671	73.8
	Widow/ divorced	192	21.1
Educational status	Illiterate	262	28.8
	Less than 10 years of schooling	423	46.6
	More than ten years of schooling	222	24.4
Occupational status	Employed	243	27
	Unemployed	665	73
Type of family	Nuclear		
Socio-economic status	High	104	11.4
	Medium	509	55.9
	Low	290	31.9
Health Insurance facility	No	437	53.6
Parity	Nulliparous	84	9.2
	Parous (1 or 2 children)	461	50.7
	Multiparous (3 or more children)	384	42.2

Clinical pattern

Tables 2, 3 and Figure 4. depicts that there was equal involvement of both the breast. The mean duration of presentation to hospital with symptoms of lump in the breast was around 3 to 6 months and three-fourth of the breast cancer patients presented to hospital with locally advanced breast cancer. History of diabetes and hypertension was given by 36.3% and 43.3% of the breast cancer patients, respectively. The predominant histopathological finding was infiltrating ductal carcinoma and half of the tumors were either negative for estrogen or progesterone receptors. Around one fourth of the tumors had an over expression of Her2/Neu receptors. Fifty percent of the tumors were triple negative.

DISCUSSION

The existing National cancer registries in India cover less than 5 % of the Indian population. In the background of an inadequate nationwide comprehensive cancer surveillance system, the region wise epidemiological information on the pattern of breast cancer are essential for policy makers and planners to determine the priorities for breast cancer control in any population. The aim of this retrospective study was to understand the epidemiological pattern of breast cancer

patients treated in a cancer hospital situated in Mysore, Southern Karnataka. Majority (59%) of the breast cancer patients who sought care and treatment at the Cancer Hospital Were in their fourth or fifth decade of life.

Table 2 Clinical pattern of reported breast cancer cases at BHIO from 2007-2011 (n= 909)

Variable	Category	Frequency	Percentages
Average duration with history of lump in the breast - 3 to 6 Months (Range – 3 days to 2 years)			
Laterality of tumor	Left	411	50.1
	Right	402	49
	bilateral	6	0.7
History of diabetes (n=344)	Yes	126	36.3
History of hypertension (n=344)	Yes	148	43.3
Type of treatment At BHIO	Surgery	360	40.4
	Chemotherapy	241	26.9
	Radiotherapy	240	26.4

Table 3 Histopathological pattern of breast cancer cases reported between 2007-2011

Variable	Category	Frequency	Percent
Histopathological finding (n=732)	Infiltrating duct carcinoma	644	88.1
Estrogen Receptor (n=375)	Positivity	199	53.0
Progesterone receptor(n=375)	Positivity	189	50.4
Her 2 receptor status	Positivity	74	25.6
Triple receptor (n=375)	Negative	189	50.2

However, in a similar hospital based study that was carried out in coastal Karnataka has observed two peaks in the age of incidence at 35-39 and 50-54 years.(Chauhan *et al*, 2011) Astonishingly, the annual NCRP report for the year 2013 has reported that the incidence of breast cancer in Bangalore has increased to such an extent that, Bangalore has been called as the "Breast cancer Capital" of India and majority of the cases are occurring between 35-55 years of age.(www.siliconindia.org, Pink India Statistics) The peak after 50 years is expected because with age the duration of endogenous hormonal exposure, influence of reproductive factors and radiation exposure is possible.

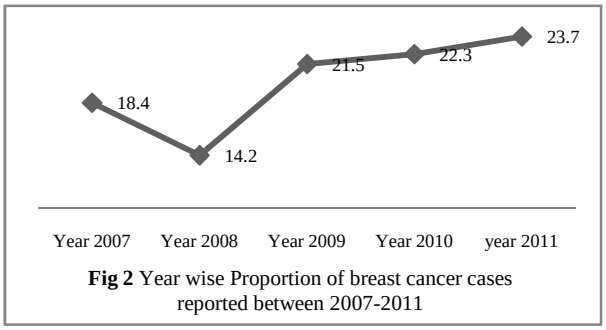

Fig 2 Year wise Proportion of breast cancer cases reported between 2007-2011

The reason for occurrence of breast cancer at younger age need to be explored especially if there are any genetic and environmental involvement. If similar trends continue in Mysore and adjoining districts then in the coming years more women in their 3rd and 4th decades of life are at risk of developing breast cancer. Evidence say that young women with breast cancer have a poor prognosis and low survival rate when compared to older women with breast cancer. (Shavers *et al*, 2003; Mathew A *et al*, 2004) .Earlier breast cancer was more among urban women (ICMR,2010) and less in rural areas, but in the present study 52.4% of the women are from rural areas indicating that cancer trend is increasing even in rural areas. In a study conducted in a tertiary hospital in North India also the breast cancer cases were more from rural areas (69%) (Sandhu D *et al*, 2010) As per the reports from rural cancer registry in India, because of community awareness programs and cancer screening clinics, the burden of cancer cervix is decreasing in rural areas and the magnitude of breast cancer has increased;(ICMR, 2010;Jayanth K *et al*, 2010)

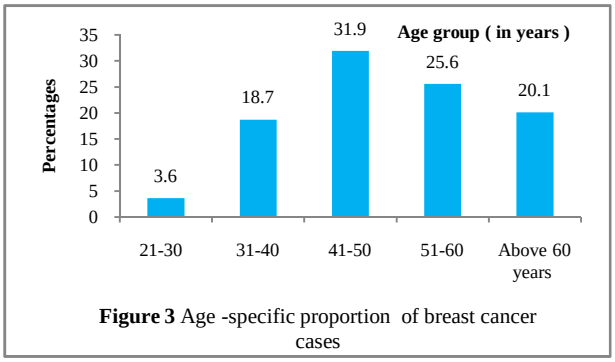

Figure 3 Age -specific proportion of breast cancer cases

Clinical presentation and implications on management of cases

Lump in the breast was the chief presenting complaint in majority (95%) of the patients, as observed in other studies (Chauhan *et al*, 2011; Sandhu *et al*, 2010) and average duration of presentation to the hospital from the onset of symptom was 3 to 6 months with a range of 3 days to 2 years. In our study, two- thirds of the patients presented with locally advanced breast cancer, which is in accordance to reports from other studies.(Agarwal G and Pooja R, 2008). Delayed presentation has been related to lack of awareness and knowledge regarding breast cancers. Thus, there is a need to create awareness among women about breast cancer screening methods like Breast self examination, clinical examination and mammography.

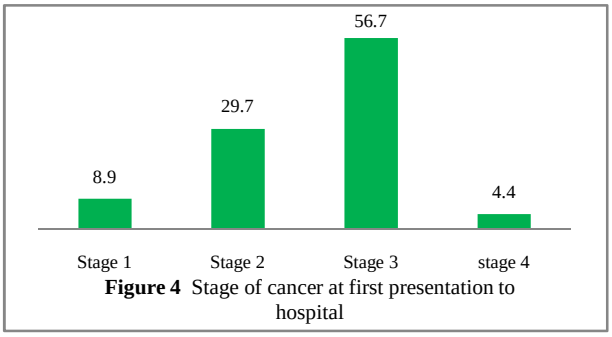

Figure 4 Stage of cancer at first presentation to hospital

The commonest histopathological finding in our study was infiltrating ductal carcinoma (88%). Other studies in India and western world also have similar findings. (Chopra R, 2001; Goel A, 2003) .Whereas, in Western countries, breast cancer has undergone a dramatic evolution since the mid 1980's. Subsequent to the widespread availability of mammographic screening programs, clinically occult non-palpable lesions are identified where 20% of breast carcinoma being ductal carcinoma *in situ.* (Evans A.J *et al*, 2001; Ernster VL *et al*, 2002) The morphological analysis of breast tumor would aid to differentiate sporadic cases from hereditary breast cancers to some extent and has implications in the in the management of breast cancer. In the Nearly half of the tumor were either negative for Estrogen or progesterone receptors and half the

tumors were triple receptor negative (i.e Negative for Estrogen, Progesterone and Her 2/ neu receptors) and such tumors have worse prognosis.(Zhang Z *et al*, 2013)

In our study, the metastatic follow-up was done for the patients based on clinical signs and symptoms and clinical examination. In less than ten percent of the cases investigation like PET Scan, X- ray Spine, Chest X-ray, Ultrasound abdomen was performed and only 70 percent of the patients have taken some form of cancer directed treatment at the reporting cancer institute and nearly 30 % of the patients are lost to follow up. This implies that cancer patients are not financially well supported for the comprehensive breast cancer care. Strategies need to be developed to address economic issues, proper referral system from primary physicians to tertiary cancer treatment centres and need ensure that follow up of patients can be done.

The findings from this study indicate an overall increase in reporting of breast cancer among women in their 4^{th} or 5^{th} decade of life, especially as locally advanced breast cancers which could be taken as proxy measure for breast cancer situation in southern Karnataka. Need for better documentation of cancer incidences through a Population based registry in this region cannot be ruled out. As more than three- fourth of the patients belong to middle- low income families and nearly half of the patients do not have any form of health insurance facilities and lack a comprehensive care for breast cancer.

Limitations of the study

The study is based on obtaining data from the cancer records, is one of the limitation in our study. As the hospital patient case record are not standardised and uniform, the details on risk factors are not recorded in all case records. There is a need to use standard cancer case record formats that are available from National Cancer Registry Program to document comprehensive details of cases and would help in better documentation of risks and such data are useful for research activities.

Future Research implications

Research to understand the role of culture, ethnicity, religion, lifestyle, dietary pattern, environmental factors and genetic factors in the occurrence of breast cancer especially in the younger women need to be carried out. With the use of information technology i.e e-records, electronic database and Geographic information System (GIS) tools, documentation and integration of government, private hospitals cancer institute's and teaching hospitals with academic research organizations will help to translate research into practice.

CONCLUSIONS

In conclusion, to reduce the burden of breast cancer in India, considering the low- resource setting, improvements in national guidelines are vital and strategies need to include raising awareness of breast cancer among both urban and rural women, empowering women for breast self examination, improving access to mammographic screening facilities, ensuring that there is uniform availability and accessibility to surgeons and oncologists, as well as chemotherapy and radiotherapy facilities at affordable costs .

Conflicts of Interest

Acknowledgements

Our Sincere Thanks to Bharath Hospital and Institute of Oncology for providing the permission to obtain breast cancer data from the hospital.

References

Agarwal G and Pooja R. (2008). Breast cancer care in India: The current Scenario and the challenges for the future. *Breast care*, **3,** 21-27. Available from www.karger.com/brc.

Bangalore from IT capital to Breast Cancer capital.www.siliconindia.com/news/general/-155616-cid.html. Accessed on 7.3.2014.

Chauhan A, Subba SH, Menezes RG *et al*.(2011).Younger women are affected by breast cacner in South India. A hospital – based Descriptive study. Asia Pacific J Cancer Prev, 12, 709-11.

Chopra R. (2001) The Indian Scene. *Journal of Clinical Oncology*, 19, 106-11.

Ernster VL, Ballard-Barbash R, Barlow W E *et al* (2002). Detection of ductal carcinoma in situ in women undergoing screening mammography. *J Natl Cancer Inst*, 94 (20), 1546-54

Evans A J, Pinder S E, Ellis I O *et al* (2001).Screen detected ductal carcinoma in situ(DCIS): Overdiagnosis or an obligate precursor of invasive disease? *J Med Screen*, **8**, 149.

Ferlay J, Soerjomataram I, Ervik M, *et al* (2013). GLOBOCAN 2012 v1.0, Cancer Incidence and Mortality Worldwide: IARC Cancer Base No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer. Available from http://www.globocan.iarc.fr.

Goel A, Bhan CM, Srivastava KN (2003) Five year clinic-pathological study of breast cancer, *Indian J Med Sci*, **57**, 347-9.

IARC,(2013). Latest World Cancer Statistics. Available from www.iarc.fr/en/media-centre/pr/2013/pdfs/pr 223_E.pdf. Last Accessed on 5th March 2014.

ICMR Bulletin. (2010). Time Trends in Cancer Incidence Rates 1982-2005, 40(2), Available from http://icmr.nic.in/bulletin/english/2010/ICMR%20Bulletin%20February%202010.pdf. Accessed on 15^{th} March 2014.

Jayant K, Nene BM, Badwe RA *et al* (2010). Rural cancer registry at barshi, Maharashtra and its impact on cancer control. *Natl Med J India*, **23(5),** 274-7.

Mariam Vahdaninia and Ali Montazeri (2004). Breast Cancer in Iran: a Survival Analysis. *Asian Pacific J Cancer Prev*, **5**, 223-225.

Parkin DM (2001). Global Cancer statistics in the year 2000. *Lancet Oncol*, **2** , 533.

Pink Indian Statistics: Trends of breast cancer in India. Available from http://www.breastcancerindia.net/bc/statistics/stati.html

Sandhu DS, Sandhu S, Karwasra RK *et al*. (2010).Profile of breast cancer patients ata tertiary care hospital in North India. *Indian J Cancer* [Serial Online][cited 9^{th} March 2014], **47**,16-22. Available from

http://www.indianjcancer.com/text.asp?2010/47/1/16/58853

Shavers VL, Harlan LC, Stevens JL (2003). Racial/ethnic variation in clinical presentation, treatment, and survival among breast cancer patients under age 35. *Cancer*, **97**, 134-47.

WHO,(2013). Global Health Estimates: 2013. Breast Cancer: Prevention and control. Available from http:// www.who.int/cancer/detection/breast cancer/en/index.html.

Zhang Z, Wang J, Tacha D E *et al*. (2013) Folate Receptor associated with triple –negative Breast Cancer and Poor Prognosis. *Archives of Pathology and Laboratory Medicine*In Press. 650**doi:** http://dx.doi.org/10.5858/arpa.2013-0309-OA.

****