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Original Research Paper

Epidemology

PATTERN OF FEMALE BREAST CANCER INCIDENCE IN DIBRUGARH DISTRICT OF ASSAM, INDIA: A POPULATION BASED STUDY DURING THE PERIOD 2012-2018

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ABSTRACT Breast cancer is the most common female cancer worldwide. The incidence of breast cancer is rising in India, specially in the north eastern region of the country including Assam, where lack of cancer awareness and limited cancer screening programme leads to advance stage at diagnosis of the disease furthermore rise in mortality. Dibrugarh District of Assam is predominantly a rural district where 81.6% of the population lives in rural areas of the district. This paper is based on the data reported in Population Based Cancer Registry (PBCR), Dibrugarh during the period 2012-2018 to see the pattern of female breast cancer incidence in the district. Breast Cancer has been the leading site of cancer among the women of Dibrugarh District comprising of 21% of all female cancer cases. Ductal carcinoma (82.3%) was the most common morphology type of the disease. Crude (CR) and Age Adjusted (AAR) incidence rates were increases from 11.0 and 12.4 in the year 2012 to 15.3 and 15.9 per 100,000 females respectively in the year 2018. A significant increase in the incidence rates of breast cancer was also observed with an annual percent change (APC) of 4.1% in the district.

KEYWORDS : Incidence, Breast Cancer, morphology, carcinoma, Crude Incidence rate, Age Adjusted Incidence rates, Annual percent change

INTRODUCTION

Breast cancer is the most common malignancy in women around the world. According to the WHO report, 2020 there were 2.3 million women diagnosed with breast cancer and 6,85,000 deaths globally. The incidence of breast cancer is rising in India. According to the latest report of ICMR-NCDIR 2020,breast cancer incidence was highest in Hyderabad District (AAR-48.0),followed by Chennai (AAR-46.0) and Bangalore (AAR-35.0) per 100,000 females at risk. Again, the North-Eastern (NE) region has the highest incidence of cancer in India, and is also burden by higher prevalence of risk factors and inadequate cancer treatment facilities. Among the women in the region, Breast cancer was the leading site of cancer with a highest incidence rate in Aizwal District of Mizoram (AAR-30.7) followed by Papumpare District of Arunachal Pradesh(AAR- 29.6) and Kamrup urban district of Assam (AAR-27.1 per 100,000 females).

Dibrugarh District of Assam is predominantly a rural district where 81.6% (census 2011)of the population lives in rural areas of the district. There are 152 tea gardens in the district having workforce constituting 16.6% of the total population. The district has a sex ratio of 961 per 1000 males. Female literacy rate is lower than males and stands at 68.99.Most of the married women were housewives and engaged in their own household works.

Breast Cancer has been the leading site of cancer among the women of Dibrugarh District since the inception of the registry in the year 2003. It has also been observed that the incidence rates were constantly increasing over the periods. This paper analyzed the PBCR, Dibrugarh data for the period 2012-2018 to see the pattern of female breast cancer incidence in the district. Statistical tools like Crude Incidence Rates (CR), Age Adjusted Rates (AAR) and percentage were used to analyze the data.

DISCUSSION

During the year 2012-2018 altogether 645 new female breast cancer cases have been registered at PBCR, Dibrugarh out of which 212 (32.9%) cases were from urban and 433 (67.1%) cases were from rural areas of the District. The relative proportion of breast cancer to all sites of female cancers in Dibrugarh district was 20.6. The proportion was highest in urban areas (23. 4) than rural areas (19.5) of the district; Table 1.

Table 1: Number (#) and relative proportion (%) of breast cancer cases relative to all sites of female cancer cases: Dibrugarh District 2012-2018

Sites	Urban		Rural		Dibrugarh Dist.	
	#	%	#	%	#	%
Breast Cancer	212	23.4	433	19.5	645	20.6
All Sites	905	100.0	2220	100.0	3125	100.0

Incidence Rates: Overall average annual Crude Incidence Rate (CR), Age Adjusted Incidence Rate (AAR) and Truncated Rate(TR) for breast cancer cases in Dibrugarh District were 13.4, 14.5 and 36.0 respectively. Crude and Age adjusted rates were increases form 11.0 and 12.4 in the year 2012 to 15.3 and 15.9 per 100,000 females respectively in the year 2018; Table2.

Table 2: Crude (CR), Age Adjusted (AAR) and Truncated (TR) Incidence Rates of Breast cancer in Dibrugarh district per 100,000 females at risk.

Year	CR	AAR	TR*
2012	11.0	12.4	32.8
2013	13.7	15.7	32.5
2014	13.7	14.2	34.9
2015	13.2	14.7	35.7
2016	14.7	15.9	37.2
2017	12.1	12.8	34.9
2018	15.3	15.9	42.7
2012-2018	13.4	14.5	36.0

*Truncated Rate is similar to the age adjusted rate calculated for the truncated age group 35-64 years of age

Basic Demographic Parameters: Among all female breast incidence cases Hindu, Muslim and Christians were accounted for 91.8%, 5.1% and 2.0% respectively. According to marital status of the case, 74.6% were married women, 7.8% were unmarried and 11.3% of them were widow. Overall 42.3% and 20.0% of women with cancer breast had primary + middle and secondary level of education respectively. Only 8.7% of

patients were literate whereas 16.4% of them were illiterate; Table 3.

Table3: Basic Demographic Parameters

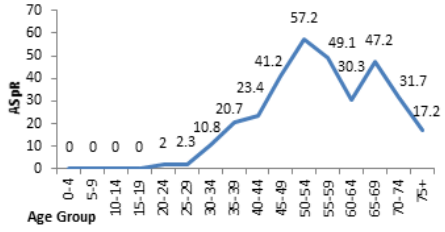
	No.	%
Marital Status		
• Married	481	74.6
• Unmarried	50	7.8
• Widowed	73	11.3
• Others	3	0.5
• Unknown	38	5.8
Religion		
• Hindu	592	91.8
• Muslim	33	5.1
• Christian	13	2.0
• Others	7	1.1
Education		
• Illiterate	106	16.4
• Literate	56	8.7
• Primary+Middle	273	42.3
• Secondary	129	20.0
• College & above	36	5.6
• Unknown	45	7.0

Cancer incidence by age group: The incidence of breast cancer was highest in the age group (35-64 years); Table4.1, with the peak incidence occurring in the age group of 50-54years (ASpR=57.2); Table4.2

Table4.1: Cancer incidence by age group

Age Group	AAR
0 – 14	0
15 – 34	3.2
35 – 64	36.0
65+	34.2

Table4.2: Age Specific Incidence rate (ASpR)



Diagnostic Details: The distribution of female breast cancer by subsite showed that the Unspecified parts of breast constituted the majority (94.4%) followed by the Upper Outer Quadrant (1.7%), Lower Outer Quadrant(1.1%), Upper Inner Quadrant(0.9%) and Lower Inner Quadrant(0.9%) of breast; Table5.1. The histological verification of cancer diagnosis was possible in 89% of breast cancer cases. The Ductal carcinoma (82.3%) was the most common morphological type followed by Lobular carcinoma (1.7%), Medullary carcinoma (0.8%), Infiltrating duct and lobular carcinoma (0.5%), Cystosarcoma phyllodes (0.5%), Carcinoma Unspecified (0.5%) and Others (1.7%); Table 5.2.

Table5.1: Sub site

Subsite	No.	%
Nipple	4	0.6
Upper inner quadrant	6	0.9
Lower inner quadrant	6	0.9
Upper outer quadrant	11	1.7
Lower outer quadrant	7	1.1
Overlapping lesion	2	0.3
NOS	609	94.4

Table5.2: Morphology

Histology Type	No.	#
Carcinoma		
Ductal carcinoma	531	82.3
Lobular carcinoma	11	1.7
Medullary carcinoma	5	0.8
Infiltrating duct and lobular carcinoma	3	0.5
Paget's disease	1	0.2
Comedo carcinoma	2	0.3
Papillary carcinoma	1	0.2
Tubular Adenocarcinoma	1	0.2
Others/Carcinoma NOS	14	2.2
Sarcoma		
Cystosarcoma phyllodes	3	0.5
Stromal Sarcoma	1	0.2
Histological verification	573	88.9
No histological verification	72	11.1

Comparison of Age Adjusted Incidence Rates (AARs): As per the report of National Cancer Registry Programme (NCRP) published by ICMR-National Centre for Disease Informatics and Research -2020; Among all 28 Population Based Cancer Registries (PBCRs) in India, female breast cancer incidence was highest in Hyderabad district (AAR – 48.0) followed by Chennai (AAR-42.2) and Bangalore (AAR-40.5). Dibrugarh district of Assam ranked 22nd (AAR- 14.7) in the list; Table6.1.

Among the North Eastern PBCRs of India, Aizwal district of Mizoram state (AAR- 30.7) has the highest incidence rate of female breast cancer followed by Papumpare district of Arunachal Pradesh (AAR-29.6) and Kamrup Urban District of Assam (27.1). Dibrugarh District ranked 7th in the comparison among the 15 north eastern PBCRs; Table6.2.

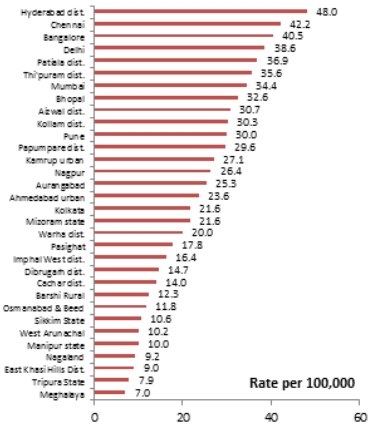


Table6.1: Comparison of Age Adjusted Incidence Rates (AARs) of female breast cancer among 28 PBCRs under NCRP

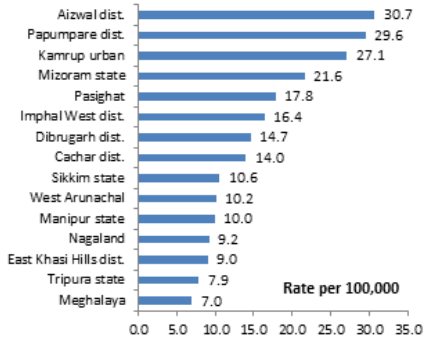


Table6.2: Comparison of Age Adjusted Incidence Rates (AARs) of female breast cancer among 15 North Eastern PBCRs under NCRP

Time Trend: A significant increase in the incidence rates of breast cancer was observed in 15 PBCRs of India with an Annual Percent Change (APC) ranged from 0.5 in Barshi rural to 6.8 in Aurangabad. Dibrugarh District also showed a

significant increase in the incidence rates of breast cancer with an APC of 4.1%; Table 7.

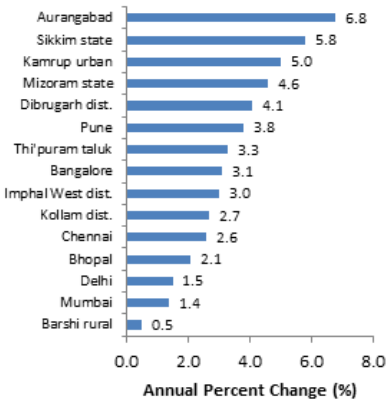


Table7: Annual Percent Change (APC) in Age Adjusted Incidence Rates (AAR) over the time period 2012-2016

CONCLUSIONS:

Breast Cancer has been the leading site of cancer among the women of Dibrugarh District comprising of 21% of all female cancer cases. It has also been observed that breast cancer incidence increases alarmingly in the district. Ample Cancer Awareness and screening programme can help in early detection of the disease which leads to prevent the overall morbidity of the disease to an extent in the district.

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