Section II

SUMMARY OF SELECTED ANATOMICAL SITES OF CANCER

This section provides a summary of details on selected anatomical sites of cancer (breast, cervix uteri, head & neck, lung and stomach). The sites are classified as per the International Classification of Diseases (ICD-10), because of easy comparability of data with registries across the world. The above mentioned anatomical sites selected have featured as leading sites in most of the cancer registries under the NCRP.

The details provided, pertains to the actual number (No.) of cancers registered in the 28 PBCRs in the period (2012-2016) and their proportion or percent (%) relative to all sites of cancer for that gender. It includes the order or rank of the site of cancer and is based on the Age Adjusted Rates (AARs). The Crude rate per 100,000 population and Truncated Rates (TRs) are also provided. The pooled analysis of 58 HBCRs is also presented for cases treated only at the reporting HBCR institution.

The age distribution table is based on age specific incidence rates according to five-year age groups and regions in India. The Annual Percentage Change (APC) in AARs over the time period for registries that have contributed to more than 10 years data since inception of the registry have been depicted.

The number and relative proportion of patients according to clinical extent of disease at the time of diagnosis, types of treatment and educational status as seen in pooled data of 58 HBCRs is indicated for selected sites. The analysis of cases treated only at Reporting Institute (RI) have been carried out and not for those which have received prior treatment outside RI. The predominant histologic type (WHO classification of tumours) of cancer and its relative proportion (relative to all microscopically diagnosed cases) encountered in the 58 HBCRs have been reported in this section. 'Others' as the clinical extent of disease and 'others or unknown' as the treatment given were excluded from analyses.

For international comparison of selected sites of cancer, AARs of NCRP registries (2012-2016) have been compared with registries in Asian and Non-Asian countries. The reference manual is Volume XI (2008-2012) of Cancer Incidence in Five Continents (Bray F et al, 2017) which has published the data of cancer registries from all over the world. For Asian comparison, the highest AAR observed from five Asian countries is compared with the top five AARs from India. For Non-Asian comparison, the highest AAR from two different countries within each non-Asian continent have been compared with top two AARs in India.

AARs drawn for races in CI5 VOL XI and small numbers (< 10 cases) in both Indian and CI5 datasets have been excluded from comparison in all the graphs.

7

Cancer
Breast

Cancer Breast (ICD-10: C50) - Females

Table 7.1 Number of cases (n) registered for Cancer Breast and its Relative Proportion to All Sites of Cancer (%), Crude (CR), Age Adjusted (AAR) and Truncated (TR) Incidence Rates per 100,000 population and its Rank in 28 PBCRs under NCRP

Females

Sl No	Registry	n	%	CR	AAR	TR	Rank
	NORTH						
1	Delhi	8085	27.8	33.3	38.6	86.3	4
2	Patiala district	1825	30.0	38.4	36.9	90.3	5
	SOUTH						
3	Hyderabad district	2291	35.5	39.0	48.0	108.5	1
4	Kollam district	2833	29.0	40.3	30.3	74.6	10
5	Thi'puram district	4089	28.5	47.0	35.6	85.9	6
6	Bangalore	4423	27.9	35.0	40.5	89.0	3
7	Chennai	5464	32.5	46.0	42.2	95.3	2
	EAST						
8	Kolkata	2271	24.8	26.3	21.6	49.1	17
	WEST						
9	Ahmedabad urban	3437	31.2	23.3	23.6	53.3	16
10	Aurangabad	673	33.6	21.1	25.3	60.6	15
11	Osmanabad & Beed	1049	23.5	12.4	11.8	28.4	25
12	Barshi rural	159	19.6	13.1	12.3	29.9	24
13	Mumbai	8226	30.0	35.2	34.4	70.6	7
14	Pune	3513	32.5	27.0	30.0	63.0	11
	CENTRAL						
15	Wardha district	724	28.5	22.5	20.0	51.2	19
16	Bhopal	1111	31.0	28.0	32.6	76.4	8
17	Nagpur	1832	30.3	28.2	26.4	63.3	14
	NORTH EAST						
18	Manipur state	695	15.4	8.9	10.0	24.4	28
	Imphal West district	235	15.7	16.9	16.4	38.7	21
19	Mizoram state	506	13.5	17.3	21.6	53.0	18
	Aizawl district	293	15.4	26.9	30.7	72.3	9
20	Sikkim state	138	12.2	9.2	10.6	25.3	26
21	Tripura state	707	14.4	7.5	7.9	20.5	31
22	West Arunachal	142	12.1	6.8	10.2	24.8	27
	Papumpare district	89	16.9	17.7	29.6	73.8	12
23	Meghalaya	227	8.0	4.5	7.0	17.6	32
	East Khasi Hills district	142	8.2	6.3	9.0	21.8	30
24	Nagaland	121	12.2	6.9	9.2	24.7	29
25	Pasighat	51	16.8	14.8	17.8	41.6	20
26	Cachar district	556	14.1	12.3	14.0	33.8	23
27	Dibrugarh district	454	20.3	13.4	14.7	34.8	22
28	Kamrup urban	840	17.5	26.4	27.1	59.8	13

Total number of cases (N) registered and reporting year of data for all sites is mentioned in Table 1.2

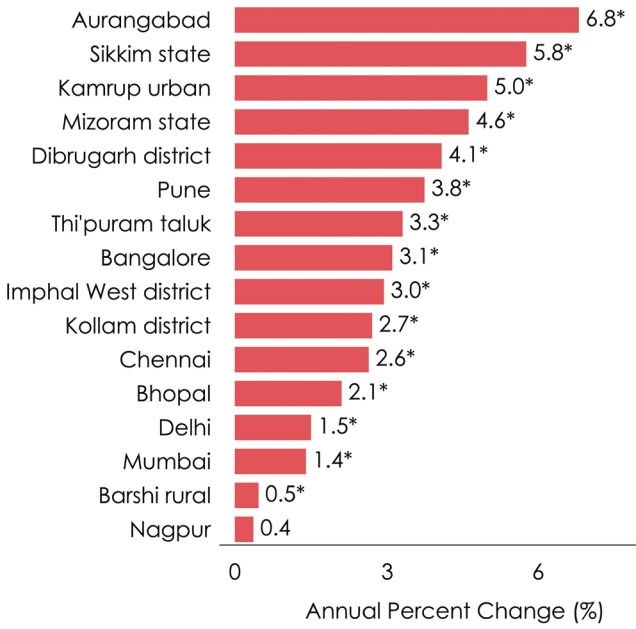
Cancer breast is the leading site of cancer in females. Hyderabad district ranked first in breast cancer (48.0 per 100,000) among all PBCRs.

Fig. 7.1 Age Specific Incidence Rates per 100,000 in 28 PBCRs under NCRP - Cancer Breast (Females)

Region	Registry	Five Year Age Group															
		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75+
NORTH	Delhi	0.0	0.0	0.0	0.0	2.5	6.1	16.0	32.8	56.5	83.4	115.0	131.0	135.0	155.2	155.4	122.2
	Patiala district	0.0	0.0	0.3	0.9	2.5	4.3	20.6	36.2	69.8	96.5	118.0	123.4	125.4	123.7	95.9	69.0
SOUTH	Hyderabad district	0.0	0.0	0.0	0.2	1.2	5.2	13.1	37.7	61.8	113.5	128.8	166.2	194.5	216.0	198.3	131.7
	Kollam district	0.0	0.0	0.0	0.4	1.7	3.8	16.5	32.2	53.1	86.5	98.0	91.5	106.6	108.0	65.7	59.0
	Thi'puram district	0.0	0.0	0.0	0.5	1.6	6.1	15.5	30.4	59.4	90.5	111.4	117.5	138.6	121.7	115.0	71.4
	Bangalore	0.0	0.0	0.0	0.3	1.7	4.7	12.9	28.5	54.5	77.8	116.3	151.6	151.4	175.0	177.7	140.5
	Chennai	0.0	0.0	0.0	0.4	0.6	4.4	15.0	31.3	62.6	88.2	130.5	142.2	160.1	176.0	144.6	158.8
EAST	Kolkata	0.0	0.0	0.0	0.0	1.4	4.3	12.1	21.4	37.5	50.4	60.5	74.9	66.2	80.9	65.0	75.1
WEST	Ahmedabad urban	0.0	0.0	0.1	0.6	1.3	3.7	10.9	22.7	35.3	48.6	70.5	70.5	94.4	100.1	83.8	63.2
	Aurangabad	0.0	0.0	0.0	0.3	1.4	4.0	13.5	19.7	43.7	58.4	72.2	92.3	104.8	92.1	80.5	43.7
	Osamanabad & Beed	0.1	0.0	0.0	0.4	0.9	2.0	5.7	14.0	25.5	31.5	35.3	30.6	39.0	43.4	33.6	20.4
	Barshi rural	0.0	0.0	0.0	0.0	0.9	0.0	3.6	8.3	22.4	41.5	36.0	35.9	42.5	59.9	37.0	10.6
	Mumbai	0.0	0.0	0.3	0.4	1.3	4.2	11.5	25.3	44.4	67.7	87.6	104.4	127.5	163.2	151.3	167.7
	Pune	0.0	0.0	0.0	0.0	1.0	3.2	9.2	22.4	39.6	65.4	74.8	90.4	113.7	150.1	126.7	124.4
CENTRAL	Wardha district	0.0	0.0	0.0	0.4	0.6	5.4	11.8	26.7	48.4	56.7	61.3	62.5	60.1	49.7	38.8	30.2
	Bhopal	0.0	0.0	0.0	0.2	1.4	4.9	18.4	28.6	57.0	66.8	101.6	115.9	120.8	123.2	119.3	59.7
	Nagpur	0.2	0.0	1.0	1.5	3.8	6.3	16.2	37.6	52.5	66.0	70.0	78.8	90.5	79.4	60.0	55.8
NORTH EAST	Manipur state	0.0	0.0	0.0	0.0	0.5	2.9	7.8	15.6	23.8	26.2	30.2	27.7	24.9	23.3	27.6	20.6
	Imphal West district	0.0	0.0	0.0	0.0	0.8	4.3	13.0	24.5	38.4	53.8	38.3	37.6	39.1	55.7	47.5	28.5
	Mizoram state	0.0	0.0	0.0	0.4	1.0	4.3	12.3	31.0	54.4	50.4	64.2	60.1	67.0	78.9	49.5	28.2
	Aizawl district	0.0	0.0	0.0	0.0	2.6	6.4	12.8	44.2	78.7	68.8	101.6	68.4	77.4	129.2	103.8	40.7
	Sikkim state	0.0	0.0	0.0	0.0	0.0	2.5	14.7	11.0	23.3	37.7	27.9	32.4	21.0	21.8	38.3	12.9
	Tripura state	0.0	0.0	0.0	0.1	0.4	1.9	6.6	11.5	18.3	22.7	21.8	28.2	24.8	19.8	7.2	9.0
	West Arunachal	0.0	0.0	0.0	0.0	1.8	4.7	6.5	16.3	14.4	35.8	28.9	40.8	15.3	22.1	32.7	13.9
	Papumpare district	0.0	0.0	0.0	0.0	4.8	7.9	20.5	56.1	40.9	70.6	87.7	156.2	54.6	36.8	102.9	65.6
	Meghalaya	0.0	0.0	0.0	0.0	0.0	1.2	3.0	8.5	18.1	20.9	20.4	13.0	26.4	19.0	10.6	25.6
	East Khasi Hills district	0.0	0.0	0.0	0.0	0.0	0.5	3.6	9.4	18.9	24.2	30.6	15.4	36.7	31.7	16.7	36.5
	Nagaland	0.0	0.0	0.0	0.0	0.5	2.7	6.5	19.4	19.6	28.0	40.0	29.5	11.7	10.7	16.0	10.5
	Pasighat	0.0	0.0	0.0	0.0	5.7	6.4	14.9	35.0	48.5	35.2	63.7	42.0	22.8	67.5	25.5	25.0
	Cachar district	0.0	0.0	0.2	0.0	3.5	7.1	8.2	25.0	34.2	35.7	43.8	36.2	28.2	34.6	20.9	37.5
	Dibrugarh district	0.0	0.0	0.0	0.0	2.0	3.2	12.1	23.2	21.1	42.8	53.2	43.4	29.1	49.3	43.3	20.4
	Kamrup urban	0.0	0.0	0.0	0.0	1.5	8.5	17.3	30.6	41.3	60.1	79.2	82.8	83.9	106.0	114.7	63.9

The age specific cancer incidence rate in females started increasing with increase in age and peaked in the age group 50-69.

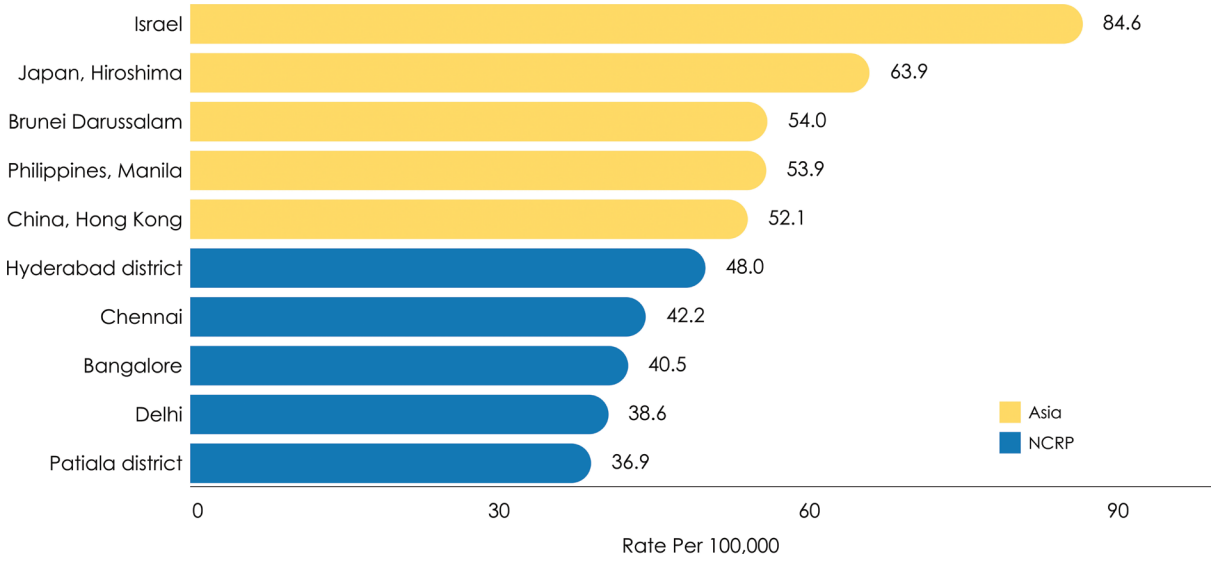
Fig. 7.2 Annual Percent Change (APC) in Age Adjusted Incidence Rates (AAR) over the time period - Cancer Breast (Females)



*Increase in APC, Decrease in APC ; *Significant increase or decrease in APC at 95% confidence level*

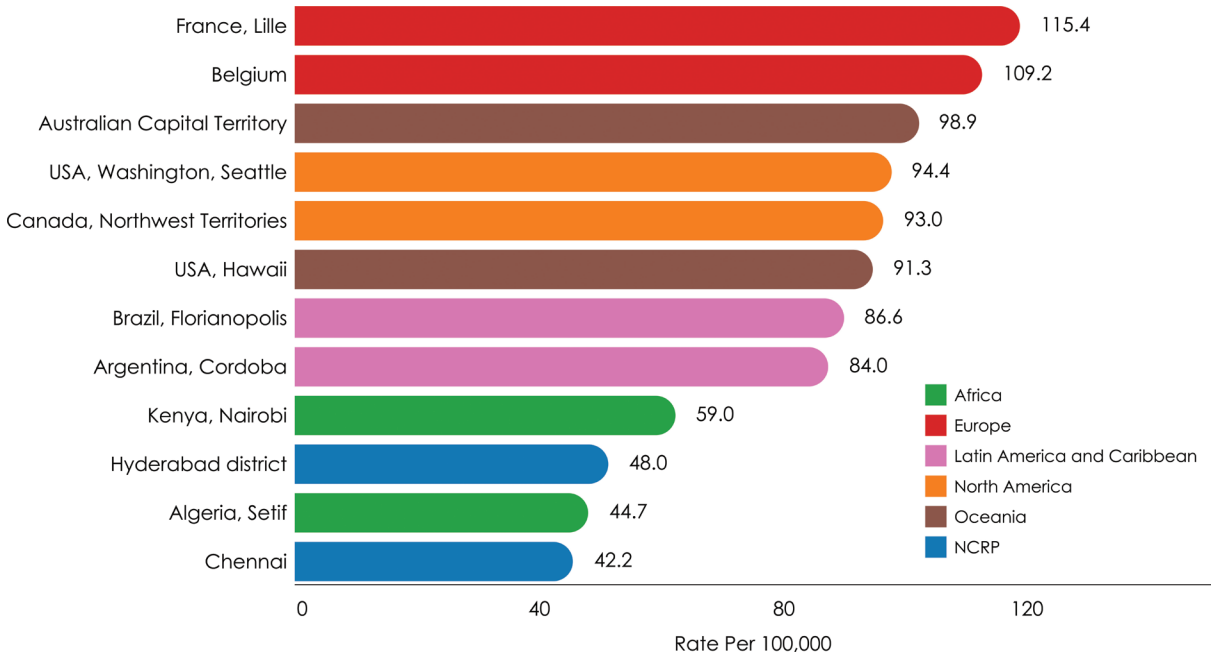
There was a significant increase in incidence rates of breast cancer across all PBCRs over the years, except in Nagpur PBCR.

Fig. 7.3 Comparison of Age Adjusted Incidence Rates (AAR) of Asian countries with PBCRs under NCRP - Cancer Breast (Females)



Israel (84.6 per 100,000) had the highest incidence of breast cancer in Asia. In India, Hyderabad district (48.0 per 100,000) had the highest incidence rate.

Fig. 7.4 Comparison of Age Adjusted Incidence Rates (AAR) of Non-Asian countries with PBCRs under NCRP - Cancer Breast (Females)



Lille in France (115.4 per 100,000) had the highest breast cancer incidence rate in the world.

Table 7.2 Number of cases (n) registered for Cancer Breast and its Relative Proportion to All Sites of Cancer (%), Crude (CR), Age Adjusted (AAR) and Truncated (TR) Incidence Rates per 100,000 population and its Rank in 28 PBCRs under NCRP

Males

Sl No	Registry	n	%	CR	AAR	TR	Rank
	NORTH						
1	Delhi	315	1.0	1.1	1.5	2.6	2
2	Patiala district	78	1.4	1.5	1.6	3.2	1
	SOUTH						
3	Hyderabad district	42	0.8	0.7	0.8	1.8	8
4	Kollam district	31	0.3	0.5	0.4	0.9	16
5	Thi'puram district	105	0.8	1.3	1.1	2.1	4
6	Bangalore	107	0.8	0.8	1.0	1.7	7
7	Chennai	77	0.5	0.6	0.6	1.1	13
	EAST						
8	Kolkata	91	0.9	1.0	0.8	1.4	9
	WEST						
9	Ahmedabad urban	108	0.7	0.7	0.7	1.4	11
10	Aurangabad	20	1.0	0.6	0.7	1.2	12
11	Osmanabad & Beed	49	1.3	0.5	0.6	1.3	14
12	Barshi rural	2	0.3	0.1	0.1	0.0	29
13	Mumbai	205	0.8	0.8	0.8	1.4	10
14	Pune	135	1.4	0.9	1.1	2.3	5
	CENTRAL						
15	Wardha district	15	0.6	0.4	0.4	0.9	17
16	Bhopal	38	1.1	0.9	1.1	2.1	6
17	Nagpur	94	1.6	1.4	1.4	2.9	3
	NORTH EAST						
18	Manipur state	10	0.3	0.1	0.2	0.3	24
	Imphal West district	4	0.4	0.3	0.4	0.6	18
19	Mizoram state	5	0.1	0.2	0.2	0.4	25
	Aizawl district	1	0.0	0.1	0.1	0.0	30
20	Sikkim state	4	0.3	0.2	0.3	0.6	20
21	Tripura state	24	0.4	0.2	0.3	0.4	21
22	West Arunachal	3	0.2	0.1	0.2	0.7	26
	Papumpare district	1	0.2	0.2	0.2	0.8	27
23	Meghalaya	9	0.2	0.2	0.3	0.7	22
	East Khasi Hills district	5	0.2	0.2	0.4	0.8	19
24	Nagaland	1	0.1	0.1	0.1	0.0	31
25	Pasighat	1	0.3	0.3	0.3	1.0	23
26	Cachar district	7	0.2	0.1	0.2	0.6	28
27	Dibrugarh district	3	0.1	0.1	0.1	0.3	32
28	Kamrup urban	20	0.3	0.6	0.6	1.5	15

Total number of cases (N) registered and calendar year of data for all sites is mentioned in Table 1.2

Table 7.3 Number (n) and Relative Proportion (%) according to Clinical Extent of Disease - Cancer Breast

Clinical Extent of Disease	Females		Males	
	n	%	n	%
Localised only	10629	29.0	221	32.6
Locoregional	20898	57.0	333	49.2
Distant Metastasis	3790	10.3	75	11.1
Unknown	1345	3.7	48	7.1
Total	**36662**	**100.0**	**677**	**100.0**

Among the data reported by the HBCRs, the majority of cases diagnosed with cancer breast in females, showed locoregional 57.0% spread, followed by 29.0% and 10.3% of cases with localized disease and distant metastasis, respectively.

Table 7.4 Number (n) and Relative Proportion (%) of Types of Treatment according to Clinical Extent of Disease - Cancer Breast (Females)

Treatment	Clinical Extent of Disease							
	Localised only		Locoregional		Distant Metastasis		Unknown	
	n	%	n	%	n	%	n	%
Surgery	1368	12.9	1283	6.1	52	1.4	221	16.5
Radiotherapy	264	2.5	404	1.9	170	4.5	145	10.8
Systemic Therapy	1077	10.2	2576	12.3	1747	46.3	307	22.9
Multi-modality*	7880	74.3	16519	79.1	1788	47.4	664	49.6
Palliative Care	21	0.2	94	0.5	19	0.5	3	0.2
Total	**10610**	**100.0**	**20876**	**100.0**	**3776**	**100.0**	**1340**	**100.0**

*Multi-modality includes the combination of Surgery and/or Radiotherapy and/or Systemic Therapy

Depending on the clinical extent of cancer breast, most typically multi-modality was the choice of treatment (locoregional: 79.1%, localized: 74.3% and distant metastasis: 47.4%). For the patients with localized disease (12.9%), surgery was the second choice of treatment. 46.3% of the patients with distant metastasis underwent systemic therapy.

Table 7.5 Number (n) and Relative Proportion (%) by Educational Status - Cancer Breast (Females)

Overall, 26.2% and 12.3% of women with cancer breast had secondary and primary level of education, respectively. Only 9.9% of the patients were literate whereas 16.7% of them were illiterate.

Educational Status	n	%
Illiterate	6141	16.7
Literate	3646	9.9
Primary	4521	12.3
Secondary	9666	26.2
Higher Education	4300	11.7
Unknown	8591	23.3
Total	**36865**	**100.0**

Table 7.6 Number (n) and Relative Proportion (%) by Broad Histological Classification - Cancer Breast (Females)

Broad Histological Classification	n	%
Epithelial Tumours	35961	97.7
Epithelial-myoepithelial tumours	14	2.3
Papillary lesions	198	
Mesenchymal tumours	57	
Fibroepithelial tumours	218	
Tumours of the Nipple	39	
Malignant Lymphoma	40	
Clinical Patterns	4	
Others	261	
All Microscopic	**36792**	**100.0**

97.7% of cases of breast cancers were diagnosed as epithelial tumours, with very few other histological types.