Executive Summary

The report contains 5 years (2012-2016) data from the network of cancer registries working under the National Cancer Registry Programme (NCRP). Number of data points and network of registries under the programme have expanded greatly since the start of the programme in 1982. The present report has included data from 28 Population Based Cancer Registries (PBCRs) and 58 Hospital Based Cancer registries (HBCRs) in India based on its completion and verification.

The aim of cancer registry is to create evidence on the burden, pattern and distribution of cancer. Incidence rates are one of the best indicators available to measure the burden of cancer. PBCRs measure the incidence rates for a defined population. Along with contributing to PBCRs, HBCRs provide data on the clinical presentation, diagnosis and care of cancer.

Compared to past NCRP reports, for the first time has the data of both PBCRs and HBCRs been provided in a single report. The data of all the HBCRs is pooled and analysed rather than providing hospital wise information.

The data of PBCR and HBCR is presented under North, South, East, West, Central and North East regions so as to characterize regional variations.

Snapshot of cancer registries provides the details of cancer registries region-wise. The location of each registry, establishment year, coverage area, leading site of cancer and sources of registration for each PBCR is illustrated. The names of HBCRs, their established year and top 5 leading sites of cancer in the HBCR is listed.

Section I

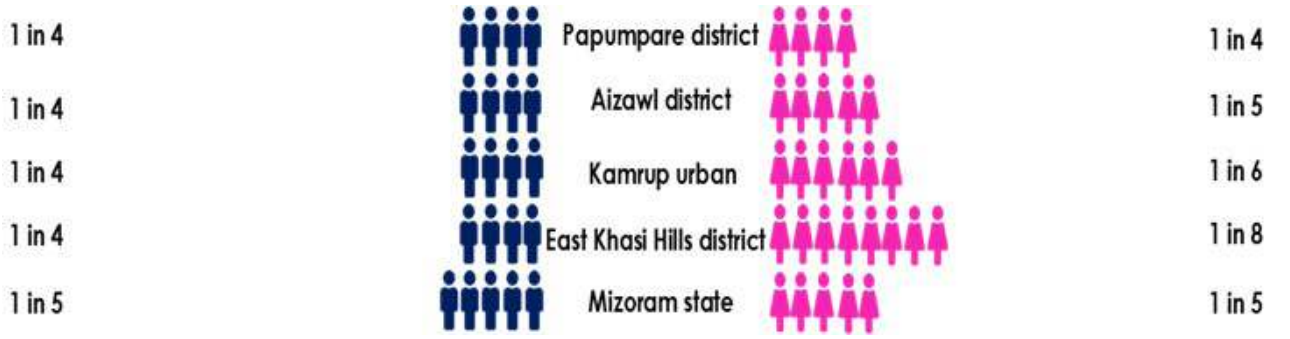
Chapter 1 enumerates the population profile of all 28 PBCRs, number of new cases of cancer, incidence rates (per 100,000 population) for all sites of cancer and cumulative risk of cancer. It lists all the HBCRs by name and enumerates the relative proportion (%) for all sites of cancer.

Delhi PBCR covered the largest population person years of 17.3 million and the lowest was 0.13 million population person years covered by Pasighat PBCR in Arunachal Pradesh. The highest Age Adjusted Rates (AAR) recorded per one lakh population for all sites of cancer combined were in Aizawl district (269.4) among males and in Papumpare district (219.8) among females. The data from PBCR Hyderabad (2014-2016) has been included for the first time in this report.

1 out of every 4 persons in Papumpare district of Arunachal Pradesh had a possibility of developing cancer in a lifetime in the age group 0-74 years.

Total cases registered by 58 HBCRs was 667666. HBCR at Tata Memorial hospital registered the highest (81260) number of cases.

Cumulative Risk of developing Cancer of Any Site in 0-74 years of Age



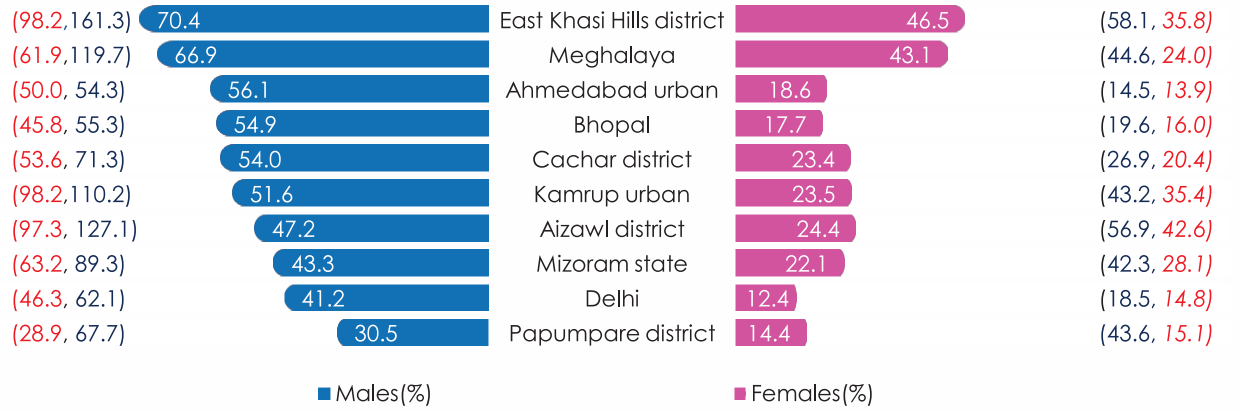
Chapter 2 The leading anatomical sites of cancer for each PBCR is summarised below.

Registry	Males			Females		
	1	2	3	1	2	3
Delhi	Lung	Mouth	Prostate	Breast	Cervix Uteri	Gall Bladder
Patiala District	Oesophagus	Lung	Prostate	Breast	Cervix Uteri	Oesophagus
Hyderabad District	Mouth	Lung	Tongue	Breast	Cervix Uteri	Ovary
Kollam District	Lung	Prostate	Mouth	Breast	Thyroid	Cervix Uteri
Thi'puram District	Lung	Prostate	Mouth	Breast	Thyroid	Ovary
Bangalore	Lung	Stomach	Prostate	Breast	Cervix Uteri	Ovary
Chennai	Lung	Stomach	Mouth	Breast	Cervix Uteri	Ovary
Kolkata	Lung	Prostate	Mouth	Breast	Cervix Uteri	Ovary
Ahmedabad Urban	Mouth	Tongue	Lung	Breast	Cervix Uteri	Ovary
Aurangabad	Mouth	Lung	Tongue	Breast	Cervix Uteri	Ovary
Osmanabad & Beed	Mouth	Tongue	Oesophagus	Cervix Uteri	Breast	Ovary
Barshi Rural	Mouth	Oesophagus	Liver	Cervix Uteri	Breast	Ovary
Mumbai	Lung	Mouth	Prostate	Breast	Cervix Uteri	Ovary
Pune	Mouth	Prostate	Lung	Breast	Cervix Uteri	Ovary
Wardha District	Mouth	Lung	Oesophagus	Breast	Cervix Uteri	Ovary
Bhopal	Mouth	Lung	Tongue	Breast	Cervix Uteri	Ovary
Nagpur	Mouth	Tongue	Lung	Breast	Cervix Uteri	Ovary
Manipur State	Lung	Stomach	Nasopharynx	Breast	Lung	Cervix Uteri
Mizoram State	Stomach	Oesophagus	Lung	Cervix Uteri	Lung	Breast
Sikkim State	Stomach	Oesophagus	Lung	Breast	Cervix Uteri	Stomach
Tripura State	Lung	Oesophagus	Larynx	Cervix Uteri	Breast	Gall Bladder
West Arunachal	Stomach	Liver	Oesophagus	Stomach	Breast	Cervix Uteri
Meghalaya	Oesophagus	Hypopharynx	Stomach	Oesophagus	Cervix Uteri	Mouth
Nagaland	Nasopharynx	Stomach	Oesophagus	Cervix Uteri	Breast	Stomach
Pasighat	Stomach	Lung	Liver	Cervix Uteri	Breast	Stomach
Cachar District	Oesophagus	Hypopharynx	Lung	Cervix Uteri	Breast	Gall Bladder
Dibrugarh District	Oesophagus	Hypopharynx	Stomach	Breast	Gall Bladder	Ovary
Kamrup Urban	Oesophagus	Hypopharynx	Lung	Breast	Oesophagus	Gall Bladder

Cancer of lung, mouth, stomach and oesophagus were the most common cancers among males. Cancer of breast and cervix uteri were the most common cancers among females.

Chapter 3 deals with anatomical sites of cancer which are mainly related to use of tobacco (Smoking and smokeless forms) as per IARC Criteria on evaluation of the carcinogenic risks to humans (IARC Lyon, 1987). The incidence rates of tobacco related cancers in north was high in Delhi (males: 62.1; females: 18.5). Kollam district (males: 52.9) and Bangalore (females: 20.1) had high incidence rates in the south. In the east, Kolkata had an AAR of 42.3 in males and 13.7 in females. In the west, Ahmedabad urban had high AAR of 54.3 in males and Mumbai had high AAR of 18.2 in females. Bhopal had high AAR in both males (55.3) and females (19.6) in the central region. East Khasi Hills district from the north east had the highest AAR of tobacco related cancers (males:161.3; females: 58.1) in India.

The Proportion (%) of Cancers Associated with the Use of Tobacco Relative to All Sites of Cancer in 28 PBCRs under NCRP



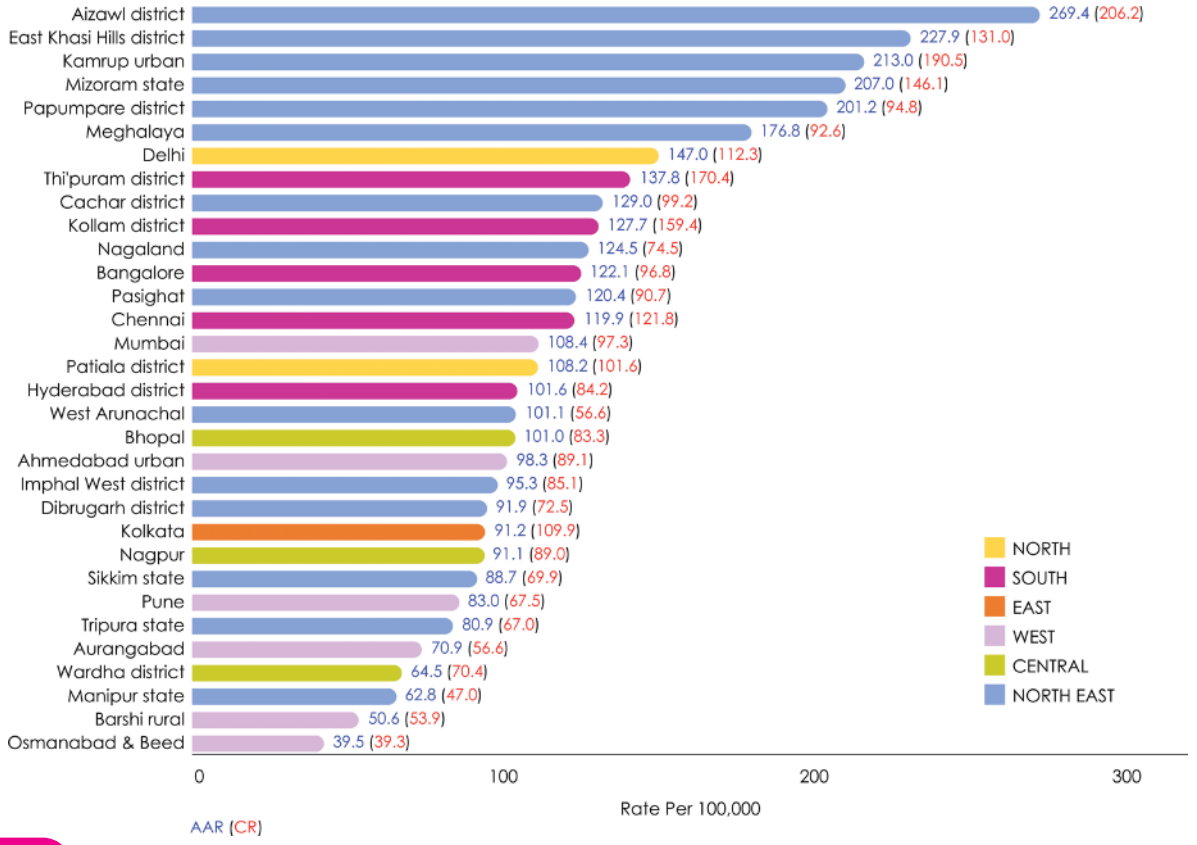
CR and AAR given in parentheses

Chapter 4 deals with the cancers of childhood. The incidence rates (expressed per million AARpm for children) have been analyzed for 0-14 age group (for comparison with previous NCRP publications) group and 0-19 age group (for comparison with international publications). Comparison of AARpm of childhood cancers across the registries within NCRP, with registries in Asian countries and those in Non-Asian countries is presented. Delhi PBCR recorded the highest proportion of childhood cancers in both 0-14 age group (3.7%) and 0-19 age group (4.9%). From the HBCR data, Leukaemia was the most common diagnosis of cancer both in 0-14 years (boys, 46.4%; girls, 44.3%) and in the 0-19 age group (boys, 43.2%; girls, 39.2%). Delhi PBCR had the highest incidence rate (AAR pm) of childhood cancers among boys in both 0-14 age group (203.1) and 0-19 age group (196.3). Among girls, Delhi had high incidence rate (125.4) in the 0-14 age group and Thiruvananthapuram district (123.5) had high incidence in the 0-19 age group.

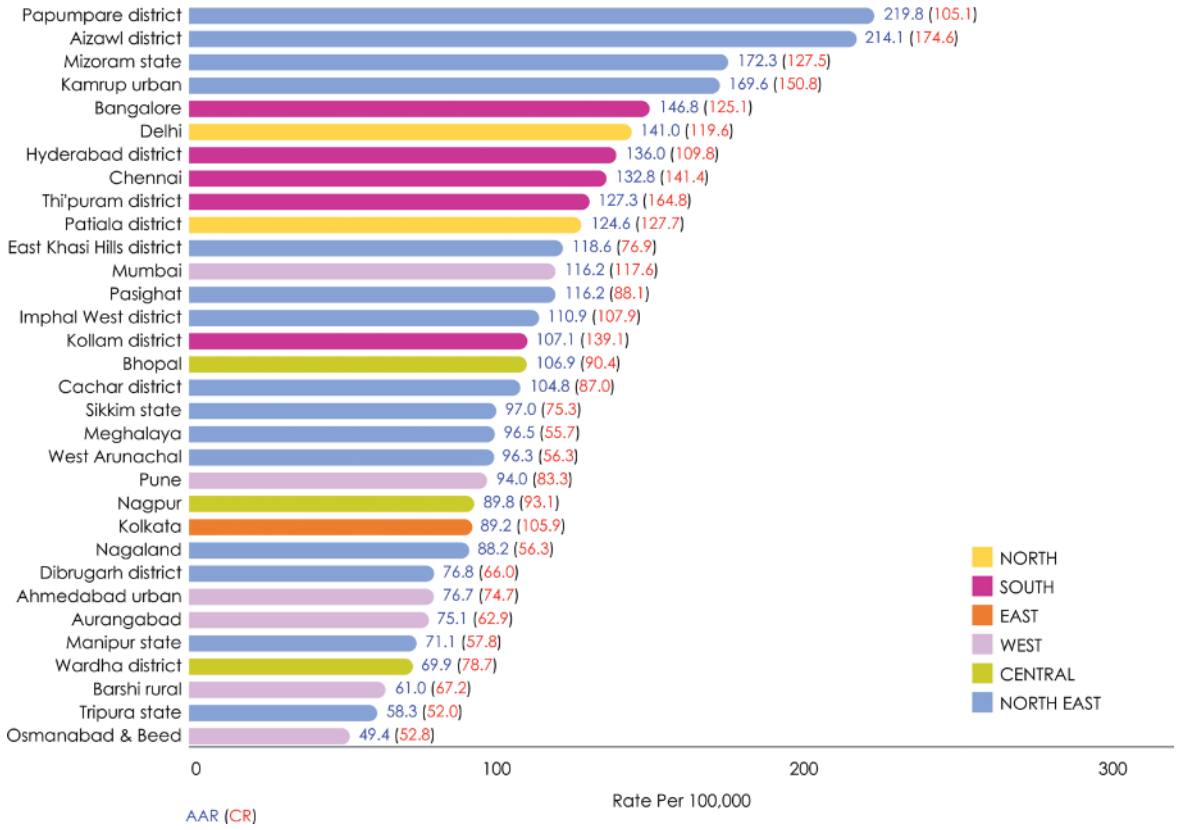
Chapter 5 compares cancer incidence and patterns of all PBCRs for different sites of cancer. Aizawl district had the highest incidence (AAR, 269.4) in males and Papumpare district (AAR, 219.8) had the highest in females for all sites of cancer. North east registries had higher incidence rates than the other registries in cancers of oropharynx, oesophagus, nasopharynx, hypopharynx, stomach, colorectal, liver, gall bladder, larynx, lung, cervix uteri and ovary. Cancer breast incidence was high in Hyderabad district, Chennai, Bangalore and Delhi.

ALL SITES (ICD-10: C00-C97) - Comparison of Age Adjusted Incidence Rates (AARs) of 28 PBCRs under NCRP

Males



Females



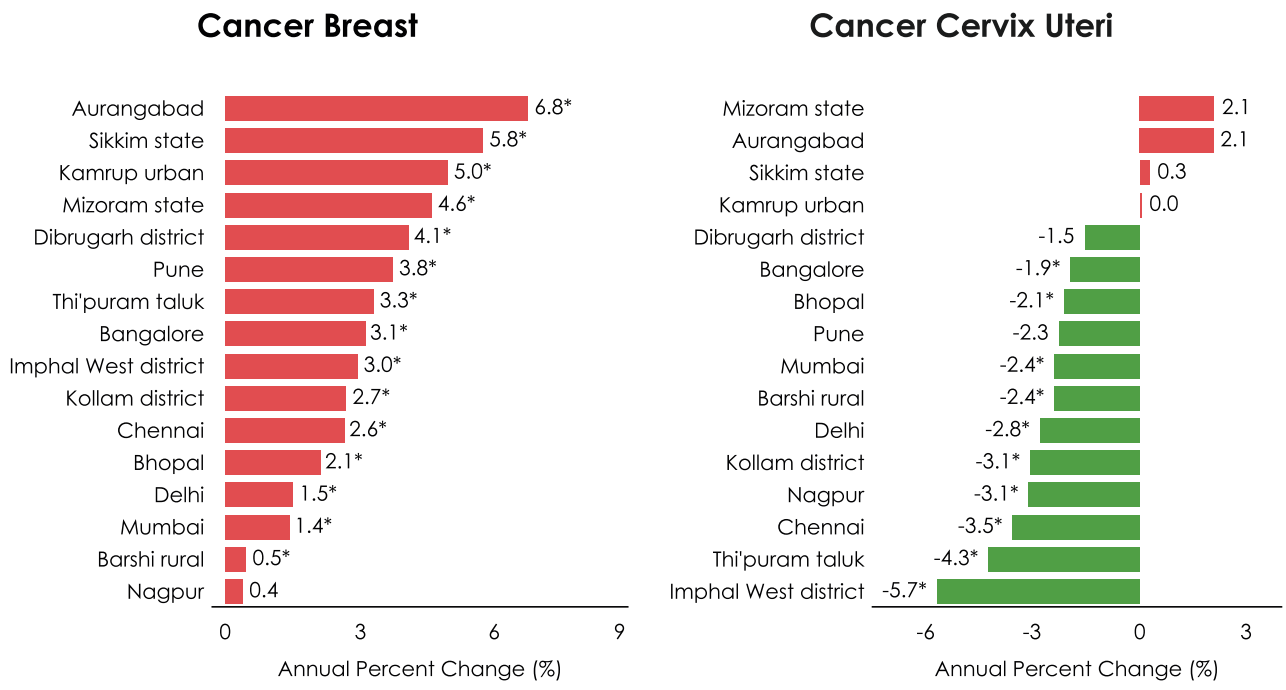
Chapter 6 presents the mortality rates and Mortality-Incidence percent (M/I%) for different cancers. Barshi rural PBCR recorded the highest M/I% (67.2%). Aizawl district recorded the highest Age Adjusted Mortality Rate (AAMR) in males (152.7) and females (89.5).

Section II provides a summary of statistical and scientific details on selected anatomical sites of cancers viz., cancer breast, cervix uteri, head & neck, lung and stomach. This section deals with incidence rates and their comparison with Asian and Non-Asian countries, cancer trends, staging and treatment of each of these sites of cancer.

Chapter 7: Cancer Breast – A significant increase in the incidence rates of breast cancer was observed in 15 PBCRs in females. Majority of patients underwent multi-modality treatment and 97.7% were epithelial tumours. Israel (84.6) had the highest incidence of breast cancer in Asia. In India, Hyderabad district (48.0) had the highest incidence rate.

Chapter 8: Cancer Cervix Uteri – A significant decrease in the incidence rates of cancer cervix uteri was observed in 10 PBCRs. Majority of patients underwent radiotherapy and chemotherapy and majority (99.5%) were epithelial tumours. Papumpare district, India had the highest incidence rate of cervical cancer (27.7) in Asia.

Annual Percent Change (APC) in Age Adjusted Incidence Rates (AAR) over the time period

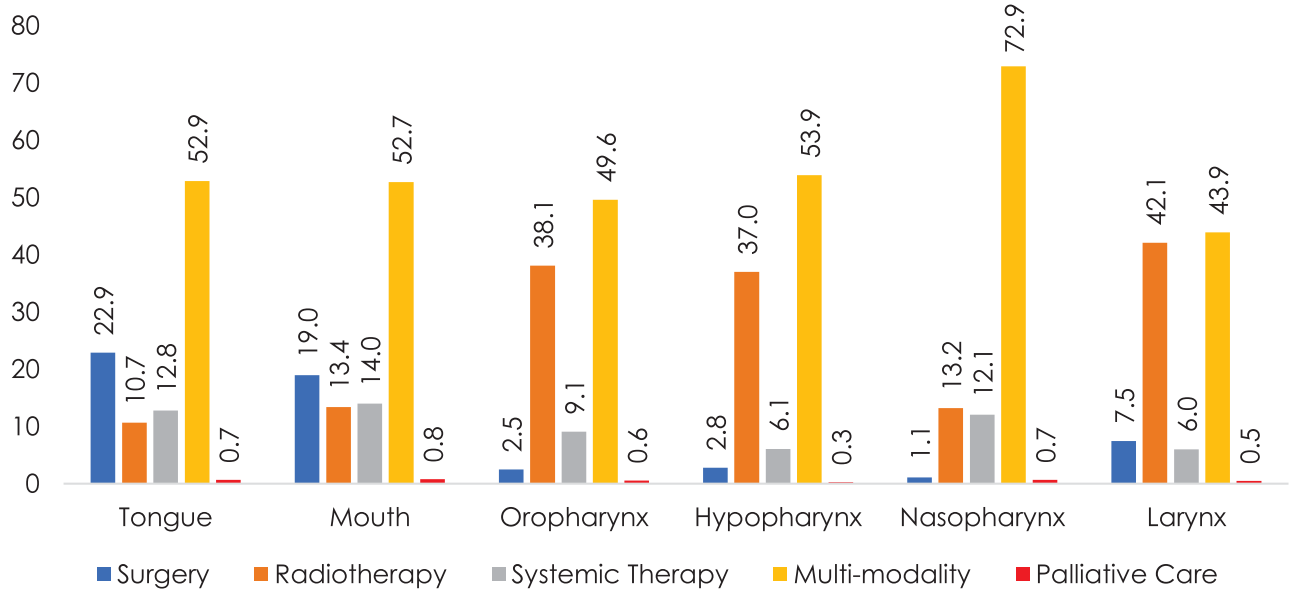


Increase in APC, Decrease in APC ; *Significant increase or decrease in APC at 95% confidence level

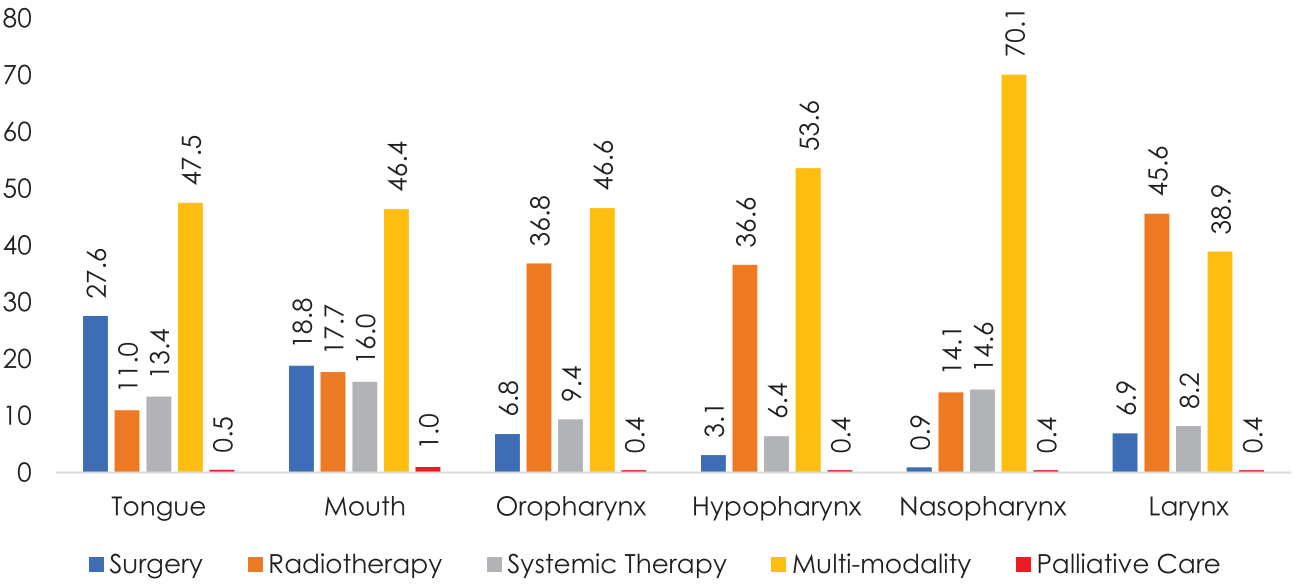
Chapter 9: Head & Neck Cancers – Cancer mouth was the most common of all head and neck cancers in both males and females. Multi-modality treatment was the most common treatment for all head & neck cancers except for cancer larynx in females, where radiotherapy was the most common treatment. In males, APC ranged from (–1.5) in Mumbai to 4.4 in Aurangabad. In females, APC ranged from (–3.1) in Sikkim state to 3.7 in Nagpur. East Khasi Hills district (12.8) followed by Ahmedabad urban (10.5) had the highest incidence rate in the world among males for tongue cancer. Among females, Bhopal (4.0) followed by Cachar district (3.8) had the highest incidence rate in the world.

Relative Proportion (%) of cases registered according to Types of Treatment for Head and Neck Cancers

Males



Females



Chapter 10: Cancer Lung – A significant increase in the incidence rates of cancer lung was observed in 5 PBCRs and 11 PBCRs in males and females respectively. Aizawl district had the highest incidence of cancer lung in Asia among females. Systemic therapy was the most common mode of treatment both in males and females. In Asia, Aizawl district, India (37.9) had the highest AAR per one lakh among females.

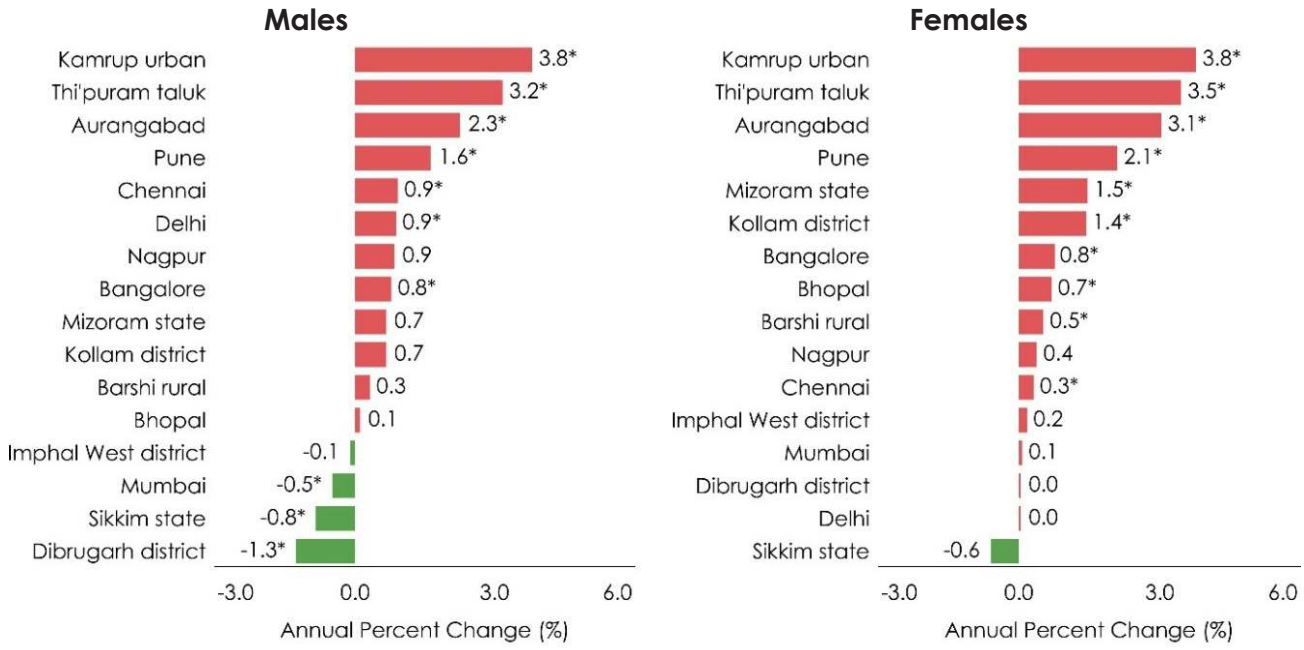
Chapter 11: Cancer Stomach – A significant decrease in the incidence rates of cancer stomach was observed in 7 PBCRs and 4 PBCRs in males and females respectively. On a comparison of incidence rates of cancer stomach with the Non-Asian countries, two districts from the north east were found to have the highest incidence rates in both males (Aizawl district, 44.2) in females (Papumpare district, 27.1). Systemic therapy was the most common mode of treatment given.

Section III

Chapter 12 discusses the quality of the data of the registries. Microscopic Verification (MV) of diagnosis was the highest in Hyderabad district (96.7%) leading to lowest registration of other and unspecified sites of cancer (1.8%). Age unknown was less than 0.6 % across all PBCRs and the highest M/I percent was observed in Barshi rural (67.2%). Out of 58 HBCRs, the MV% ranged between 90 – 100% in majority of the hospitals but the least MV% was observed to be 75.5% in one hospital.

Chapter 13 & 14 provides the cancer incidence rates over time and projected number of incidences of cancer cases for the years 2016 to 2025. A rise in the incidence of all sites of cancer was observed in majority of the PBCRs. In India, the total number of incidence cases in males is estimated to be 679421 in 2020 and 763575 in 2025. Among females, the total number of incidence cases is estimated to be 712758 in 2020 and 806218 in 2025. Cancer breast (238908) is expected to be the most common site of cancer in 2025 followed by cancer lung (111328) and mouth (90060). Tobacco related cancers are estimated to constitute 27% of all cancers in India.

Annual Percent Change (APC) in Age Adjusted Incidence Rates (AAR) over the time period - All Sites of Cancer.



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

The projected cancer cases in India is 2020 and 2025 is as below.

Anatomical Sites of Cancer	2020		2025	
	No. of Cases	%	No. of Cases	%
All Sites	**1392179**	**100.0**	**1569793**	**100.0**
Tobacco Related Cancers	377830	27.1	427273	27.2
Gastro Intestinal Tract	273982	19.7	310142	19.8
Cervix Uteri	75209	5.4	85241	5.4
Breast	205424	14.8	232832	14.8
Corpus Uteri and Ovary	70400	5.1	79765	5.1
Lymphoid & Haematopoietic Malignancies	124931	9.0	138592	8.8
Prostate	41532	3.0	47068	3.0
Central Nervous System	32729	2.4	36258	2.3

Network of 36 Population Based Cancer Registries

▲ PBCR data not included in the report (8)

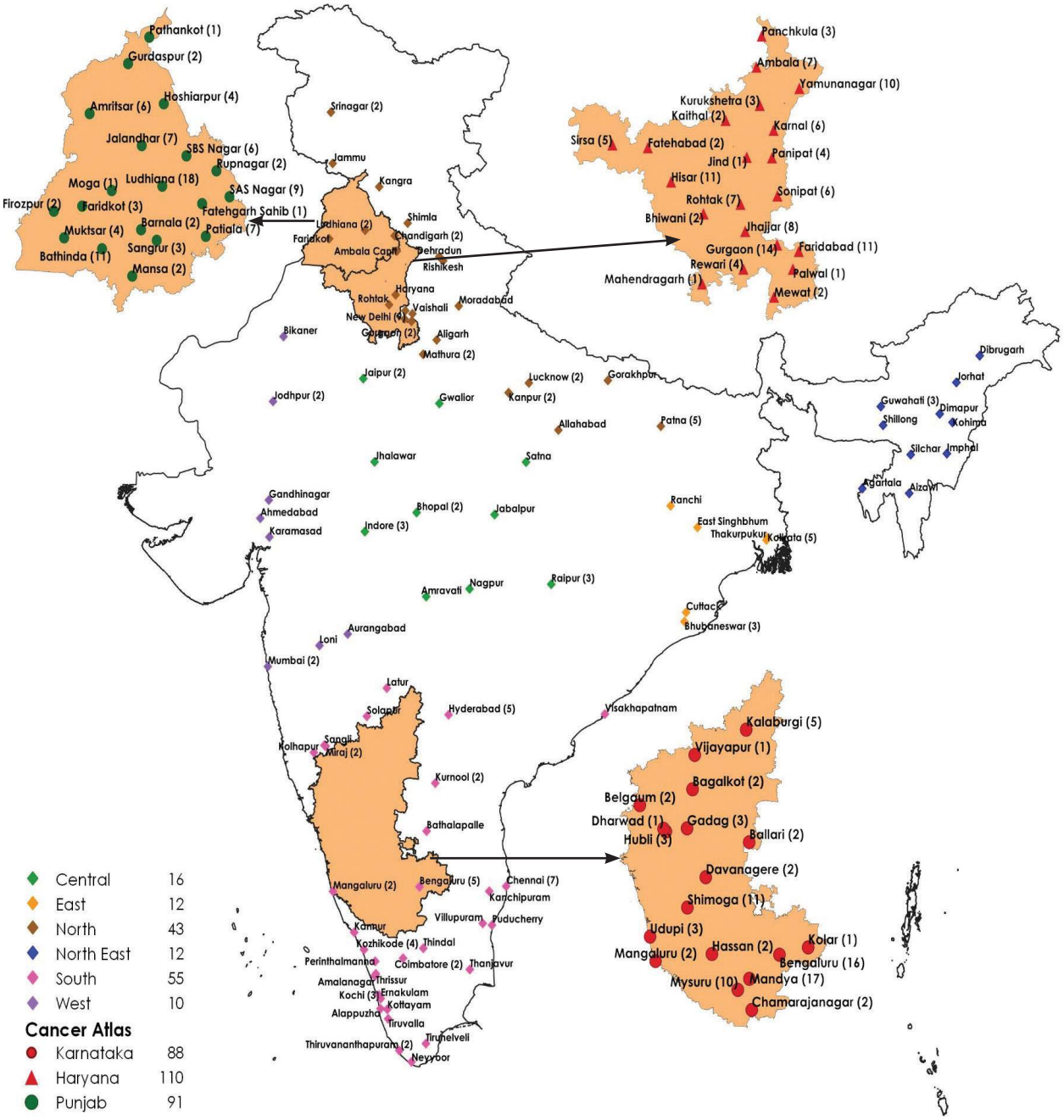
PBCR data included in the report

North	2
East	1
West	6
South	5
Central	3
North East	11

Registries	Year of Inception
Ahmedabad rural	2004
Malabar	2013
Karimganj	2016
Allahabad	2017
Gautam Budh Nagar	2017
Aligarh	2018
Patna	2018
Srinagar	2018

Source : ICMR-NCDIR, 2020

Network of Hospital Based Cancer Registries



Source : ICMR-NCDIR, 2020