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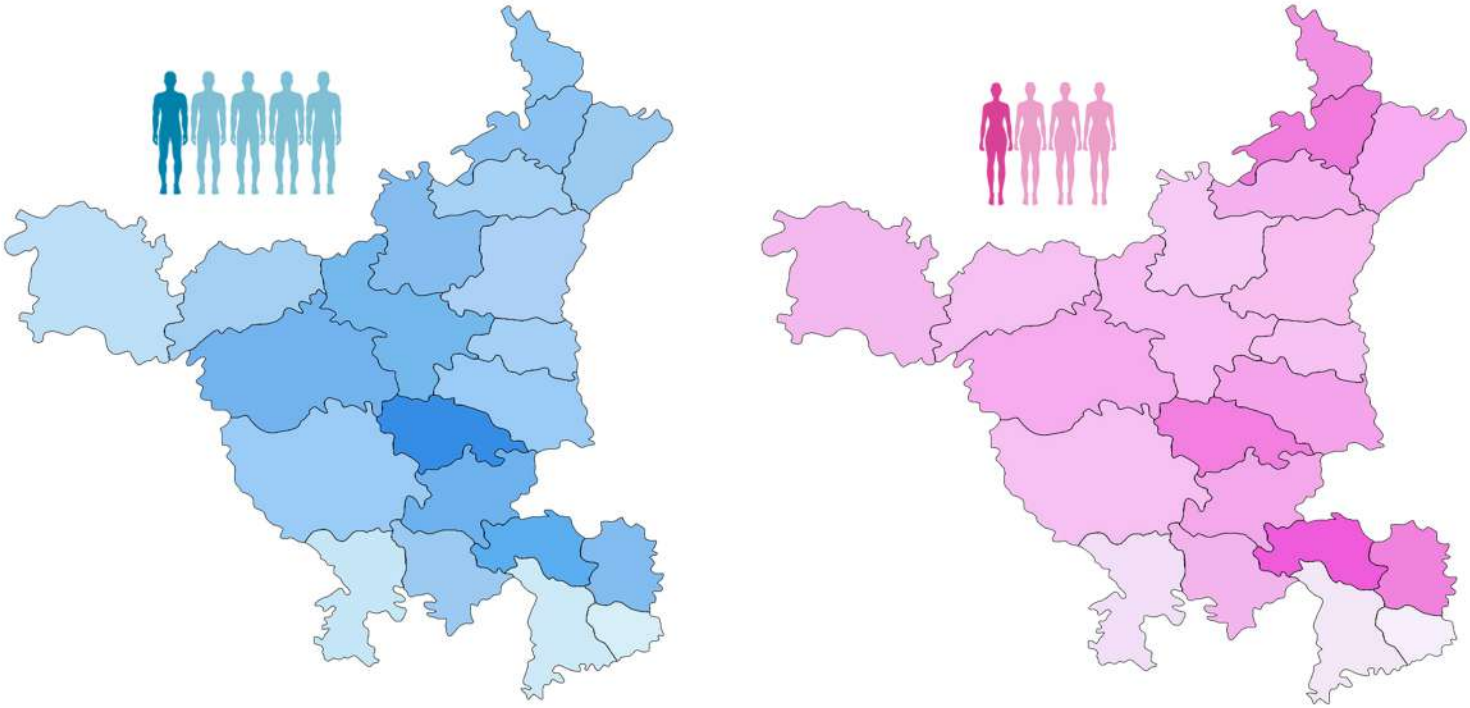

National Centre for Disease Informatics and Research (NCDIR)

(Indian Council of Medical Research)

Supported by Department of Health Research

ICMR - National Centre for Disease Informatics and Research

DEVELOPMENT OF AN ATLAS OF CANCER IN HARYANA STATE

A Project of National Centre for Disease Informatics and Research (NCDIR)
(Indian Council of Medical Research)
Supported by Department of Health Research

Two -Year Report of
Development of an Atlas of Cancer in Haryana State
2016-2017

With Contributions from the
Principal/Co-Principal Investigators/ Faculty-in-charge at the Collaborating Centers
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and
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13/5/19

PREFACE

The first report of the project "Development of an Atlas of Cancer in Haryana State" is the culmination of a three year journey that was undertaken under the stewardship of NCDIR and Coordinating Unit at Office of DGHS, Panchkula,Haryana. This achievement was possible by the undaunting efforts of all those employed in collection of data, culling out the relevant parts from available records, transmitting them to a central database where it went through the established processes of cleansing and analysis. The effort of the individuals has now resulted in an official publication.

The data so collected of residents of state of Haryana is the authentic data for the state by the people and for the people. We are sanguine that the data shall be used, quoted, referred and shall form the basis of important decisions by the persons who are vested with the responsibility of providing healthcare to the residents of the state.

More needs to be done in times to come, not only to continue the effort done so far, but also to complement it with additional work that shall make cancer related data of all patients available and accessible to anyone who has a legitimate use for it. These could be the clinicians, citizens, the medical set-up, the government or a curious scientific researcher.

It's been the endeavour of NCDIR-NCRP to present the data in a form which retain its relevance and be open to scientific interpretation. We hope that the scientific relevance of this report would enable and facilitate the working of the reader.

With Best Regards

G K Rath

(PROF. G.K. RATH)

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FOREWORD

Cancer has rapidly emerged as the major cause of mortality and disease burden in the country, affecting all age groups, both genders and people living in all geographic regions of the country. Reliable cancer statistics is an important aspect of formulating, implementing and monitoring cancer prevention and control programs. The ICMR-NCDIR has been running the National Cancer Registry Program covering large parts of the country. Yet, several states are devoid of it. Haryana was one such state identified for setting up cancer registration mechanisms (Haryana Cancer Atlas) so that district wise cancer incidence data could be collected to describe patterns and distribution.

The ICMR- National Centre for Disease Informatics and Research, Bengaluru coordinated the implementation of project on "Development of an Atlas of Cancer in State of Haryana" funded by Department of Health Research. This report covers data accrued over a two-year period (1 January 2016 to 31 December 2017) and over 120 centers within and outside the state of Haryana who have contributed and collaborated in the project. This includes data of functioning cancer registries under the NCDIR-NCRP network. The cancer atlas centers have transmitted core information on confirmed malignancy cases, the data so transmitted has been received and analyzed by NCDIR-NCRP.

The main emphasis of this report is on patterns and incidence rates of cancer for all districts of Haryana. The incidence rates on important selected sites of cancer are compared with that of the established population based cancer registries under the NCDIR. Summary report on individual centers is also given. Overall, the presentation provides a glimpse of similarities and variation in types of cancer in different regions of India. This comprehensive account is a big step forward in covering more areas not covered by the registries under the NCDIR. Continued and sustained active participation by existing and additional newer centers will augment this process.

This statewide report serves as a ready reference manual to describe incidence rates and patterns of cancer. The information provided is detailed, nonetheless made simple and clear to researchers, scientists, clinicians and policy makers alike. The difficult endeavor of collating data, making checks on the same, generate tabulations and prepare a timely report, so as to meet international standards has been achieved. This project has been an example of successful collaboration with the Department of Health, Govt of Haryana and ICMR-NCDIR. The efforts put in must shape up continuation of cancer registration across the state.

Prashant Mathur

Rajeev Arora, IAS

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D.O. No. NCD/HCA/35

Dated 05.07.2019

Message

Due to high morbidity and mortality, Non- Communicable Diseases (NCDs) including cancer are posing major public health challenge in India. Cancer affects not only the economically productive age group but also the elderly whose population is growing. Focused efforts are required for prevention & control of cancer. To plan strategy towards its prevention and control the first step is to know the burden & pattern of the disease so that targeted interventions can be implemented.

Hence, there is a need for creating a data repository on cancer which can provide useful information to make cancer control policies that can be used for prevention of cancer and providing accessible and affordable treatment to cancer patients.

One such effort was undertaken in the form of a cancer atlas by ICMR-NCDIR and NCD Division, Health Department, Haryana to understand the geographical variation/similarities in the cancer incidence across the state of Haryana. The report on "The Development of an Atlas of cancer in Haryana state (2016-2017)" is a result of this comprehensive and coordinated effort by NCDIR-Bangalore, coordinating unit of Health Department, Haryana in the Directorate of Health Services at Panchkula and the collaborating centers within and outside the state of Haryana. The project is being referred to as HCA by all involved.

This report attempts to give clues to understand the incidence patterns and types of cancer across the districts of Haryana so as to present a base for further studies and research, which is why I welcome this first HCA report.

On behalf of department of Health, Govt. of Haryana, I thank the centers involved and all the staff involved in this project for the work they have put in for making data available and also to ensure that the findings in this report are utilized, its recommendations implemented and adhered to so that we may achieve the ultimate objective of strengthening the cancer surveillance and cancer control in state of Haryana and India.

My best wishes to all those who will be the major users of this report.

(Rajeev Arora)

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Date: 05.07.2019

Message

It gives me immense pleasure to know that National Centre for Disease Informatics and Research (NCDIR) is going to publish a report on "Development of an atlas on Cancer in Haryana state" for the year 2016-2017 after successful completion of 2 years of systematic and organized data collection. Hallmark feature of this report is that it incorporates data from newer registries thus bringing in information on cancer profiles from uncovered terrains of the country. Cancer Registry Programme has propagated the use of information technology to support, improve and enhance the management and exchange of electronic data in cancer surveillance.

The staff working under the atlas of Cancer in state have put in sincere efforts to collate, verify and transmit the data to The number of institutions that made available their data to this registry especially in the metros are gratefully acknowledged.

I am sure this report will serve a good resource for providing an insight and serve as a useful reference on cancer incidence in the state in planning cancer control measures. All team members deserve special thanks for their dedicated work in providing quality data which has contributed to the completion of this report in a time bound manner.

(Satish Kumar Aggarwal)

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Message

It gives me a sense of achievement as a coordinator on the release of consolidated report on "Development of an atlas of Cancer in Haryana state" for the years 2016- 2017. It marks the successful completion of 2 years of systematic and organized data collection from 100 plus cancer centres located in and around the state of Haryana.

Rapid industrialization and socioeconomic development poses new and emerging challenges. Rapid changes in lifestyles, unhealthy diet, obesity, alcohol consumption, urbanization etc. have significantly impacted the health scenario thereby increasing the burden of Non-Communicable Diseases (NCDs). With this scenario & no cancer registry in the state, there was a need to setup a cancer registry - an important tool to assess and evaluate the magnitude and patterns of cancer in the state.

The use of Information technology has significantly reduced the gap between calendar year of data and year of report publication in a very cost effective way. This report has given wider perspective in case finding and data abstraction from medical records. It has boosted the Hospital Based Cancer Registries (HBCR) operating in the region.

Hope this report will encourage other hospitals to establish cancer registries and contribute to determine the demographic pattern of cancer incidence across the country. It would be extremely rewarding to all the people involved in this exercise if the information presented is used for planning and evaluation of cancer control programs, help set priorities for allocating health resources and promotion of research.

My sincere thanks and congratulations to all those who have contributed in this endeavor.

(Rekha Singh)

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The Project "Development of an Atlas on Cancer in Haryana State" was funded and overseen by the Department of Health Research under the Ministry of Health & Family Welfare and implemented by ICMR-National Centre for Disease Informatics and Research, Bangalore.

The report, which is culmination of the project, would not have been possible without the continuous support and encouragement provided by our Secretary, Department of Health Research & Director General, ICMR - Prof. Balram Bhargava. Our former Secretaries & Director Generals, Dr Soumya Swaminathan and Dr. V M Katoch have a pivotal role in sanction and execution of the project which made the journey of the project possible. I extend my heartfelt thanks to them.

We also would like to thank Dr. G K Rath, Professor Chief, National Cancer Institute, Jhajjar and Chief, DRBRAIRCH, AIIMS, New Delhi, who was present with the team of the project right since its inception. As chairperson of the Scientific Advisory Committee of NCDIR-ICMR Bangalore, his unstinted support has given the report a form which would not have been possible otherwise.

Dr. PC Gupta as a member of Research Advisory committee of Cancer has, with his experience given special contributions for which we are thankful as a team. Dr. Sushmita Ghoshal (Head of Radiotherapy PGI, Chandigarh) who is a leading expert in the field of oncology has given a critical review of the final report which gave scope of further improvement.

The comprehensive nature of data collected for this report would not have been possible without the active support and commitment by the Principal Investigators and the staff at collaborating centres, staff at NCDIR and the staff at the co-ordinating unit at Panchkula. The participation of these individuals and organizations is gratefully appreciated.

We would be failing in my duties if the contributions of Dr. Rekha Singh, Chief co-ordinator, DGHS, Dr.Kajal and their team are not acknowledged who were responsible for coordinating the project activities from Panchkula, streamlining transmission of data and providing solutions to centers with regards to registering confirmed malignancy cases

Thanks are also due to Mr. Vijay Kumar D.D, Dr. Remya M and Ms. Sathya N who as staff of the coordinating unit have been the backbone of collation, compilation and statistical data analysis. The overall directions were provided by director of my institute, Dr. Prashant Mathur.

This project has benefited from the wisdom of many people and it is pleasure to acknowledge and thank Dr. A. Nandakumar, Former Director-in-charge, NCDIR, Bangalore.
The precious contributions of Mr. Rajeev Arora (IAS), Additional Chief Secretary, State of Haryana, who provided the overall direction, need to be thanked.

The combined experiences and insights provided by them have contributed significantly in the outcome of the project and have helped to establish, what we hope will be, a useful reference document that can guide future plans and initiatives toward cancer surveillance. We are indebted to all.

Meesha Chaturvedi

Dr. Meesha Chaturvedi
Principal Investigator
Development of an Atlas of cancer in Haryana State

EXECUTIVE SUMMARY

This report of the project on "Development of an Atlas of Cancer in State of Haryana" is a summary covering the data for calendar years 2016 and 2017. The project has collated and processed relevant data on cancer. The report gives an idea of patterns of cancer for a state not covered by registries under the National Center for Disease informatics and Research which houses the National Cancer Registry Programme (NCRP) of Indian Council of Medical Research (ICMR). The cancer incidence rates are also calculated.

Knowledge of patterns of cancer provides a background to search answers to questions related to causation of cancer, a baseline for undertaking, monitoring and evaluation of cancer control measures, and an environment for administering optimum care and measuring outcome. The basic principle and methodology of working in this study, was to have all centers, medical colleges and hospitals (public and private) involved in diagnosis and treatment of cancer be involved as the focal point of capture of information on cancer cases. Several clinicians working in oncology have actively collaborated. Pathologist and radiotherapists were active participants in project

All centers, medical colleges and hospitals (both Directors and Principal Investigators) throughout the state were contacted to collaborate in the project. Those who responded were supplied with core forms for collecting basic information (mainly patient identification details including area of living, and site and morphology of tumor) and provided guidelines for collecting this information on all malignant cases from all concerned departments from 1 Dec 2015.

Visits were made to many of these collaborating centers and on the spot instructions given. During the visits their need for support was assessed and depending on the infrastructure and average number of malignancies reported per annum, technical and financial support was provided. Intense training workshops in the various districts of state were held. Principles of cancer registration, data collation, transmission and fundamentals of epidemiology constituted the thrust areas of training at the workshops. The workshops and visits contributed a great deal to the success of the project.

Several detailed checks were done on the data received so as to meet international standards. Where needed, clarification was sought from individual centers. A variety of duplicate checks to ensure that no case was counted twice were also carried out. Strict inclusion criteria were adopted. The regular accepted measures by cancer registries for analysis, tabulation and estimation of incidence rates were followed. In all there were a total of 42699 cases for the two-year period (1 January 2016 to 31 December 2017) from 149 centers including the cancer registries under the NCRP and other functioning cancer registries.

The district was taken as a unit for calculation of incidence rates. The advantage of using the district as a unit, was that these are reasonably well demarcated geographic areas where the five year age group population is available from the Census of India Publications. Thus the age adjusted incidence rates (that is normally used for calculation and comparison of incidence rates) per 100,000 population were calculated for each district. The district wise incidence rates were compared with the incidence rates of the regular Population Based Cancer Registries (PBCRs) under the NCRP.

The 21 districts of Haryana have contributed to this project. The incidence rates and patterns of the leading sites of cancer in many of these districts revealed several new features.

For all sites of cancer put together, a belt of higher incidence of cancer is seen over Hisar (105.3), Rohtak (143.9), Jhajjar (109.9) Gurugram (124.8), Jind (104.7) and Faridabad (94.8) for males, However, the relatively higher rates within the state are in tandem with incidence rates seen in PBCRs of neighbouring state/UT/districts of Delhi (149.4) and Patiala (97.9) which has been functional since 1988 and 2014 respectively. For females, similar belt with relatively higher rates within the state is seen. Additionally, district of Ambala (85.7) also shows higher rates for females. The rates of these districts falling in the belt were comparable with Delhi (144.8) and Patiala (111.2) for females.

Sustained support on a long-term basis with scope for considerable expansion would be required for setting up a composite database through what may be called a National Electronic Surveillance System for Cancer. That then would constitute a sound platform for quality research in cancer in all its dimensions. This could be for observing incidence and patterns across a wide spectrum of populations, evolving analytic studies in molecular epidemiology to seek clues in cancer aetiology, looking at patterns of cancer patient care and survival so as to regulate management and, last but by no means the least for monitoring and evaluation of cancer control measures.

CONTENTS

Chapter 1

INTRODUCTION

1.1 National Cancer Registry Programme Under NCDIR and Cancer Scenario in India

The National Cancer Registry Programme (NCRP) has been in existence since 1982 with the coordinating unit becoming a permanent institute (National Centre for Disease Informatics and Research (NCDIR)) of the Indian Council of Medical Research in 2011.The centre is a crucial repository of data from the collaborating cancer registries located in medical colleges/institutions and hospitals throughout India. The use of Information technology to collate the patient information enforces data standards, instant identification of errors and opportunities for immediate action to rectify the errors, thereby ensuring data quality. The software technology has the ability to handle large data sets for scientific research including evaluation of patient care.

The research activities of NCDIR-NCRP network are fulfilled through Population Based Cancer Registries, Hospital Based Cancer Registries, and Cancer Atlases. Data from the PBCRs provides leads to set priorities for cancer research and identify target sites – both anatomic and geographic, for cancer control measures. To initiate, establish and sustain population based cancer registries as per international norms requires meticulous planning, cooperation of medical institutions in the area, dedicated and committed personnel and adequate funding and training. Hospital Based Cancer Registries are concerned with recording of information on the cancer patients/ cases seen in a particular hospital (Isabel dos Santos Silva et al., 1999). A standardized common core form is used for data collection for all the registries. Information on patient identifiers and demographics, details of diagnosis, clinical stage of disease and the broad type of treatment is collected in the proforma. Setting up of registries in rural and urban pockets throughout the country is challenging as it entails prohibitive expenditure for establishment and maintenance. Cancer Atlases over the world address these issues to some extent.

The existing PBCRs under NCRP cover less than 10% of the population of India. The latest consolidated PBCR report for 2012-2014 is based on the analysis of the data from 27 PBCRs including three new ones (Naharlagun and Pasighat from Arunachal Pradesh and Patiala from Punjab). Nonetheless, it reflects the cancer profile of the country fairly well owing to representation of registries from different parts of the country.

Cancer incidence rate is generally expressed as age adjusted (AAR) or age standardized (ASR) rate (direct standardization to the world standard population) per 100,000 population in order to ensure comparability between different states and nations having varied population profiles with respect to age groups. Among males, Aizawl District in Mizoram state shows the highest AAR followed by Papumpare District under Naharlagun PBCR in Arunachal Pradesh. The order is reversed in females, with Papumpare District recording the highest AAR followed by Aizawl District.

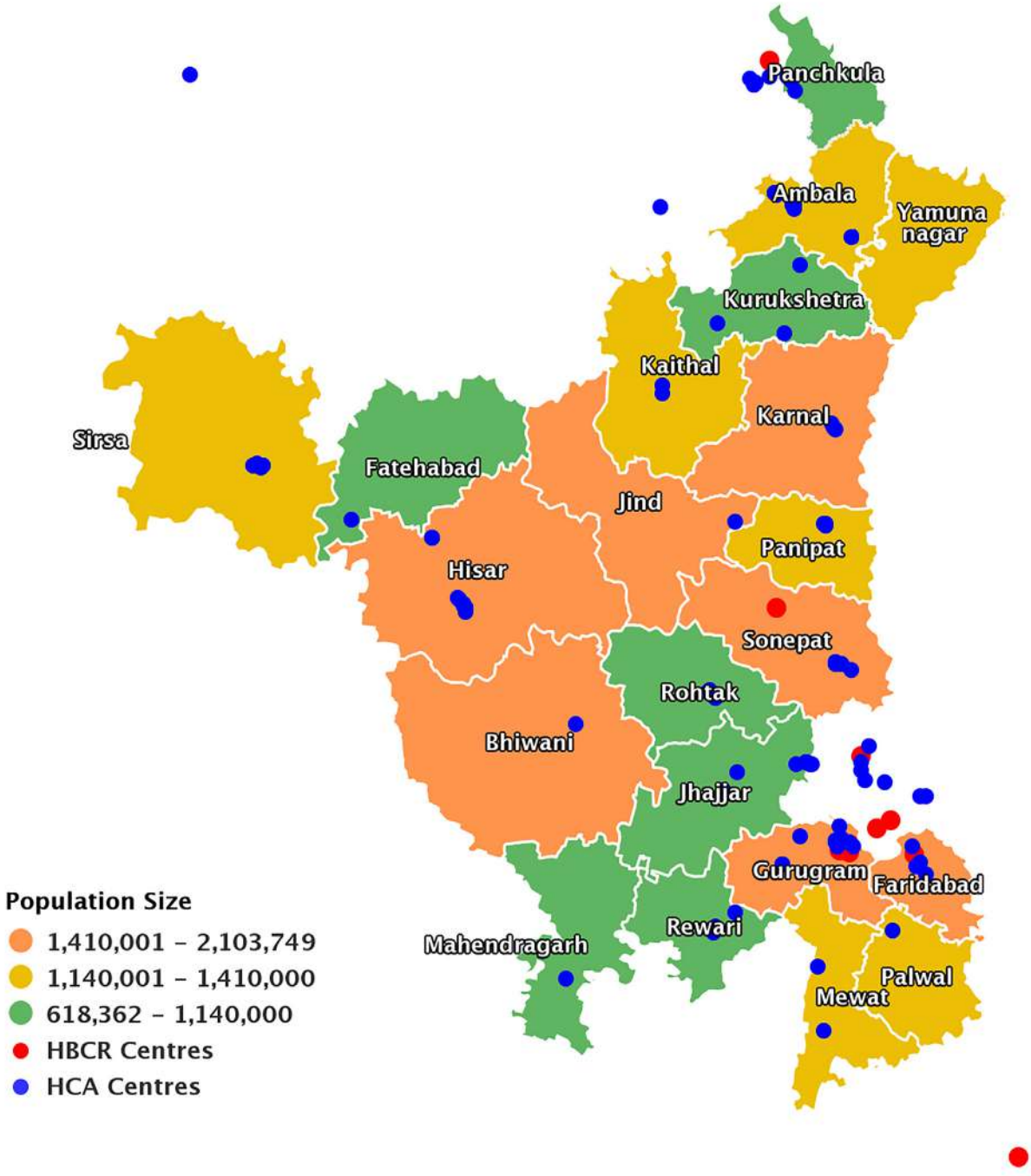
Among males, cancers of the lung, mouth, oesophagus and stomach are the leading sites across most of the registries. Lung cancer is the leading site in Bangalore, Chennai, Delhi, Mumbai, Manipur, Aurangabad, Kolkata, Kollam, Thiruvananthapuram and Tripura. Mouth is the leading site of cancer in Barshi Rural, Barshi Expanded, Bhopal, Ahmedabad Urban, Nagpur, Pune and Wardha. Cancer of the oesophagus is the leading site in registries in Assam, Meghalaya and Patiala. Stomach is the leading site in Sikkim, Mizoram and the two registries in Arunachal Pradesh namely, Naharlagun and Pasighat. Cancer of the nasopharynx is the leading site in Nagaland. Among females, cancer of the breast is the leading site of cancer in 19 registry areas. Cancer of the cervix uteri is the leading site in 6 registry areas viz., Barshi Rural, Barshi Expanded, Mizoram, Tripura, Nagaland and Pasighat PBCRs. In females as well, cancer of the Oesophagus leads the list of cancers in Meghalaya. Stomach was the leading site in Naharlagun PBCR.

With respect to the proportion of cancers associated with the use of tobacco, East Khasi Hills district of Meghalaya had the highest relative proportion with 69.5% and 45.0% for males and females respectively. Excluding the north east PBCRs, the highest proportion of TRC was observed in Ahmedabad Urban PBCR for both males (56.3%) and females (19.8%).

The occurrence of childhood cancers shows much variability between the various geographical areas/ registries, among boys, the proportion of cancers in childhood relative to cancers of all ages varied from .7% in Nagaland PBCR to 5.4% in Delhi PBCR. Among girls, it ranged from 0.5% in East Khasi Hills District of Meghalaya to 3.5% in Naharlagun excluding Papumpare district.

The site-wise AARs of the three newest PBCRs viz., Pasighat, Naharlagun and Patiala have also been compared with the other PBCRs. Papumpare District under Naharlagun PBCR of Arunachal Pradesh had the highest AAR in cancers of the stomach and liver for males and stomach, cervix uteri, ovary and thyroid for females in comparison to all other Indian PBCRs. Pasighat PBCR had high AARs in stomach, liver (males), cervical and ovarian cancers. Patiala PBCR had high AARs in breast, brain NS (males) and oesophageal cancers. The report of PBCR (2012-14) gives the details mentioned above.

Fig: 1.1 Map of Haryana with collaborating centres



1.2 Background of the Project

NCDIR- NCRP have already completed two Atlas Projects, "Development of an Atlas of Cancer in India and Development of an Atlas of Cancer in Punjab State" Haryana state does not have a functioning PBCR within the geographical limits to bring out the magnitude of cancer or similarities and differences in patterns of cancer across the state. The cancer atlas India could cover only 2 districts of Haryana including Ambala and Panchkula along with its Capital City Chandigarh. A comparison has been made in this report to understand the scenario of cancer patterns.

1.3 Socio demographic profile of the state Haryana

Haryana is the 17th state of India that came into being on 1st November 1966.The state had 21 districts at the time of commencement of the project. Previously it was a part of Punjab. The state of Haryana is situated in the North Western region surrounded by Himachal Pradesh in North, Uttarakhand in North East, Rajasthan in South, U.P and Delhi in East and Punjab in North West. The largest and smallest districts of Haryana are Bhiwani and Panchkula respectively. Panchkula, along with Mohali and Chandigarh is called Tricity. The capital of Haryana is shared by its neighbouring state Punjab and is Chandigarh, designed by Swiss born French architect, Le Corbusier. The state has a rich mythological background which makes it stand out culturally.

The total area of Haryana is 17,070 sq. miles or 44,212 square km which makes it the 20th biggest state in India by area. As determined by the census performed in 2011, the population of the state is 25,353,081, or making it the 16th most populated state in India. Haryana's population is less than that of the Punjab. The total population growth in this decade was 19.90 percent which marginally exceeds the National growth (19%) The growth rate has declined from previous decade when it was 28.06 percent. The population of Haryana formed 2.09 percent of the total populations of India in 2011. In 2001, the figure was 2.06 percent. The rapid rise of the state's population is due to economic development and evolution. The proficiency rate in the state is about 76% that has improved substantially in the last few years due to the consistent efforts of the government.

Haryana has large amount of fertile land, and achieved an unpredictable growth in its agricultural sector. Consequently, it is now the second largest contributor to India's central pool of food grains. The health and life style of the people are influenced by and well connected to their socio economic background. Robust growth in the Services Sector and Gross State value added services has also caused an enhanced pace of structural transformation of the state economy. As a result, there is a decline in engagement of agriculture activities whereas the share of Services Sector is continuously increasing (Economic Survey of Haryana, 2017-18).

The report has two completed years of data (2016 - 2017) due to following reasons:

1. The incidence rates are calculated for two completed years of data.
2. The retrospective and current data collected through the project has undergone checks as per international norms. Hence, data till December 2017 which was received till December 2018 has been subjected to checks and feedback taken from center.
3. Though collection of data of cancer registration is almost never real time (Globocan; CI V Vol. 10), in the Cancer Atlas Haryana, the data of 2016-17 has been received by December 2018. The analysis of this data was completed i.e. Feb 2019. The same pattern has been seen internationally, (refer international and national reports on cancer registration i.e., Globocan; CI V Vol. 10 and NCRP India).

Chapter 2

THE OVERALL PLAN AND METHODS

The overall aim of this study was to get to know similarities and differences in patterns of cancer across this state of the country using recent advances in computer and information technology for data transmission. Knowing patterns of cancer would provide important leads in undertaking etiological research, in targeting cancer control measures and in examining clinical outcomes.

A brief summary of methods used is given below.

2.1 Initial Registration

Initially, an invitation was sent to all heads/ principals of medical institutions which included medical colleges, major hospitals and pathology labs as well as cancer hospitals in the state of Haryana. Hospitals outside of Haryana state were also contacted. The list of collaborating centres has been given in preliminary pages.

A registration form was distributed to these institutions for obtaining information regarding various details like;

1. Name and address of Institution;
2. Name of Head of Institution;
3. Name and designation of Principal Investigator, Co-Principal Investigator and Faculty-in-charge;
4. Brief profile of the Institution;
5. Number of malignant neoplasms reported per annum by the Department of Pathology (comprising histo-pathology, haematology and cytology);
6. Number of patients treated during the year 2015 at Departments (if present) of oncology:
7. Any other relevant information.
8. Approval of Head of Institution and Principal Investigator (or other as the case may be) for participation in the study with respective signatures.

The form also made clear that:

A. The Principal Investigator was the main corresponding/contact person for all matters including release of funds and was overall in-charge of the project in respective Institution.

B. Faculty in charge (Point No. 3 above), preferably a junior faculty member on permanent roles in Department of Pathology/Radiation / Medical / Surgical Oncology was identified in most of centers. This person was responsible for day to day working of the project. The person identified should be interested in such work that involves supervision/ scrutiny of:

   a. Completion of all items of information including identifying information, especially residential status of malignant neoplasms as and when reported /registered.

   b. Completion of Topography and Morphology details;

   c. Ensuring that data in the core form is correctly entered on to the computer and promptly transmitted to NCDIR-NCRP;

   d. Replying to queries concerning the data transmitted.

C. Since over 80% of cancers registered under cancer registries have a microscopic diagnosis of cancer and also since over 60% cancer patients receive RT, it was essential that Departments of Pathology/RT are directly involved in this project. It was preferable that the Principal Investigator or one of Co-Investigators is a senior faculty of one of these departments and has concurrence of others and Head of the Institution. If the Principal Investigator is of a department other than Pathology or RT, it was important to have concurrence of Heads of these departments including that of the Head of the Institution.

2.2 Detailed Research Plan

The basic philosophy of the method followed for cancer atlas project was that a system of electronic capture of information that has been established with the project on "Development of an Atlas of Cancer in Haryana State" which has constituted a framework on which capture of clinical information would take place. This was used to gather information from the departments of pathology and radiotherapy. Cooperation by HBCR at Delhi under NCDIR- NCRP who registers cases from Haryana and institutions in Punjab and Rajasthan who also diagnose and treat cancer cases from Haryana was also elicited. Identifying and diagnostic information on patients with a diagnosis of cancer was entered on the website exclusively developed for this purpose. Data was received on-line at Coordinating Unit of NCDIR- NCRP on a day to day basis. In the Cancer Atlas Project active practicing pathologists, radiotherapists and also other oncologists were included in network.

Haryana Government has announced Charkhi Dadri as the 22nd district of the state on September 2016. At present, it is part of District Bhiwani, the state's largest district. For analysis of data, 21 districts have been considered (prior to formation of new district).Census population of 2011 is the baseline of data analysis of the project and population for bifurcated districts are not yet available. Data of Charkhi Dadri district was included and considered to be a part of Bhiwani district for analysis purpose. Data from some centers which was found to be deficient in certain fields which were important for analysis was excluded.

The Online and Dynamic e-Monitoring of Data Capture - Coverage of Cancer Cases under the project would be monitored by the following:

1. Status of Registration – List of all the centres who are registered with HCA.
2. List of Online Participating Centres – To show the list of centres who are currently transmitting data and centres who are offline.
3. Status of Data Received (Year Wise) of all Centres
4. Status of Data Received from all Districts
   - District wise
   - Status of Registration at various Institutions / Hospitals
   - Status of Data Received from Different Hospitals
   - Status of Month Wise Data Received from Different Hospitals form the Year 2016
   - Status of Data Entry from Different Hospitals according to Time Period

2.3 Committees in Action

1. In the third Meeting of the Research Area Panel (RAP) on Cancer of NCDIR held on 14-15 October 2014, the proposal for Development of an Atlas of Cancer in Haryana State was presented by Dr. Meesha Chaturvedi and the members reviewed the project proposal and approved the same for funding.
2. The meeting held under the Chairmanship of Dr. P.N. Tandon on 25th February, 2015 at National Institute of Pathology (NIOP), Safdarjung Hospital Campus Ansari Nagar West, New Delhi to review the research proposals received under Grant - in - Aid of Inter –Sectoral Convergence & Coordination for Promotion and Guidance on Health Research, a scheme of DHR, sanctioned the Project on 'Development of an Atlas of Cancer in Haryana State' and observed it as a large study and should be divided in to two phases.
3. In third meeting of Scientific Advisory Committee (SAC) of NCDIR, Bengaluru held at NCDIR on 18 August 2015, the members recommended sanction of funds at the earliest for the commencement of the sanctioned project on "Development of an Atlas of Cancer in Haryana state
4. Fourth meeting of the Scientific Advisory Committee of NCDIR held on 13th February 2018 at NCDIR, Bengaluru observed that the project has progressed well since inception. They recommended visits by the team and workshops can be organized for newly collaborated centres. The members appreciated that 111 centers are actively transmitting data to NCDIR and suggested to inform the centers which have not started data transmission or stopped transmitting data. The committee approved the extension of the project for further two years, from 2018 December to 2020 November with proposed budget.
5. In the meeting of the Research Area Panel (RAP) on Cancer of NCDIR held on 06-07 Aug 2018, the panel members reviewed the data collected under the project on and quality of data was appreciated.

2.4 Meetings, Visits to Centres and Workshops

A coordinating centre has been set up with proper staffing and infrastructure in the office of Director General of Health Services, Panchkula Haryana for local coordination and for rendering immediate assistance to collaborating centres. A team of Social Workers, Statisticians and Data Entry Operator headed by Chief Coordinator made continuous visits to the centres to motivate and to equip them for active data transmission.

Apart from the visits by the Principal Investigator, NCDIR team had visited many centres and Training workshops were conducted. Two workshops had been organized. Inaugural and second workshops at Office of DGHS, Panchkula on 20th and 21st May 2016 and Medanta, The Medicity, Gurugram on 13th February 2017 respectively aimed to create awareness, provide guidance, strengthen and rejuvenate the project related activities of the collaborating centres.

a) These workshops essentially aimed at attaining the objectives of the project (specific details of which are discussed in the later part of this chapter);

b) Provide a forum for collaborating centres to present their initial experience towards data collation;

c) Give training in basic principles and techniques of cancer registration and coding according to the International Classification of Diseases of Oncology (ICD-O);

d) Importance of contact with patient or close relative/friend in order to obtain reliable and accurate information on permanent place of residence and other identification details;

e) Guidelines for correctly completing the various items of patient information in the core form;

f) Efforts required to get the exact primary anatomical site of tumour in all reported malignant neoplasms;

g) The methods of collation of patient information in different settings - government medical colleges and hospitals, private hospitals, cancer centres, pathology laboratories etc.

h) Necessity of coverage of other institutions registering and reporting malignant neoplasms in the geographic area;

i) An overview of web-site development and on-line transmission of data.

As a result of continuous interaction with state health authority, D.O. letters had been issued by Director Health Services (DHS) directing that cancer cases from Haryana who have been registered with Institutes/Hospitals from 1st December, 2015 onwards must be uploaded under HCA in view of mandatory registration of cancer cases

1. to all Civil Surgeons (CSs) of Districts of Haryana on 15.07.2016
2. to Empaneled Hospitals of Haryana Govt. on 07.09.2016
3. to other coordinating centers outside the State on 09.09.2016

The collaborating centres were given an individual login ID and password for transmission of data through the website "www.ncdirindia.org/ncrp/ca/haryana". The usual checks on the data and processing were done at the Coordinating Unit of NCRP in Bangalore.

2.5 Collation of Data by Collaborating Centres

The overall method of data collation that is generally adopted by the centres is presented here. Some specifics could vary between and among centres.

1. Identification of a cancer case:

The first step towards collation is identification of the recording of a malignant neoplasm. The method of obtaining this varies in different settings.

Cancer Centres: Generally, cancer centres in India are referral centres for diagnosed or suspected cancer patients. Therefore, the identifying information is completed for all patients who attend that centre for the first time, regardless of whether a microscopic report of malignancy exists or not. This is made at the time of initial registration by a medical doctor, trained social worker, post-graduate medical student, nurse or any other trained person. A provisional noting of the diagnosis is made in the core form wherever a record/report of diagnosis of malignancy is available. The diagnostic portion is subsequently completed after reviewing the records/reports of the pathology department.

Medical College Hospitals and other General Hospitals (Government and Private): Usually, cancers constitute less than 10% of all diseases in a general hospital setting. Therefore, unlike that in a cancer centre, the contact with the patient/

relative/close friend is taken-up only after a diagnosis of malignancy, is made by the Department of Pathology. However, centres use different approaches for histo-pathology, haematology and cytology. For the latter two methods of diagnosis, normally, patients personally visit laboratory for giving blood or bone marrow samples or present themselves for smears to be taken. The chances of the pathologist looking up the patient and the patient's records for details of suspected cancer if any are high. The identifying information in the core form is completed for such patients wherein a malignancy is diagnosed or suspected. Whenever a histopathology diagnosis of malignancy is made, the concerned patients are followed back to the in-patient wards and through the concerned physician.

Pathology Laboratories: Histopathology specimens are often received at the pathology laboratory and the report collected by one of the close family members or friends of the patient. In these circumstances, identifying the report with a diagnosis of malignancy and contacting the patient's representative for the required identifying information, by the concerned pathologist with the help of his secretarial staff posed little difficulty. However, occasionally in some pathology laboratories, specimens are sent through courier or messengers, by surgeons practicing in rural areas to the laboratory in the urban area. In such instances the collaborating pathologist has developed a rapport with the oncologists in the area and the required information is gathered.\

2. Completion of the Core Form

a) Identifying Information: Besides the name of the patient certain additional details like unique identification number, mobile number are sought, mainly to help in checking duplicate registrations. The details of address of the permanent place of residence are of paramount importance. The key information is the location (at least at the level of district) for the past year. Therefore, the information on duration of stay at the residential address is a guide to confirming that the patient is actually residing at that address and that it is not a temporary place of dwelling for the purpose of treatment. This is the same rule that is followed for cancer registries under the NCDIR-NCRP, in that a cancer patient is taken into the registry, provided he or she has stayed in the geographic area of cancer registry operation for a minimum period of one year.

b) Diagnostic Information: Once a pathological - microscopic diagnosis of cancer has been made, the details of the diagnosis including coding according to the WHO, International Classification of Diseases - Oncology, 3rd edition [ICD-O-3] (WHO, Fritz et al, 2000) is done. The concerned faculty (mostly from the department of pathology or radiotherapy) who is in charge of the project at the respective centre oversees the diagnostic information and coding. Whenever the exact primary site of tumour is unknown, efforts are made to contact the treating clinician to obtain the details of primary site.

2.6 Software Development and Functioning of web-site

The data is being received on a day to day basis. The advances in information technology helped the Haryana Cancer Atlas Project identify internet as one of the primary communication medium for collecting the data.

The 'core form' for collecting the patient information was hosted on the web-site www.ncdirindia.org/ncrp/ca/haryana. It was designed to be user friendly and reduce the time taken for data entry. Internet Browser based data entry eliminated the need for software to be installed on every system, the hassles of administration and maintenance.

Care was being taken to code/encrypt the data entered so that the identity or the nature of the data cannot be deciphered by anyone except those concerned with the project. Thus, security of data sent over the Internet was implemented at various levels.

A unique username and password for each participating centre ensured authorized data entry.

All data were encrypted for transmission, to prevent unauthorized access. A center is able to retrieve and visualize the data which has been entered but would not be able to access data from other centers participating in the project.

The Coordinating Unit at NCDIR examines the data and makes changes/corrections if any, only in its data base after affirmation of concerned center.

Another level of security is implemented by storing the data on a Database Server in an encrypted form. The Coordinating Unit periodically downloads this data which is stored on a local database. This data is sanitized and used for off-line checks, analysis, preparation of reports etc.

The Coordinating Unit uses a 'Database Server' and 'analysis stations' connected over a Local Area Network. A Secure Firewall installed in the Coordinating Unit at NCDIR keeps away hackers from accessing any information/data.

2.7 Transmission of Data:

Collaborating centres were given an individual login-ID and password with detailed instructions on entering the data. Essentially, the process of data transmission through the web-site "www.ncdirindia.org/ncrp/ca/haryana" involves the following steps:

a) Hard copies of HCA coreform can be requested online by the registered centres through the Coreform Request Module which can be accessed after the user logs in to the HCA website with their centre credentials.
b) One set of completed forms as hard copy kept ready;
c) Connecting to the internet;
d) Opening the internet browser;
e) Opening the URL: http://www.ncdirindia.org/ncrp/ca/haryana
f) Typing login ID (user ID) and password;
g) Opening the page with the "Proforma";
h) Transferring all the details from the hard copy of a particular form to the proforma on the web-site
i) Submitting the form

Entry of data on to the proforma on the web-site followed by transmission, is done by the person, authorised to do so by the Principal Investigator of the respective centre. Usually it is done from its own internet connection. If internet connectivity is not available at the department or at the collaborating centre or if the desired speed of connection is not existing, centres use the public browsing locations.

Data from one centre was transmitted through an email in an excel file with the identifying and diagnostic information of cancer cases. These records were scrutinized by the concerned staff of the project for accuracy of diagnosis and were coded accordingly as per the HCA proforma and stored in the database server after encryption. The Co-ordinating unit at DGHS, Panchkula was also provided with a user-id and password through which the data collected by the social workers from various labs and hospitals were entered.

2.8 Checks and Data Processing

The following checks were done on the data and where needed, clarifications sought from individual centres:

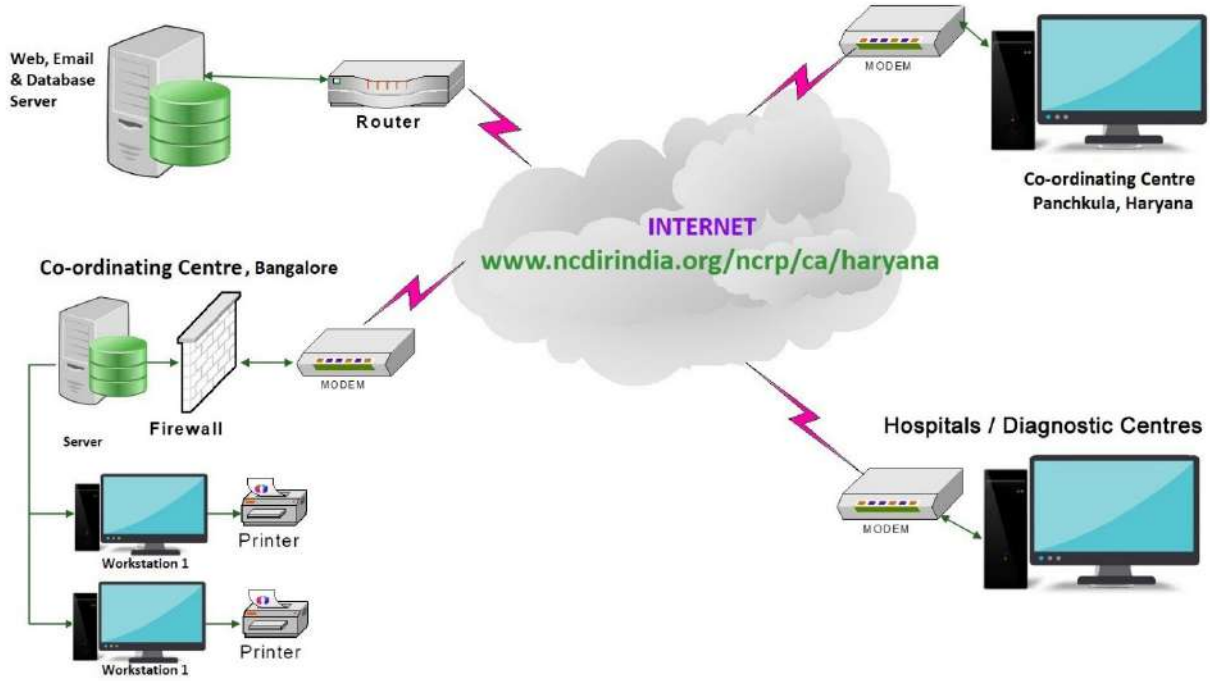
1. During the data entry, validations were done to ensure that the data received had no formatting errors
2. Information on completeness and correctness of information on residential status (at least the District of residence of the patient should be known);
3. Information on completeness and correctness of information on diagnosis was checked and whether coding was done according to ICD-O-3;
4. From steps 1-3 the following cases were excluded/clarifications sought from centers:
   a) District Unknown;
   b) Date of diagnosis earlier than commencement of project;
   c) Behavior code of morphological diagnoses being less than /3
5. A detailed check programme that was developed in-house was carried out on the data. These included the following:
   A. On Identifying Information
      a) Postal PINCODE versus District;
      b) Centre-wise listing of possible duplicate registrations using patient's name, topography site and morphology, age, gender, address and other identifying information like mobile number, hospital registration, Unique Identification Number and pathology slide number;
      c) Similar check as in across all districts.
      d) Patients with same name,address and date of first diagnosis(DFD) but with different registration number were clarified with the centers.
   B. On Diagnostic Information - an in-house version based on the list of checks furnished by IARC (Parkin et al) was prepared. It included the following:
      a) Range check on code - topography and morphology;
      b) Impossible sex and site (topography) combinations;
      c) Wrong or unlikely sex and morphology combinations;

d) Unlikely age - site combinations;
e) Unlikely age - morphology combinations;

6. Further checks on Identifying Information:
   a) Sorted listing of cases by district code and verification of address and district name with district code for each case;
7. Further checks on Diagnostic Information:
   a) Sorted listing of cases by Topography Site code and verification of topography description and code;
   b) Sorted listing of cases by Morphology code and verification of morphology description and code;
8. Specific attention to look into, clarify and minimize cases with:
   a) Unknown Primary Site of tumour;
   b) III defined sites;

The Data Flow Diagram of the functioning of the Website is shown in Fig. 2.1.

FIGURE 2.1: Data Flow Diagram of the functioning of Website



2.9 Principles in Data Analysis and Presentation of Results

1. The reference manual – International Classification of Diseases (ICD-10) - Oncology Section was used to group neoplasms by site and determine leading sites of cancer. There are few finer differences in the definition of some anatomical sites in particular for sites of Head and Neck. Such variance may be kept in mind when relating the rates or charts with earlier reports of NCDIR-NCRP.
2. Diagrammatic bar charts with relative proportion (%) of ten leading sites of cancer for each Centre that reported at least 500 cases are presented in Chapter 8 (Individual Centre's Data);
3. Population (Census of India publications) according to five-year age group and gender is available by district. As per the 2011 census results, there were 21 districts in the state. Information on cancer cases also gives the identity of the district for each case. Therefore, the district is taken as a unit for calculation of incidence rates;
4. The most recent data from established Population Based Cancer Registries (PBCR: 2012-2014) is also included, for description and comparison.
5. Most of the centers have contributed data for both the years 2016 and 2017.
6. All districts that have a higher AAR than that calculated for PBCR at Barshi Expanded (2012-2014) are represented in salient features on individual districts. PBCR Barshi Expanded has the least incidence rates among the registries under NCDIR-NCRP, it is a rural registry and majority of districts in the country have predominantly semi-urban or rural population.

7. The different district-wise maps of Haryana State in Chapter 3 (all sites) and Chapter 5 (specific sites) display districts with relatively higher incidence rates in darker shades and those with lower incidence rates in lighter shades of the same colour. A legend has also been provided for each map. Besides, there are also areas/districts in grey. These latter areas represent places with paucity of information on cancer cases. Sites of cancer with less than 10 cases are excluded from the bar charts so as to avoid overestimation or misinterpretation.

8. The following two points were considered in choosing specific anatomical sites of cancer for detailed comparison of incidence rates nationally (Chapter 5). (i). All districts of Haryana state were tabulated with top ten leading sites of cancer. Those sites which featured in top ten in most of the districts after above tabulation were chosen for elaborating in specific sites of cancer. (ii)The specific sites are compared with PBCR data of 2012-14. (iii) A district wise map depicts the AARs within districts with darker shades having higher AARs (point no.7 above).

9. The profile of each district is shown in alphabetic order, decadal growth rate, literacy rate and other demographics are given as per census of 2011.The center wise contribution from each of the centers is given in descending order in tabular form. This includes centers which were outside the state of Haryana where residents of state have been diagnosed/received cancer directed treatment. The centers which have contributed less than 10 cases in either 2016 or 2017 were included in others.

10. While presenting the profile of cancers in collaborating centres (Chapter 8), the centres are arranged in the descending order of the number of cancers (for the combined years 2016 and 2017) on which information was provided to the project, after grouping into HBCRs, PBCRs and all other centres.

Salient Features and Limitations:

- After a centre completes data transmission of cases registered in a particular year, number of internal validity checks were carried out and clarifications were sought from individual centres on address (of the place of permanent residence of the patient), residential status, diagnostic details and other demographic information of the cases where required information was not provided which was essential to eliminate duplicates.
- The hospitals/ labs whose data did not comply with these standard were excluded from this analysis. Consistency check between Pin codes and district names was done. Around 4000 cases from Lal Path Lab, New Delhi, and other centres were excluded.
- The proportion of cases with unknown and unspecified sites of cancer were low and acceptable as per International norms.
- During the data analysis it was found that there were a number of cases in which there was a mismatch between the coding of sites such as Tongue, Mouth and Buccal Mucosa and hence all the Head and Neck sites were analyzed together as a group and included the following sites:

    - ✓ Tongue (C01-C02)
    - ✓ Mouth (C03-C06)
    - ✓ Tonsil (C09)
    - ✓ Oth. Oropharynx (C10)
    - ✓ Nasopharynx (C11)
    - ✓ Hypopharynx (C12-13)
    - ✓ Pharynx Unspecified (C14)
    - ✓ Larynx (C32)

Chapter 3

INCIDENCE RATES OF CANCER [ALL SITES] IN DISTRICTS OF STATE OF HARYANA

The rationale on which incidence rates have been used has been spelt out in the earlier chapter on `Overall Plan and Methods' (Chapter 2). The reason for using the district as a unit for such calculation has also been addressed. The majority of the districts in the State of Haryana represent rural population.

Under the NCDIR-NCRP, registries covering Manipur, Mizoram, Sikkim, Tripura, Barshi expanded, Barshi Rural and Wardha are Population Based Cancer Registries giving incidence rates representative of the rural population in the country. The most recent incidence rates available for above mentioned registries is that of the years 2012-14. The average annual age adjusted incidence rate (AAR) for Barshi expanded (all sites) for the period 2012-14, is 40.9 and 52.0 per 100,000 for males and females respectively. These rates are the lowest observed among rural registries mentioned. Thus the AAR of 40.9 has been used as the cut off level to select districts for observing and comparing cancer patterns.

All districts of Haryana had a higher AAR than 40.9 for at least one of the two years (2016 or 2017) and in either sex. Keeping in view the incidence rate of 2016 and 2017 separately as well as in combination for all district of Haryana state it was found that all 21 districts are above the cut off level either in males or females. Therefore all 21 districts have been used for comparison of AARs with existing PBCRs.

Since the incidence rates calculated are of confirmed malignancies, the combination of the AAR between the years 2016 and 2017 has been used in depicting the bar charts and maps in the following pages. For the 27 PBCRs under the NCDIR-NCRP the latest data available is of the period 2012-14. Therefore the combination of AAR for the period (2012-14) has been used to calculate the average AAR for these PBCRs.

All Sites (ICD-10: C00-C97)

Figure 3.1(a & b) Compares the Age Adjusted Rates (AARs per 1, 00,000) of all sites in males and females respectively within the district of state of Haryana. The overall incidence rate for all districts of the state as a single figure has also been depicted in the figure for males and females.

Figure 3.1(c & d) shows the bar charts of AAR in districts for all sites of cancer in males and females. The bars of the 27 PBCRs under the NCRP-NCDIR are also given. The AAR is shown against each bar.

Males: Among males, in PBCRs under NCDIR- NCRP, Aizawl had the highest AAR of 270.7/100,000. Rohtak district of Haryana with highest AAR comes in ninth position with AAR of 143.9/100,000 for all sites of cancer. Among the urban PBCRs, Pune had the lowest AAR of 77. 6 per 100,000. There were thirteen districts that were above this AAR but below that of Aizawl PBCR. The remaining eight districts listed had AAR lower than the urban PBCRs (Mizoram-Excl- Imphal West) but above that of the rural PBCR at Barshi expanded. [Fig 3.1(c)]

Females: Among females, Papumpare PBCR had the highest AAR of 249.0/100,000. The Gurugram district of Haryana with highest AAR that comes in fourteenth position with AAR of 108.2/100,000. Among the urban PBCRs, Tripura state had the lowest AAR of 54. 9 per 100,000. There were eleven districts that had a higher AAR than that of Tripura state. There were twelve districts that had AAR above that of Barshi Expanded PBCR, which in females was 52.0/100,000. [Fig 3.1(d)]

Districts with rates less than that indicated are given lighter shades. Based on the stated analogy, this map essentially gives a picture of the breadth of coverage, of information on cancer cases under this project. On further review of figure 3.2(a), a belt of higher incidence of cancer is seen over Hisar (105.3), Rohtak (143.9), Jhajjar (109.9) Gurugram (124.8), Jind (104.7) and Faridabad (94.8) for males, However, the relatively higher rates within the state are in tandem with incidence rates seen in PBCRs of neighbouring state/UT/districts of Delhi (149.4) and Patiala (97.9) which has been functional since 1988 and 2014 respectively. For females (Fig 3.2(b)), similar belt with relatively higher rates within the state is seen. Additionally, district of Ambala (85.7) also shows higher rates for females. The rates of these districts falling in the belt were comparable with Delhi (144.8) and Patiala (111.2) for females.

Figure 3.1(a): District wise Comparisons of Age Adjusted Incidence Rates (AARs) of All Districts All Sites (ICD-10:C00-C97) - (2016-2017) - Males

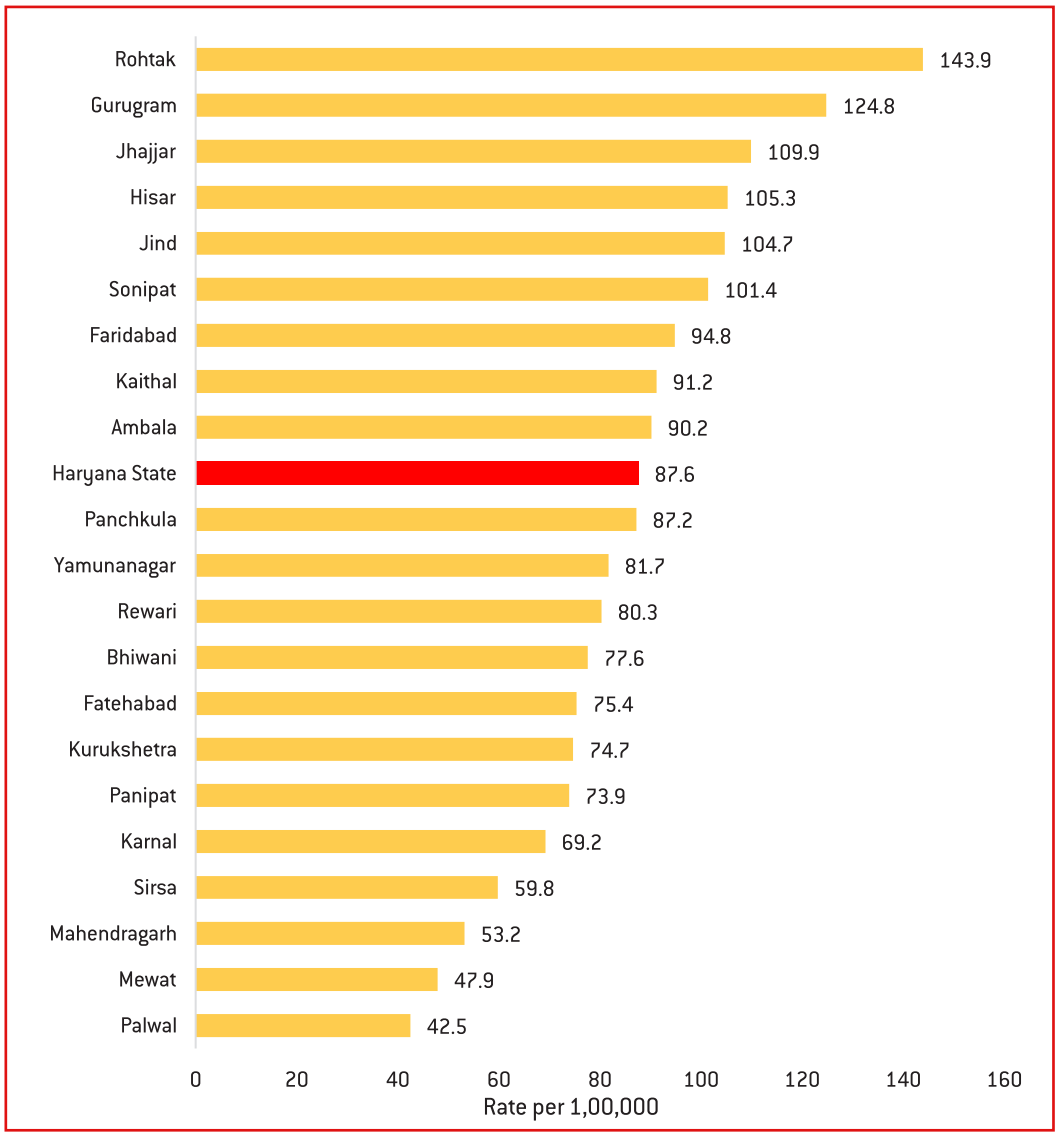


Figure 3.1(b): District wise Comparisons of Age Adjusted Incidence Rates (AARs) of All Districts All Sites (ICD-10:C00-C97) - (2016-2017) - Females

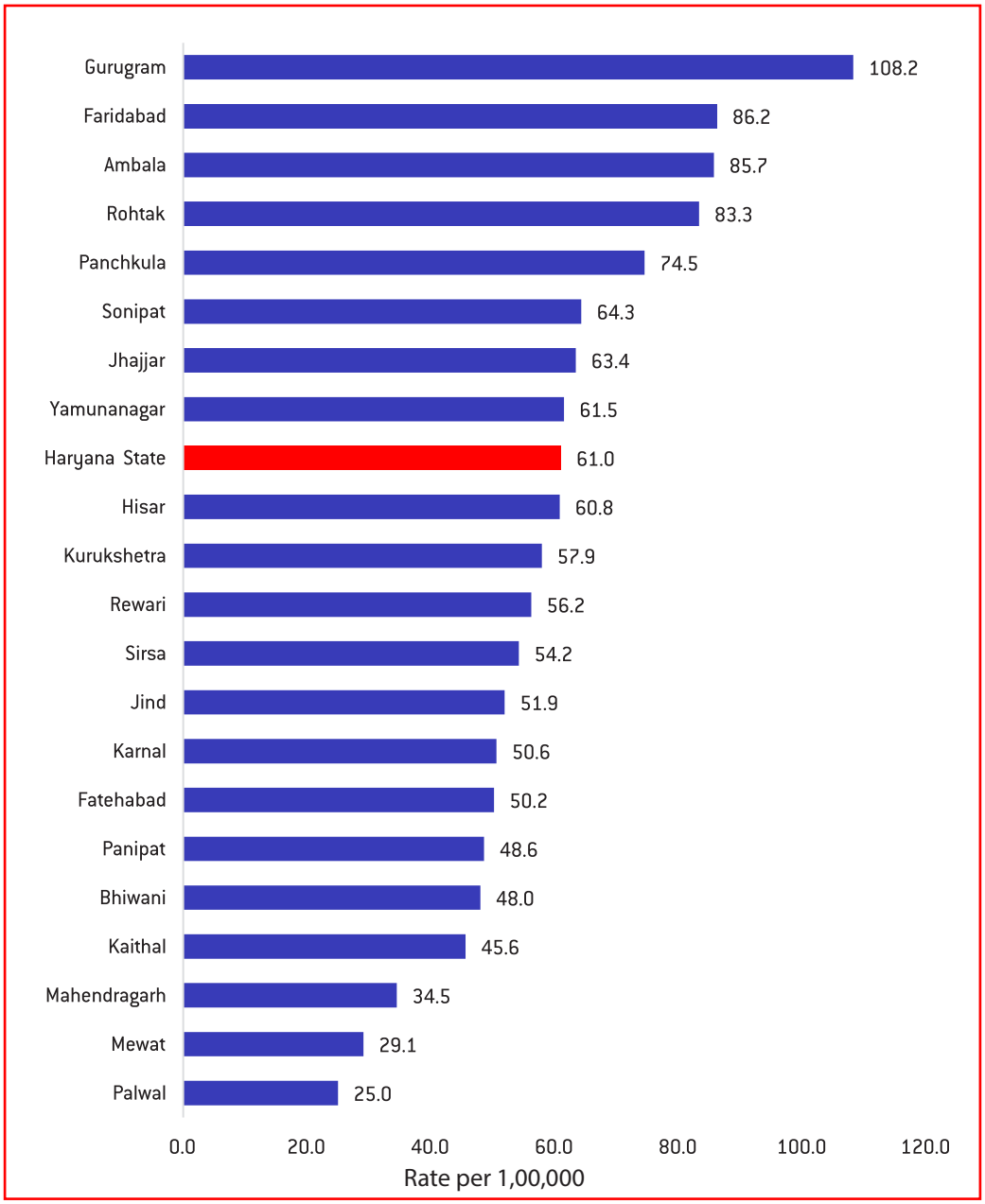


Figure 3.1(c): District wise Comparisons of Age Adjusted Incidence Rates (AARs) with that of PB-CRs under NCDIR -All Sites (ICD-10:C00-C97) - (2016-2017) - Males

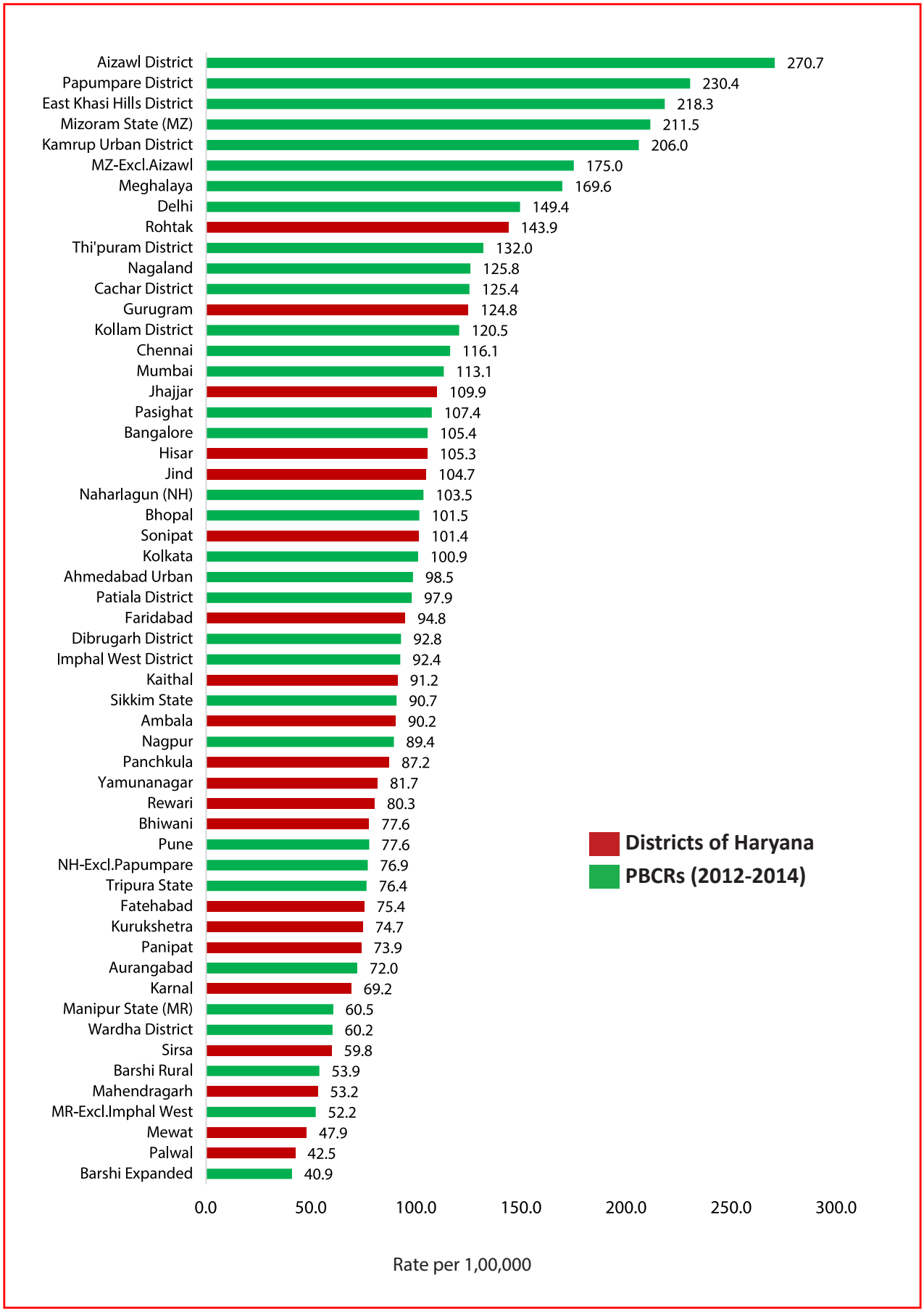


Figure 3.1(d): District wise Comparisons of Age Adjusted Incidence Rates (AARs with that of PBCRs under NCDIR -All Sites (ICD-10:C00-C97) - (2016-2017) - Females

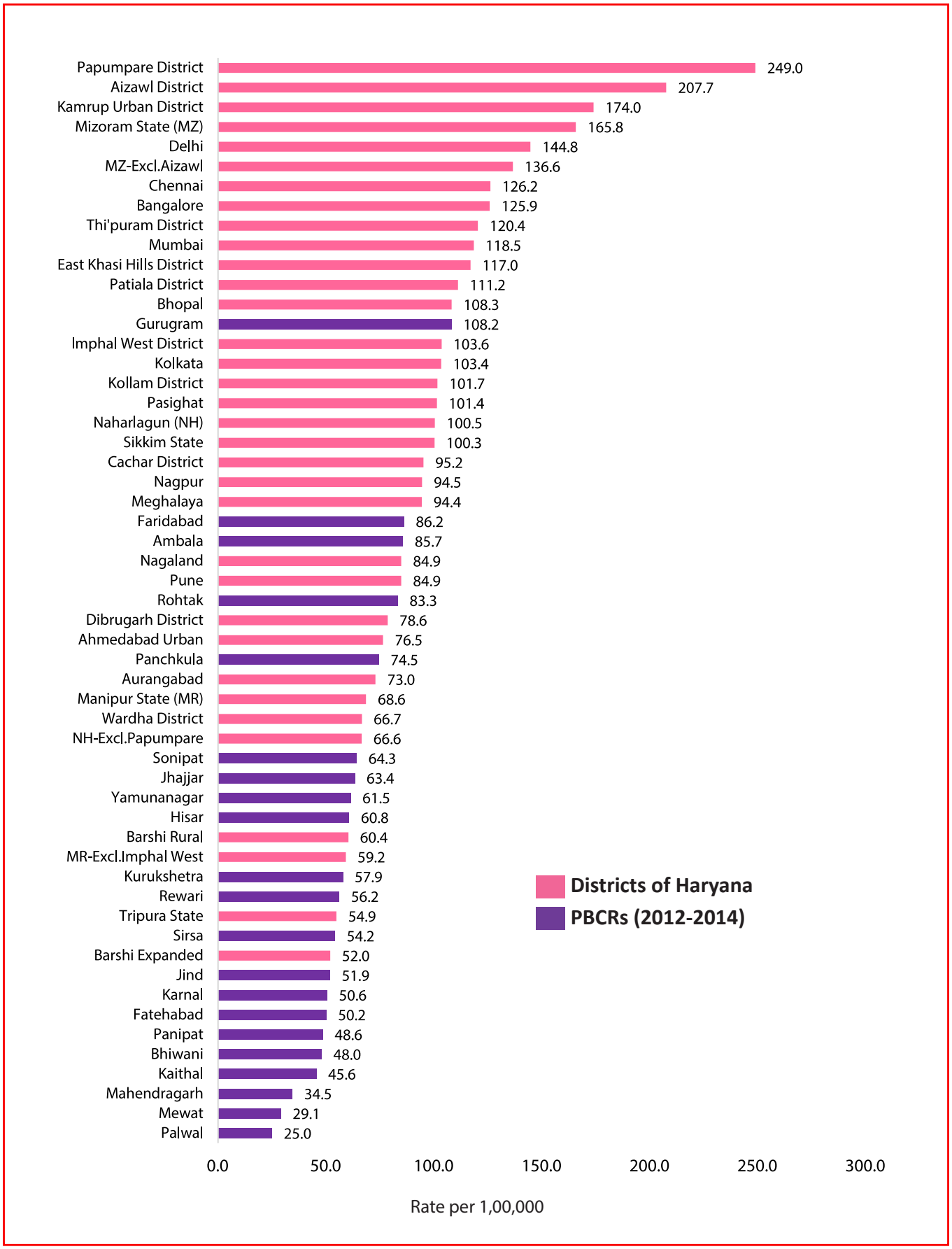


Figure 3.2 (a) District wise distribution of AAR All Sites (ICD-10:C00 – C97) - (2016-2017) – Males

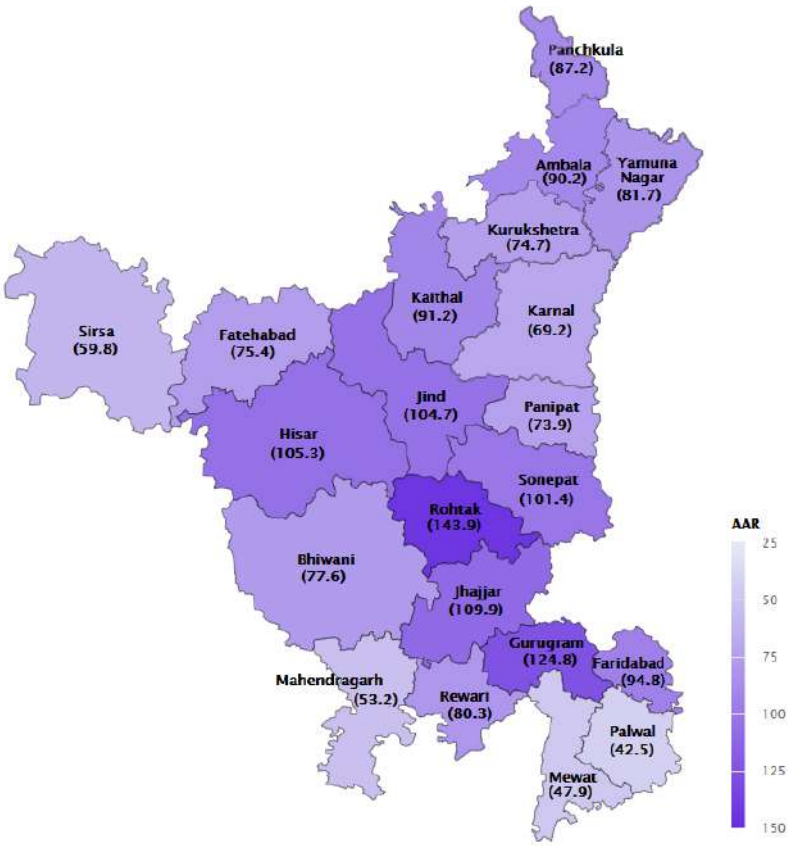
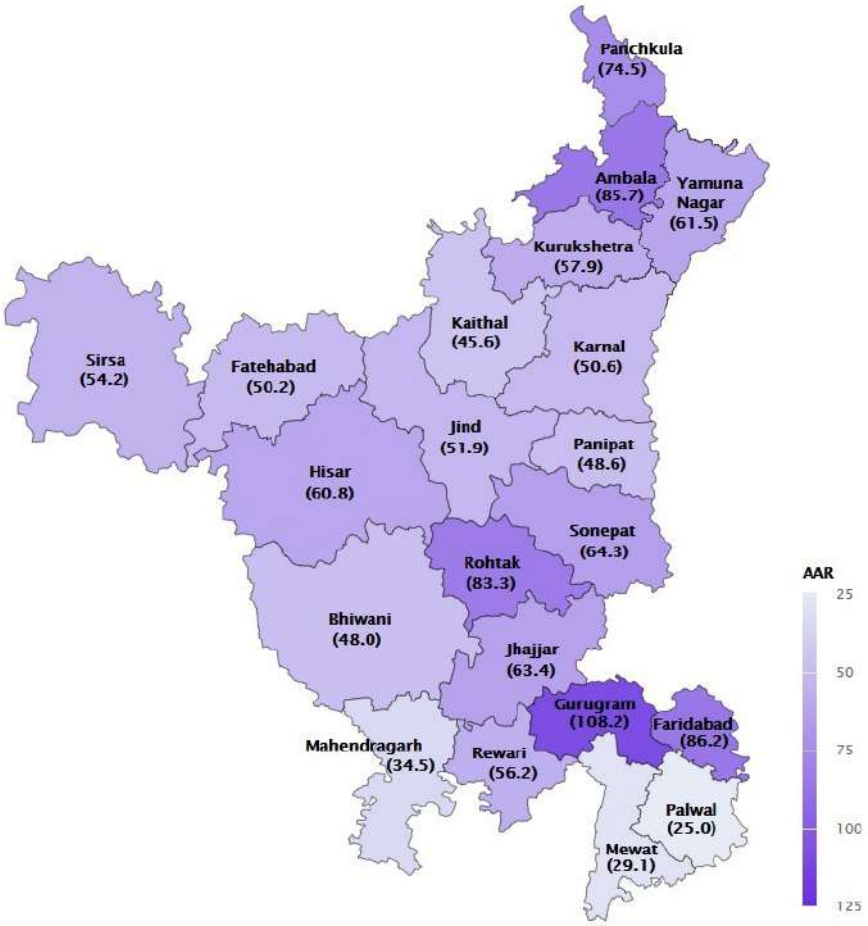


Figure 3.2(b) District wise distribution of AAR All Sites (ICD-10:C00 – C97)-(2016-2017)- Females



Cumulative rate and Risk

Day (1987) proposed the Cumulative rate as another age Standardised incidence rate. The Cumulative risk is the probability that an Individual will be diagnosed with cancer during a certain age period in the absence of any competing cause of death and assuming that the current trends prevail over the time Period. For practical purposes, Cumulative rate is a good approximation of Cumulative risk over the defined period of time.

Cumulative Risk (%) in 0-64 years

This cumulative risk (%) gives an idea about a person developing cancer during the life period of 0-64 years of age. Among males, the cumulative risk ranged from 3.2 % in Palwal District to 9.0% in Rohtak followed by 7.4% of Jind District. Hence 9.0% of males in the age group of 0-64 years in Rohtak District are likely to develop cancer in their life time and the males in the age group of 0-64 years in Palwal District at 3.2% are the least at risk.

Among females, the cumulative risk ranged from 1.9% in Palwal District to 7.2% in Gurugram District. This means in Gurugram District, on an average about 7.2% of females in the 0-64 age group are likely to develop cancer in their life time whereas in Palwal District the risk is 1.9%.

Cumulative Risk (%) in 0-74 years

Among males, the cumulative risk (%) in the 0-74 year age group ranged from 4.7% in Palwal District to 16.5% in Rohtak District, followed by Gurugram District in 14.2%.

Among females, the cumulative risk percentage in the 0-74 age group ranged from 2.9 % in Palwal District to 12.3% in Gurugram District, followed by Faridabad District in 10.0%.

Table 3.1. Cumulative Incidence Rate, Cumulative Risk and Possibility of one in number of persons developing cancer of any Site (ICD-10): C00-C97 for all Districts (2016-2017) Calculation based on age specific rates from 0-64 and 0-74 years of age

Registry	Cumulative Rates (%)				Cumulative Risk (%)				Possibility of one in number of persons developing cancer			
	0-64 Years		0-74 Years		0-64 Years		0-74 Years		0-64 Years		0-74 Years	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Panchkula	5.4	5.1	10.9	8.7	5.2	5.0	10.3	8.4	19	20	10	12
Ambala	5.8	6.0	11.1	9.7	5.6	5.8	10.5	9.3	18	17	9	11
Yamunanagar	5.1	4.4	10.2	7.1	4.9	4.3	9.7	6.8	20	23	10	15
Kurukshetra	4.6	4.5	9.2	6.8	4.5	4.4	8.8	6.6	22	23	11	15
Kaithal	6.9	3.4	10.9	5.3	6.6	3.4	10.4	5.1	15	30	10	20
Karnal	4.8	4.0	8.5	5.7	4.7	3.9	8.1	5.5	21	26	12	18
Panipat	5.1	3.6	9.4	5.9	5.0	3.5	8.9	5.7	20	28	11	18
Sonipat	6.8	4.8	12.9	7.4	6.6	4.7	12.1	7.1	15	21	8	14
Jind	7.7	4.0	13.0	5.9	7.4	3.9	12.2	5.7	13	25	8	18
Fatehabad	5.2	3.9	9.3	5.9	5.1	3.8	8.9	5.7	20	26	11	18
Sirsa	4.3	4.2	7.3	6.2	4.2	4.1	7.0	6.0	24	24	14	17
Hisar	7.4	4.6	13.3	7.0	7.1	4.5	12.4	6.8	14	22	8	15
Bhiwani	5.4	3.5	9.6	5.5	5.3	3.5	9.2	5.4	19	29	11	19
Rohtak	9.4	6.1	18.0	9.7	9.0	6.0	16.5	9.2	11	17	6	11
Jhajjar	7.6	4.5	13.7	7.2	7.3	4.4	12.8	7.0	14	23	8	14
Mahendragarh	3.6	2.6	6.5	3.9	3.5	2.5	6.3	3.9	28	39	16	26
Rewari	5.1	4.1	10.2	6.5	5.0	4.0	9.7	6.3	20	25	10	16
Gurugram	6.7	7.5	15.4	13.2	6.5	7.2	14.2	12.3	15	14	7	8
Faridabad	5.7	6.0	12.0	10.5	5.5	5.8	11.3	10.0	18	17	9	10
Mewat	3.8	2.2	5.5	3.3	3.7	2.2	5.4	3.2	27	46	19	31
Palwal	3.3	1.9	4.9	2.9	3.2	1.9	4.7	2.9	31	52	21	35

Chapter 4

DISTRIBUTION AND PATTERNS OF CANCER IN DISTRICTS

In this chapter, distribution of cancers in various districts would be discussed individually. This chapter provides a summary of cancer patterns for 21 districts of state of Haryana. For the analysis, the state census data of 2011(accessed from www.censusindia.net) has been tabulated for each district.

Each district's description consists of three tables. One with a profile of the district (2011 census), giving the area in sq. kms, decadal growth rate (2001-11), literacy rate, sex-ratio, population density per sq. km and urban/rural population with proportions. The second table gives the centre-wise distribution of the cancers from that respective district. This table provides a picture of the referral patterns of cancers in that district. The third table gives by gender, the estimated population, the number of cancers (all sites), the Crude, Age Adjusted and Truncated Incidence Rate per 100,000 persons. The items in this table are provided for the calendar years 2016 and 2017 as the case may be. Following this, the leading sites (top 10) for males and females for the district have been depicted graphically.

4.1. Ambala district

Table 4.1 (a): Profile of Ambala District (2011 Census)	
Area (in sq. kms.)	**1574**
Decadal Growth Rate (2001 - 2011)	**11.2%**
Literacy Rate	
Males	**87.3%**
Females	**75.5%**
Sex Ratio (females per 1000 males)	**885**
Density (Persons per sq. km)	**717**
Total Population	**1128350**
Rural Population (%)	**627576 (55.6)**
Urban Population (%)	**500774 (44.4)**

Figure 4.1 (a): Map of Haryana State highlighting Ambala District

Table 4.1 (b): Centerwise Distribution of Cancers

Number (#) and Relative Proportion (%)

Sl No	Name of the Centre	2016		2017		2016 - 2017	
		#	%	#	%	#	%
1	Post Graduate Institute of Medical Education Research, Chandigarh	277	27.8	299	26.5	576	27.1
2	Government Medical College and Hospital, Chandigarh	128	12.9	191	16.9	319	15.0
3	Dogra Path Lab, Ambala City	95	9.5	100	8.9	195	9.2
4	Rotary Ambala Cancer and General Hosptial, Ambala Cantt	103	10.3	79	7.0	182	8.6
5	Government Hospital Ambala City, Ambala	64	6.4	92	8.2	156	7.3
6	M.M. Institute of Medical Sciences and Research, Ambala	46	4.6	80	7.1	126	5.9
7	Fortis Hospital, Mohali	30	3.0	38	3.4	68	3.2
8	Indus Super Speciality Hospital, Mohali	41	4.1	20	1.8	61	2.9
9	IVY Hospital, Mohali	26	2.6	24	2.1	50	2.4
10	Mahaveer Clinical Laboratory, Ambala	12	1.2	35	3.1	47	2.2
11	Rajiv Gandhi Cancer Institute and Research Centre, New Delhi	25	2.5	22	2.0	47	2.2
12	GH Ambala cantt, Ambala	26	2.6	16	1.4	42	2.0
13	Acharya Tulsi Regional Cancer Treatment and Research Institute, Bikaner	18	1.8	17	1.5	35	1.6
14	Adesh Medical College and Hospital, Kurukshetra	1	0.1	34	3.0	35	1.6
15	Max Super Speciality Hospital, Mohali	21	2.1	9	0.8	30	1.4
16	Grecian super speciality hospital, Mohali	19	1.9	9	0.8	28	1.3
17	Alchemist Hospital Ltd, Panchkula	6	0.6	7	0.6	13	0.6
18	Max Super Speciality Hospital, New Delhi	7	0.7	6	0.5	13	0.6
19	Fortis Memorial Research Institute, Gurgaon	3	0.3	9	0.8	12	0.6
20	KOS DIAGNOSTIC LAB	9	0.9	3	0.3	12	0.6
21	General / Civil Hospital, Panchkula	5	0.5	6	0.5	11	0.5
22	All Other Centres	34	3.4	31	2.8	65	3.1
Total		**996**	**100.0**	**1127**	**100.0**	**2123**	**100.0**

* All Other centres which have contributed less than 10 cases

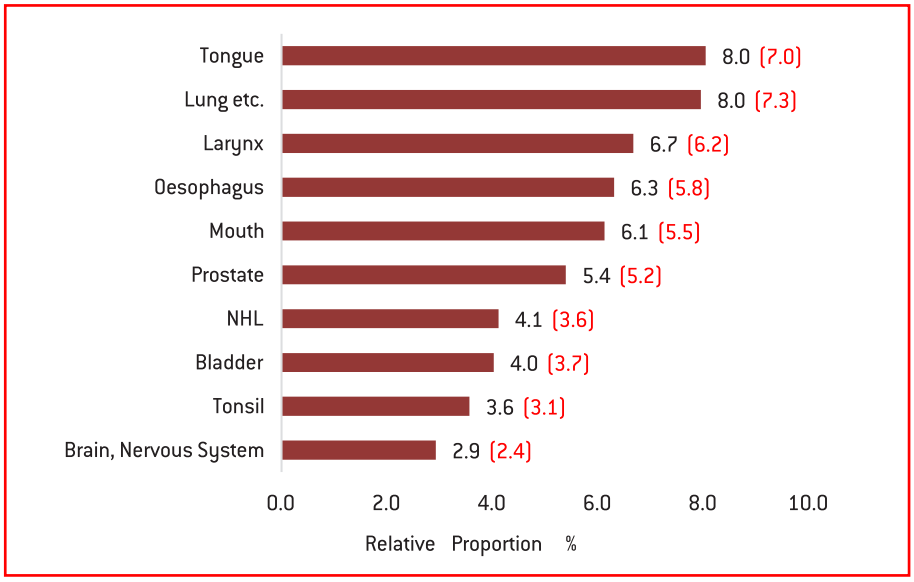
Table 4.1 (c): Salient features of Cancer Incidence

Year	2016		2017		2016-2017	
	Males	Females	Males	Females	Males	Females
Estimated Population	630726	563579	636918	570179	1267644	1133758
Total cancers(all sites)	510	486	584	543	1094	1029
Crude Rate	80.9	86.2	91.7	95.2	86.3	90.8
Age Adjusted Rate	85.2	81.4	95.1	89.9	90.2	85.7
Truncated Rate	146.9	168.4	173.0	177.0	160.1	172.8

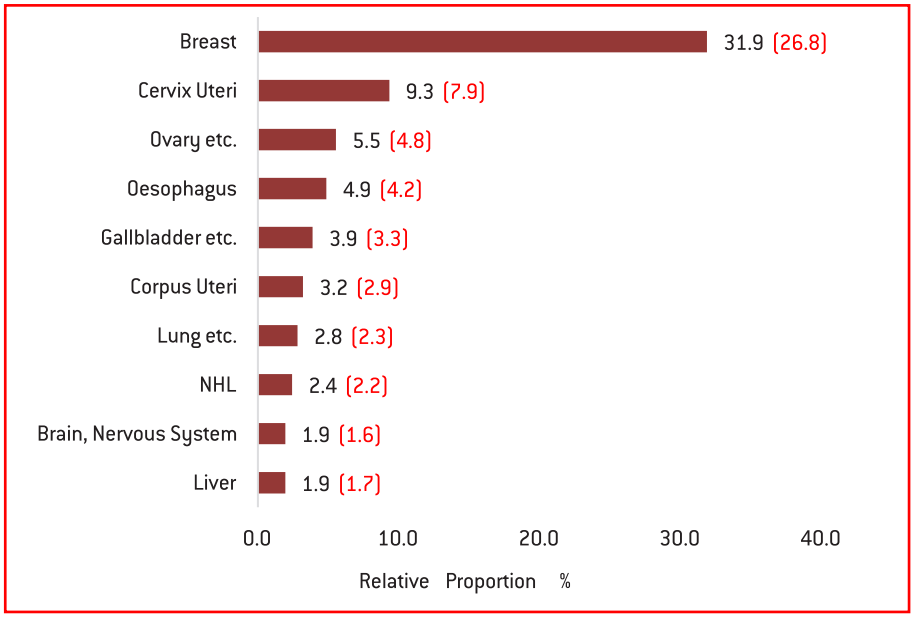
Figure 4.1 (b): Ten Leading Sites of Cancer (2016-2017)

(Age Adjusted Rates given in parentheses)

Males



Females



4.2. Bhiwani district

Table 4.2 (a): Profile of Bhiwani District (2011 Census)	
Area (in sq. kms.)	**4778**
Decadal Growth Rate (2001 - 2011)	**14.7%**
Literacy Rate	
Males	**85.6%**
Females	**63.5%**
Sex Ratio (females per 1000 males)	**886**
Density (Persons per sq. km)	**342**
Total Population	**1634445**
Rural Population (%)	**1313123 (80.3)**
Urban Population (%)	**321322 (19.7)**

Figure 4.2 (a): Map of Haryana State highlighting Bhiwani District

Table 4.2 (b): Centerwise Distribution of Cancers

Number (#) and Relative Proportion (%)

Sl No	Name of the Centre	2016		2017		2016-2017	
		#	%	#	%	#	%
1	Pt. B.D. Sharma PGIMS, Rohtak	339	32.8	394	41.0	733	36.8
2	O.P.Jindal Institute of Cancer and Research, Hisar	222	21.5	175	18.2	397	19.9
3	Acharya Tulsi Regional Cancer reatment and Research nstitute, Bikaner	155	15.0	105	10.9	260	13.0
4	Aadhar Health Institute (Vlcom Health Care Private Limited), Hisar	96	9.3	117	12.2	213	10.7
5	Rajiv Gandhi Cancer Institute and Research Centre, New Delhi	44	4.3	35	3.6	79	4.0
6	Dr. B.R. Ambedkar Institute Rotary Cancer Hospital, New Delhi	46	4.4	14	1.5	60	3.0
7	Bhagwan Mahaveer Cancer Hospital and Research Centre, Jaipur	19	1.8	17	1.8	36	1.8
8	Post Graduate Institute of Medical Education Research, Chandigarh	15	1.5	9	0.9	24	1.2
9	Fortis Memorial Research Institute, Gurgaon	13	1.3	9	0.9	22	1.1
10	Medanta Cancer Centre, Gurgaon	11	1.1	9	0.9	20	1.0
11	Maharaja Agrasen Medical College Agroha, Hisar	12	1.2	6	0.6	18	0.9
12	Artemis Health Institute, Gurgaon	7	0.7	7	0.7	14	0.7
13	Paras Hosptials, Gurgaon	7	0.7	4	0.4	11	0.6
14	Action Cancer Hospital, Delhi	-	-	10	1.0	10	0.5
15	Asian Institute of Medical Sciences, Faridabad	5	0.5	5	0.5	10	0.5
16	All Other Centres	43	4.2	44	4.6	87	4.4
Total		**1034**	**100.0**	**960**	**100.0**	**1994**	**100.0**

* All Other centres which have contributed less than 10 cases

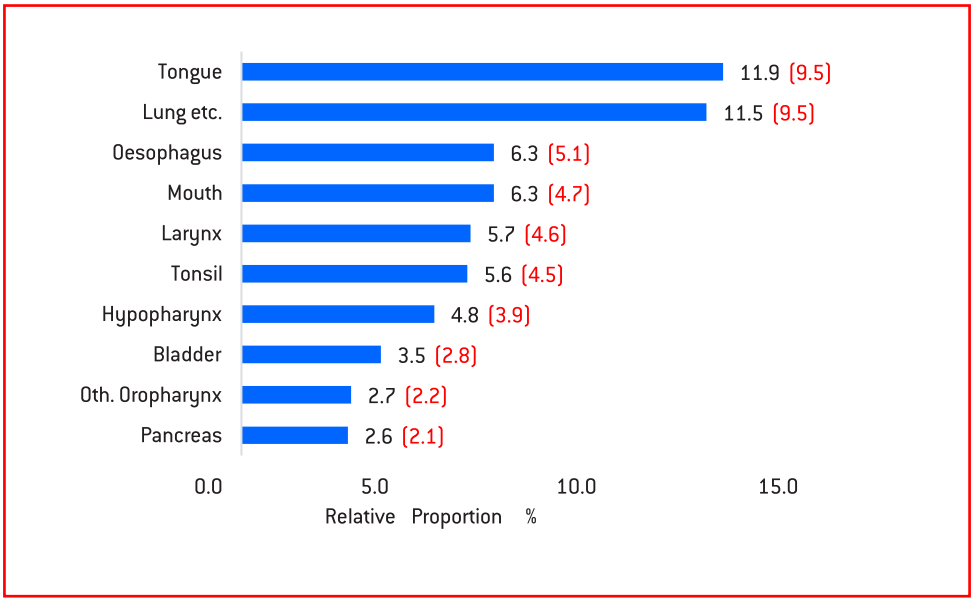
Table 4.2 (c) : Salient features of Cancer Incidence

Year	2016		2017		2016-2017	
	Males	Females	Males	Females	Males	Females
Estimated Population	930700	827758	943222	839516	1873922	1667274
Total cancers(all sites)	616	418	598	362	1214	780
Crude Rate	66.2	50.5	63.4	43.1	64.8	46.8
Age Adjusted Rate	79.6	51.9	75.6	44.3	77.6	48.0
Truncated Rate	156.6	110.6	150.4	89.9	153.5	100.1

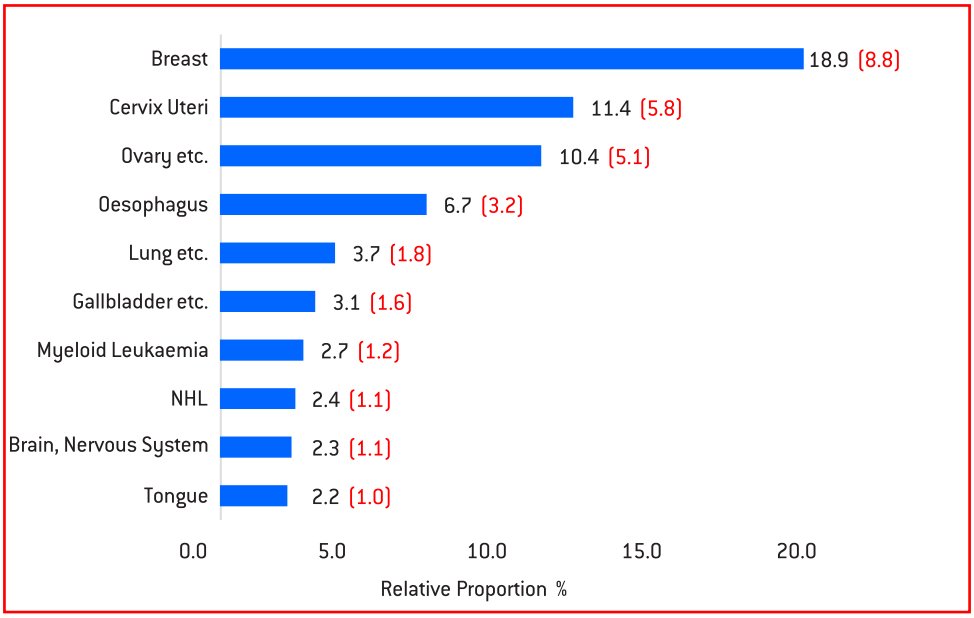
Figure 4.2 (b): Ten Leading Sites of Cancer (2016 - 2017)

(Age Adjusted Rates given in parentheses)

Males



Females



4.3. Fatehabad district

Table 4.3 (a): Profile of Fatehabad District (2011 Census)	
Area (in sq. kms.)	**3983**
Decadal Growth Rate (2001 - 2011)	**16.9%**
Literacy Rate	
Males	**76.1%**
Females	**58.9%**
Sex Ratio (females per 1000 males)	**902**
Density (Persons per sq. km)	**371**
Total Population	**942011**
Rural Population (%)	**762423 (80.9)**
Urban Population (%)	**179588 (19.1)**

Figure 4.3 (a): Map of Haryana State highlighting Fatehabad District

Table 4.3 (b): Centerwise Distribution of Cancers

Number (#) and Relative Proportion (%)

Sl No	Name of the Centre	2016		2017		2016-2017	
		#	%	#	%	#	%
1	O.P.Jindal Institute of Cancer and Research, Hisar	139	22.6	104	18.6	243	20.7
2	Acharya Tulsi Regional Cancer Treatment and Research Institute, Bikaner	134	21.8	97	17.3	231	19.7
3	Aadhar Health Institute (Vlcom Health Care Private Limited), Hisar	81	13.2	87	15.5	168	14.3
4	Maharaja Agrasen Medical College Agroha, Hisar	61	9.9	56	10.0	117	10.0
5	Pt. B.D. Sharma PGIMS, Rohtak	47	7.6	65	11.6	112	9.5
6	General Hospital, Fatehabad	41	6.7	55	9.8	96	8.2
7	Post Graduate Institute of Medical Education Research, Chandigarh	23	3.7	28	5.0	51	4.3
8	Rajiv Gandhi Cancer Institute and Research Centre, New Delhi	18	2.9	10	1.8	28	2.4
9	Bhagwan Mahaveer Cancer Hospital and Research Centre, Jaipur	8	1.3	11	2.0	19	1.6
10	Govt. Medical College and Hospital, Chandigarh	7	1.1	4	0.7	11	0.9
11	All Other Centres	56	9.1	43	7.7	98	8.4
Total		**615**	**100.0**	**560**	**100.0**	**1175**	**100.0**

* All Other centres which have contributed less than 10 cases

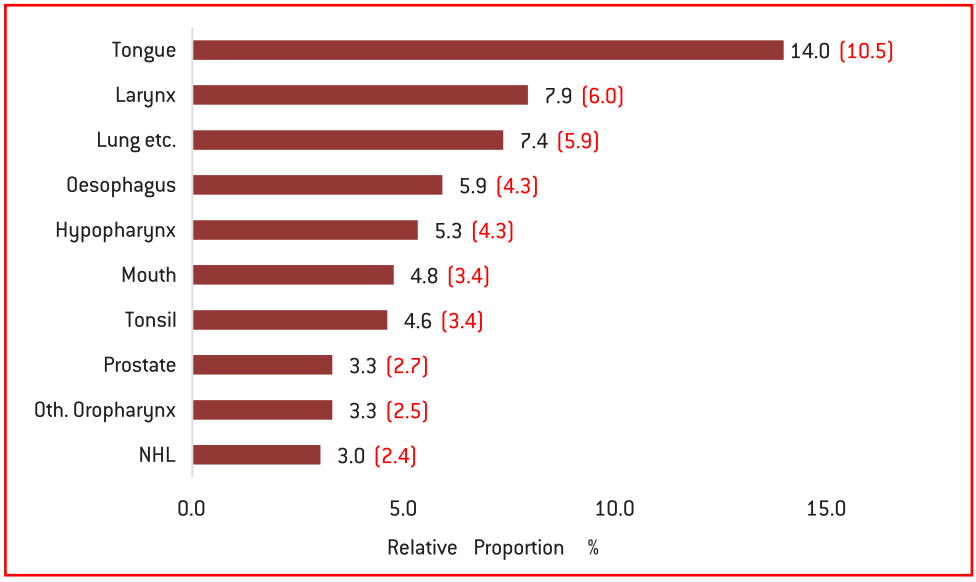
Table 4.3 (c) : Salient features of Cancer Incidence

Year	2016		2017		2016-2017	
	Males	Females	Males	Females	Males	Females
Estimated Population	535612	488024	543515	496198	1079127	984222
Total cancers(all sites)	366	249	328	232	694	481
Crude Rate	68.3	51.02	60.3	46.8	64.3	48.9
Age Adjusted Rate	80.7	53.0	70.3	47.3	75.4	50.2
Truncated Rate	167.3	118.7	130.9	105.8	148.8	112.2

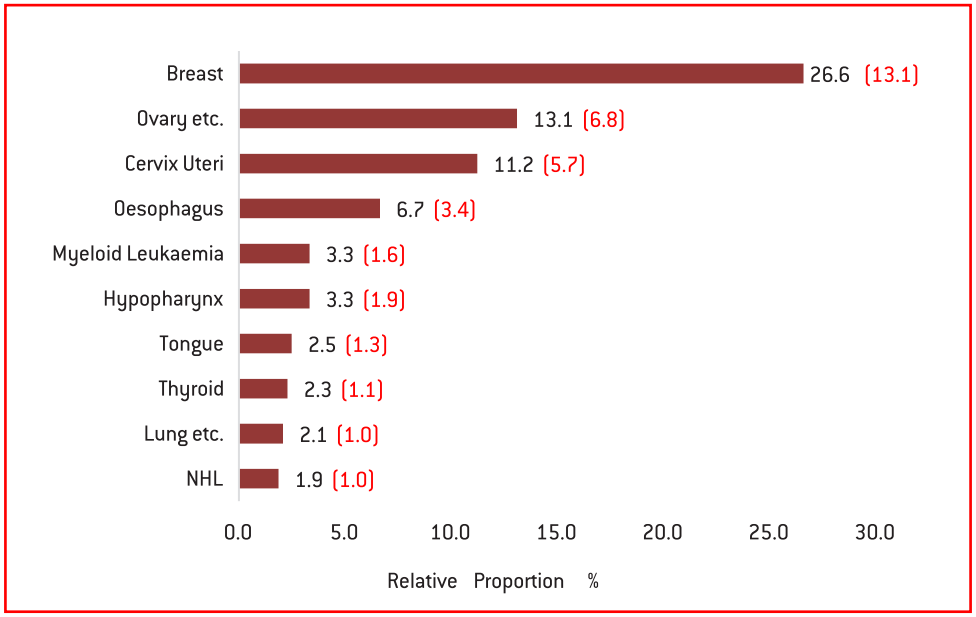
Figure 4.3 (b): Ten Leading Sites of Cancer (2016-2017)

(Age Adjusted Rates given in parentheses)

Males



Females



4.4. Faridabad district

Table 4.4 (a): Profile of Faridabad Distrct (2011 Census)	
Area (in sq. kms.)	**741**
Decadal Growth Rate (2001 - 2011)	**32.5%**
Literacy Rate	
Males	**88.6%**
Females	**73.8%**
Sex Ratio (females per 1000 males)	**873**
Density (Persons per sq. km)	**2,442**
Total Population	**1809733**
Rural Population (%)	**370878 (20.5)**
Urban Population (%)	**1438855 (79.5)**

Figure 4.4 (a): Map of Haryana State highlighting Fatehabad District

Table 4.4 (b): Centerwise Distribution of Cancers

Number (#) and Relative Proportion (%)

Sl No	Name of the Centre	2016		2017		2016-2017	
		#	%	#	%	#	%
1	Asian Institute of Medical Sciences, Faridabad	511	36.0	548	38.5	1059	37.3
2	Dr. B.R. Ambedkar Institute Rotary Cancer Hospital, New Delhi	338	23.8	223	15.7	561	19.7
3	Rajiv Gandhi Cancer Institute and Research Centre, New Delhi	107	7.5	120	8.4	227	8.0
4	Max Super Speciality Hospital, New Delhi	48	3.4	68	4.8	116	4.1
5	Fortis Memorial Research Institute, Gurgaon	59	4.2	54	3.8	113	4.0
6	ESIC Medical College and Hospital, Faridabad	17	1.2	74	5.2	91	3.2
7	Fortis Hospitals Ltd, Faridabad	27	1.9	45	3.2	72	2.5
8	Metro Heart Institute with Multispeciality, Faridabad	5	0.4	36	2.5	41	1.4
9	B.K Civil Hospital, Faridabad	15	1.1	23	1.6	38	1.3
10	Batra Hospital and Medical Research Centre, New Delhi	25	1.8	13	0.9	38	1.3
11	Medanta Cancer Centre, Gurgaon	18	1.3	15	1.1	33	1.2
12	Pt. B.D. Sharma PGIMS, Rohtak	13	0.9	12	0.8	25	0.9
13	Acharya Tulsi Regional Cancer Treatment and Research Institute, Bikaner	16	1.1	5	0.4	21	0.7
14	Sri Ganga Ram Hospital, New Delhi	16	1.1	5	0.4	21	0.7
15	Institute of Liver and Biliary Sciences, New Delhi	8	0.6	9	0.6	17	0.6
16	Max Super Speciality Hospital, PPG, Delhi	6	0.4	11	0.8	17	0.6
17	Paras Hosptials, Gurgaon	6	0.4	6	0.4	12	0.4
18	All Other Centres	183	12.9	157	11.0	340	12.0
Total		**1418**	**100.0**	**1424**	**100.0**	**2842**	**100.0**

* All Other centres which have contributed less than 10 cases

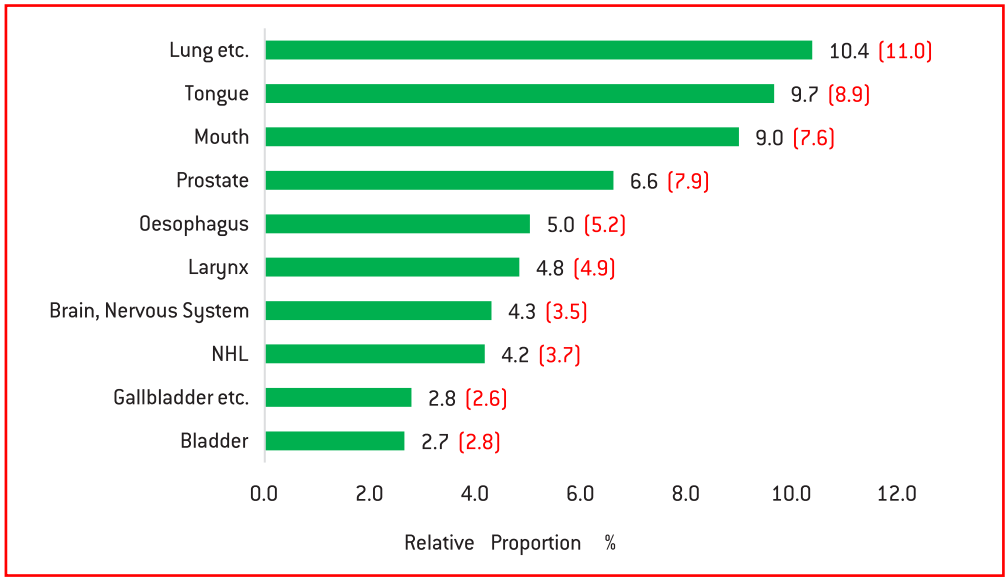
Table 4.4 (c) : Salient features of Cancer Incidence

Year	2016		2017		2016-2017	
	Males	Females	Males	Females	Males	Females
Estimated Population	1107629	996120	1136386	1027643	2244015	2023763
Total cancers(all sites)	740	678	772	652	1512	1330
Crude Rate	66.8	68.1	67.9	63.4	67.4	65.7
Age Adjusted Rate	93.8	89.1	95.9	83.5	94.8	86.2
Truncated Rate	153.5	180.2	150.6	156.8	152.0	168.2

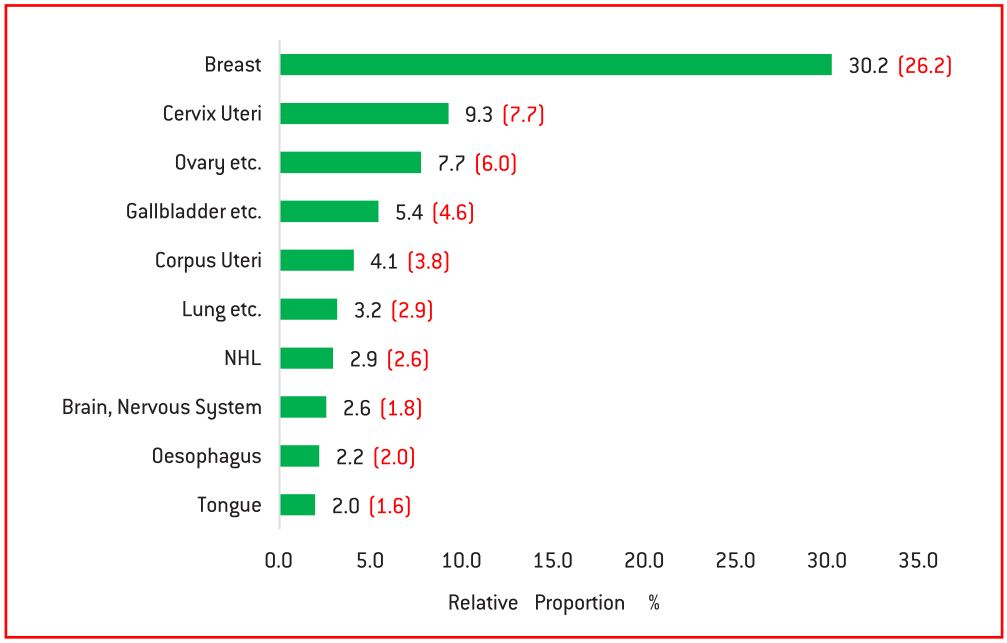
Figure 4.4 (b): Ten Leading Sites of Cancer (2016 - 2017)

(Age Adjusted Rates given in parentheses)

Males



Females



4.5. Gurugram district

Table 4.5 (a): Profile of Gurugram District (2011 Census)	
Area (in sq. kms.)	**1258**
Decadal Growth Rate (2001 - 2011)	**73.1%**
Literacy Rate	
Males	**90.5 %**
Females	**78.0 %**
Sex Ratio (females per 1000 males)	**854**
Density (Persons per sq. km)	**1204**
Total Population	**1514432**
Rural Population (%)	**472179 (31.2)**
Urban Population (%)	**1042253 (68.8)**

Figure 4.5 (a): Map of Haryana State highlighting Gurugram District

Table 4.5 (b): Centerwise Distribution of Cancers

Number (#) and Relative Proportion (%)

Sl No	Name of the Centre	2016		2017		2016-2017	
		#	%	#	%	#	%
1	Fortis Memorial Research Institute, Gurgaon	731	34.5	606	33.8	1337	34.2
2	Paras Hosptials, Gurgaon	200	9.4	166	9.3	366	9.4
3	Medanta Cancer Centre, Gurgaon	213	10.1	126	7.0	339	8.7
4	Rajiv Gandhi Cancer Institute and Research Centre, New Delhi	138	6.5	189	10.5	327	8.4
5	Dr. B.R. Ambedkar Institute Rotary Cancer Hospital, New Delhi	178	8.4	144	8.0	322	8.2
6	Max Super Speciality Hospital, New Delhi	137	6.5	116	6.5	253	6.5
7	Artemis Health Institute, Gurgaon	145	6.8	78	4.4	223	5.7
8	Asian Institute of Medical Sciences, Faridabad	76	3.6	89	5.0	165	4.2
9	Pt. B.D. Sharma PGIMS, Rohtak	57	2.7	59	3.3	116	3.0
10	Max Super Speciality Hospital, PPG, Delhi	13	0.6	26	1.5	39	1.0
11	Bhagwan Mahaveer Cancer Hospital and Research Centre, Jaipur	15	0.7	22	1.2	37	0.9
12	Sri Ganga Ram Hospital, New Delhi	28	1.3	9	0.5	37	0.9
13	Pushpanjali Hospital, Gurgaon	13	0.6	13	0.7	26	0.7
14	Kalyani Hospitals Pvt Ltd, Gurgaon	14	0.7	10	0.6	24	0.6
15	Max Hospital, Gurgaon	19	0.9	2	0.1	21	0.5
16	Acharya Tulsi Regional Cancer Treatment and Research Institute, Bikaner	10	0.5	9	0.5	19	0.5
17	Civil Hospital, Gurgaon	3	0.1	16	0.9	19	0.5
18	Max Super Speciality Hospital, Shalimar Bagh, New Delhi	5	0.2	14	0.8	19	0.5
19	SGT Medical College Hospital Research Institute, Gurgaon	17	0.8	-	-	17	0.4
20	Institute of Liver and Biliary Sciences, New Delhi	4	0.2	9	0.5	13	0.3
21	Shaheed Hassan Khan Mewati Govt Medical College, Mewat	8	0.4	5	0.3	13	0.3
22	All Other Centres	94	4.4	85	4.7	179	4.6
Total		**2118**	**100.0**	**1793**	**100.0**	**3911**	**100.0**

* All Other centres which have contributed less than 10 cases

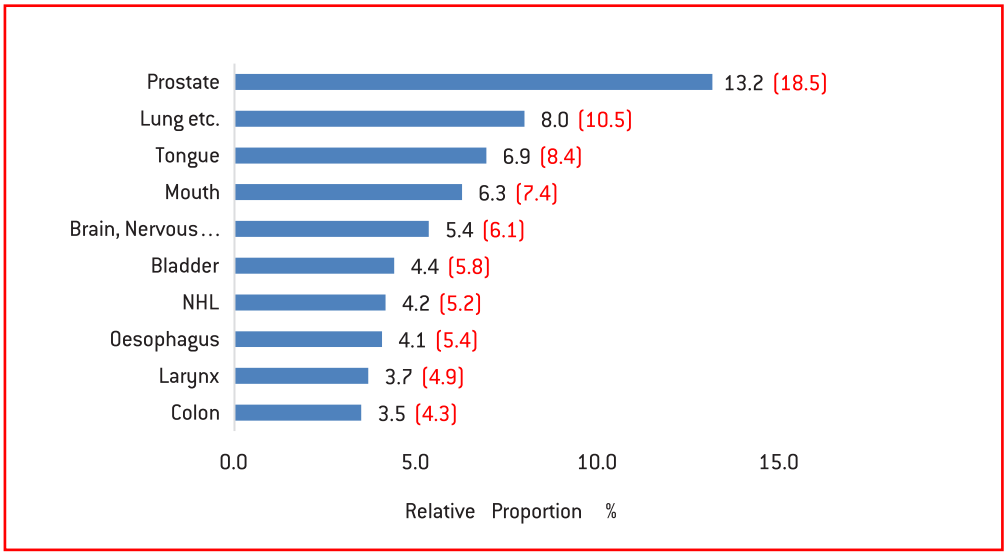
Table 4.5 (c): Salient features of Cancer Incidence

Year	2016		2017		2016-2017	
	Males	Females	Males	Females	Males	Females
Estimated Population	1093217	936305	1154657	989385	2247874	1925690
Total cancers(all sites)	1107	1011	985	808	2092	1819
Crude Rate	101.3	108.0	85.3	81.7	93.1	94.5
Age Adjusted Rate	136.4	123.9	113.8	93.5	124.8	108.2
Truncated Rate	195.8	243.7	166.2	177.6	180.5	209.5

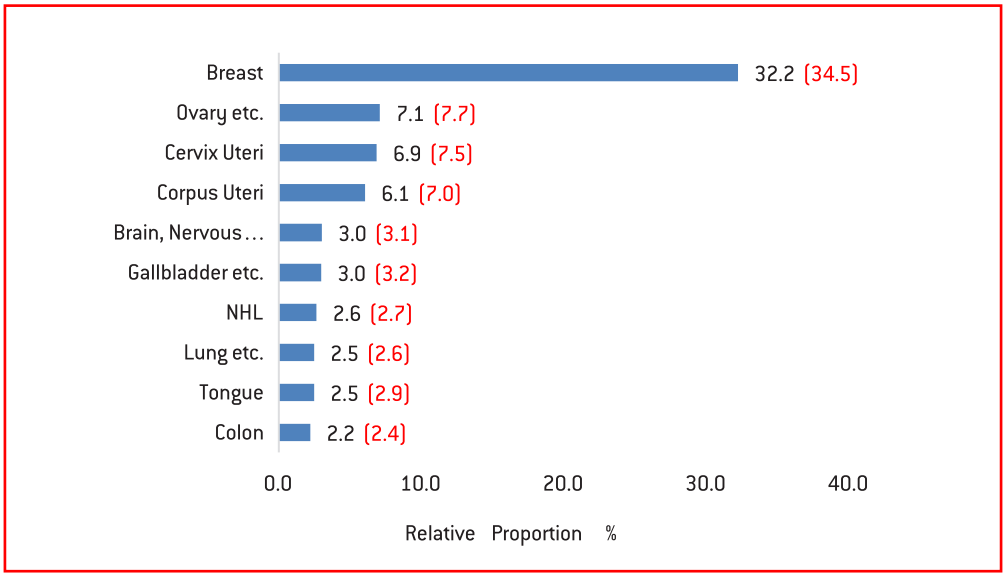
Figure 4.5 (b): Leading Sites of Cancer (2016 - 2017)

(Age Adjusted Rates given in parentheses)

Males



Females



4.6. Hisar district

Table 4.6 (a): Profile of Hisar District (2011 Census)	
Area (in sq. kms.)	**3983**
Decadal Growth Rate (2001 - 2011)	**13.5%**
Literacy Rate	
Males	**82.2%**
Females	**62.3%**
Sex Ratio (females per 1000 males)	**872**
Density (Persons per sq. km)	**438**
Total Population	**1743931**
Rural Population (%)	**1190443 (68.3)**
Urban Population (%)	**553488 (31.7)**

Figure 4.6(a) : Map of Haryana State highlighting Hisar District

Table 4.6(b) : Centerwise Distribution of Cancers

Number (#) and Relative Proportion (%)

Sl No	Name of the Centre	2016		2017		2016-2017	
		#	%	#	%	#	%
1	O.P.Jindal Institute of Cancer and Research, Hisar	412	29.9	345	25.1	757	27.5
2	Aadhar Health Institute (Vlcom Health Care Private Limited), Hisar	225	16.3	248	18.1	473	17.2
3	Pt. B.D. Sharma PGIMS, Rohtak	167	12.1	183	13.3	350	12.7
4	Acharya Tulsi Regional Cancer Treatment and Research Institute, Bikaner	194	14.1	145	10.6	339	12.3
5	Nalwal labs Pvt Ltd, Hisar	90	6.5	143	10.4	233	8.5
6	Maharaja Agrasen Medical Colelge Agroha, Hisar	111	8.1	91	6.6	202	7.3
7	Rajiv Gandhi Cancer Institute and Research Centre, New Delhi	54	3.9	41	3.0	95	3.5
8	Maharaja Agarsen Civil Hospital, Hisar	13	0.9	32	2.3	45	1.6
9	Post Graduate Institute of Medical Education Research, Chandigarh	16	1.2	22	1.6	38	1.4
10	Bhagwan Mahaveer Cancer Hospital and Research Centre, Jaipur	12	0.9	14	1.0	26	0.9
11	Konark Labs, Hisar	7	0.5	13	0.9	20	0.7
12	Dr. B.R. Ambedkar Institute Rotary Cancer Hospital, New Delhi	3	0.2	16	1.2	19	0.7
13	Kalra pathology Laboratory, Hisar	-	-	14	1.0	14	0.5
14	Fortis Memorial Research Institute, Gurgaon	4	0.3	7	0.5	11	0.4
15	Max Super Speciality Hospital, New Delhi	6	0.4	5	0.4	11	0.4
16	Medanta Cancer Centre, Gurgaon	7	0.5	4	0.3	11	0.4
17	All Other Centres	56	4.1	50	3.6	106	3.9
Total		**1377**	**100.0**	**1373**	**100.0**	**2750**	**100.0**

* All Other centres which have contributed less than 10 cases

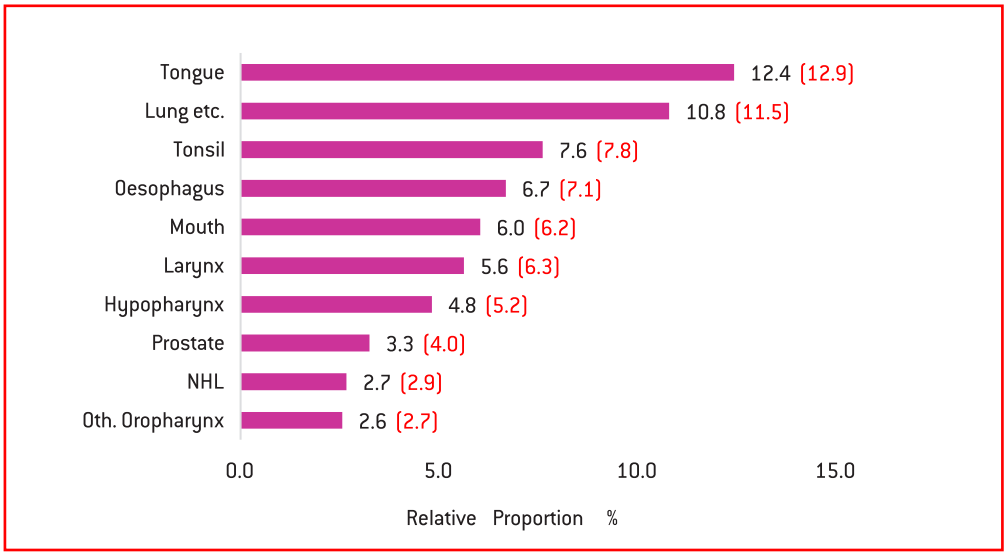
Table 4.6(c): Salient features of Cancer Incidence

Year	2016		2017		2016-2017	
	Males	Females	Males	Females	Males	Females
Estimated Population	990386	875112	1001823	887405	1992209	1762517
Total cancers(all sites)	883	494	839	534	1722	1028
Crude Rate	89.2	56.4	83.7	60.2	86.4	58.3
Age Adjusted Rate	109.6	59.4	101.2	62.2	105.3	60.8
Truncated Rate	228.1	134.8	197.5	133.6	212.6	134.2

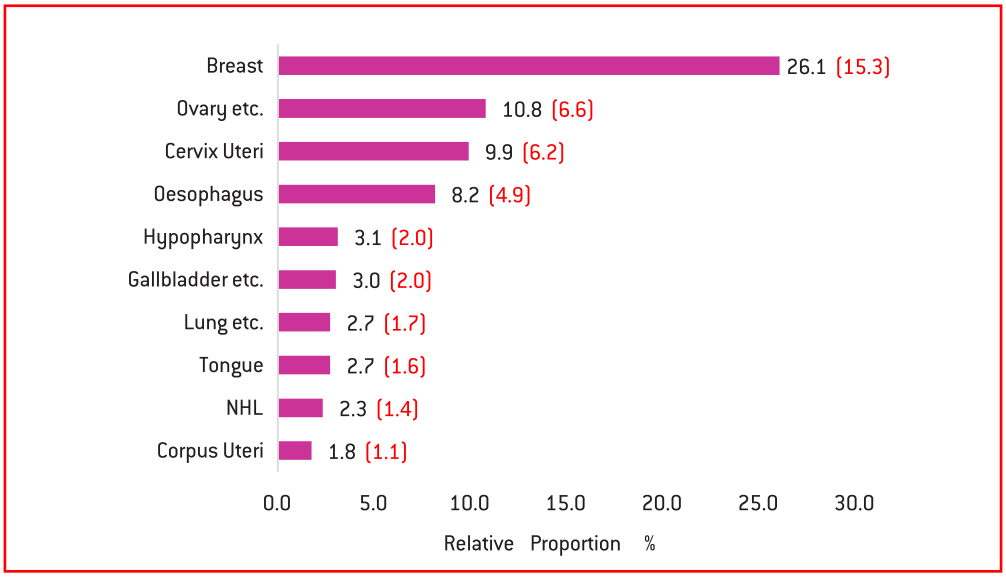
Figure 4.6(b): Leading Sites of Cancer (2016 - 2017)

(Age Adjusted Rates given in parentheses)

Males



Females



4.7. Jind district

Table 4.7 (a): Profile of Jind District (2011 Census)	
Area (in sq. kms.)	**2702**
Decadal Growth Rate (2001 - 2011)	**12.1%**
Literacy Rate	
Males	**80.8%**
Females	**60.8%**
Sex Ratio (females per 1000 males)	**871**
Density (Persons per sq. km)	**494**
Total Population	**1334152**
Rural Population (%)	**1028569 (77.1)**
Urban Population (%)	**305583 (22.9)**

Figure 4.7 (a): Map of Haryana State highlighting Jind District

Table 4.7 (b) : Centerwise Distribution of Cancers

Number (#) and Relative Proportion (%)

Sl No	Name of the Centre	2016		2017		2016-2017	
		#	%	#	%	#	%
1	Pt. B.D. Sharma PGIMS, Rohtak	405	39.6	417	40.9	822	40.3
2	O.P.Jindal Institute of Cancer and Research, Hisar	165	16.1	125	12.3	290	14.2
3	Acharya Tulsi Regional Cancer Treatment and Research Institute, Bikaner	138	13.5	77	7.6	215	10.5
4	Aadhar Health Institute (Vlcom Health Care Private Limited), Hisar	47	4.6	85	8.3	132	6.5
5	Post Graduate Institute of Medical Education Research, Chandigarh	46	4.5	48	4.7	94	4.6
6	Rajiv Gandhi Cancer Institute and Research Centre, New Delhi	57	5.6	35	3.4	92	4.5
7	BPS Government Medical College for Women, Haryana	36	3.5	39	3.8	75	3.7
8	Office of Civil Surgeon, Jind	10	1.0	58	5.7	68	3.3
9	Grecian super speciality hospital, Mohali	33	3.2	11	1.1	44	2.2
10	Maharaja Agrasen Medical Colelge Agroha, Hisar	18	1.8	24	2.4	42	2.1
11	Govt. Medical College and Hospital, Chandigarh	8	0.8	9	0.9	17	0.8
12	Dr. B.R. Ambedkar Institute Rotary Cancer Hospital, New Delhi	4	0.4	7	0.7	11	0.5
13	Asian Institute of Medical Sciences, Faridabad	4	0.4	6	0.6	10	0.5
14	Medanta Cancer Centre, Gurgaon	6	0.6	4	0.4	10	0.5
15	All Other Centres	45	4.4	74	7.3	119	5.8
Total		**1022**	**100.0**	**1019**	**100.0**	**2041**	**100.0**

* All Other centres which have contributed less than 10 cases

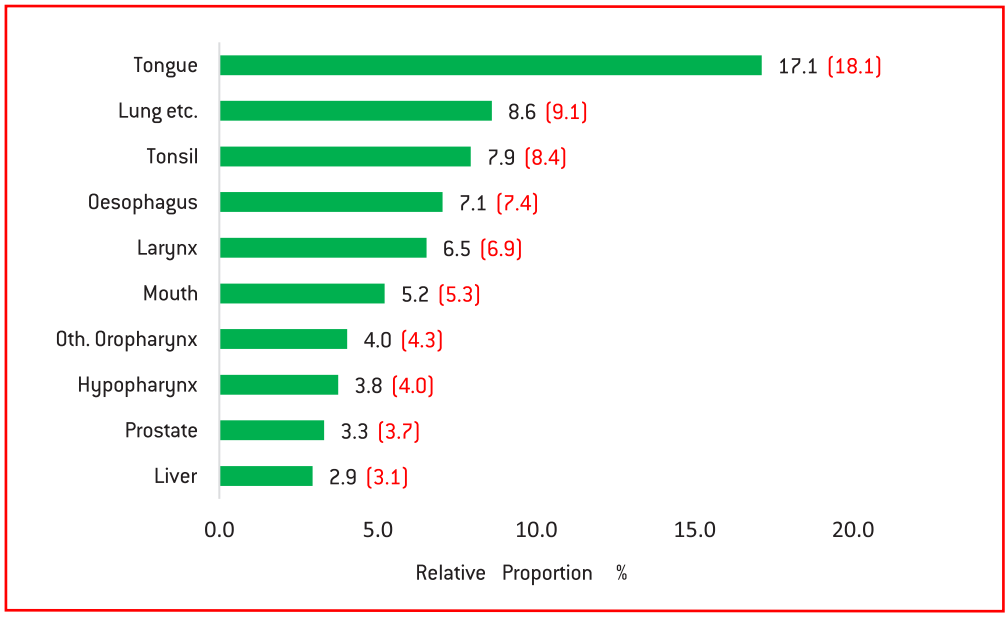
Table 4.7(c) : Salient features of Cancer Incidence

Year	2016		2017		2016-2017	
	Males	Females	Males	Females	Males	Females
Estimated Population	753857	664364	761774	672797	1515631	1337161
Total cancers(all sites)	683	339	678	341	1361	680
Crude Rate	90.6	51.0	89.0	50.7	89.8	50.9
Age Adjusted Rate	106.4	52.2	103.0	51.5	104.7	51.9
Truncated Rate	222.2	122.5	219.7	113.6	220.9	118.0

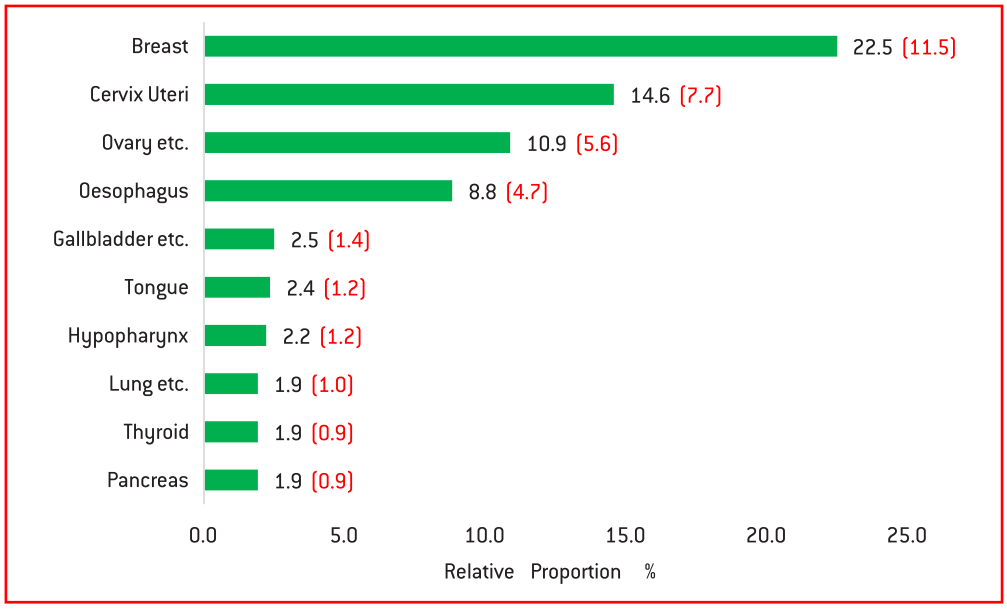
Figure 4.7 (b): Ten Leading Sites of Cancer (2016-2017)

(Age Adjusted Rates given in parentheses)

Males



Females



4.8. Jhajjar district

Table 4.8 (a): Profile of Jhajjar District (2011 Census)	
Area (in sq. kms.)	**1834**
Decadal Growth Rate (2001 - 2011)	**8.9%**
Literacy Rate	
Males	**89.3%**
Females	**70.7%**
Sex Ratio (females per 1000 males)	**862**
Density (Persons per sq. km)	**523**
Total Population	**958405**
Rural Population (%)	**715066 (74.6)**
Urban Population (%)	**243339 (25.4)**

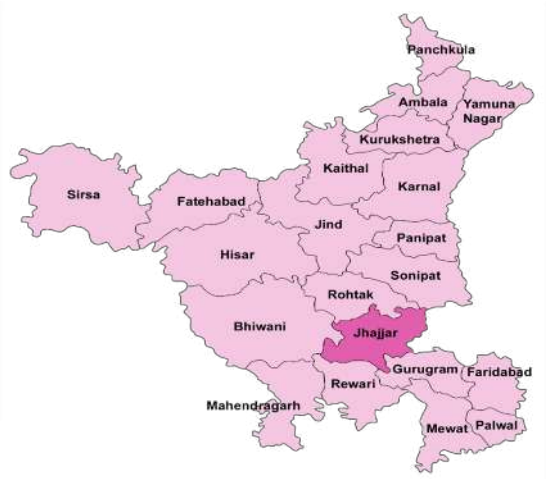


Figure 4.8 (a): Map of Haryana State highlighting Jhajjar District

Table 4.8 (b) : Centerwise Distribution of Cancers

Number (#) and Relative Proportion (%)

Sl No	Name of the Centre	2016		2017		2016-2017	
		#	%	#	%	#	%
1	Pt. B.D. Sharma PGIMS, Rohtak	436	51.4	415	52.5	851	51.9
2	Civil Hospital, Jhajjar	86	10.1	52	6.6	138	8.4
3	Rajiv Gandhi Cancer Institute and Research Centre, New Delhi	73	8.6	57	7.2	130	7.9
4	Acharya Tulsi Regional Cancer Treatment and Research Institute, Bikaner	27	3.2	18	2.3	45	2.7
5	Asian Institute of Medical Sciences, Faridabad	17	2.0	22	2.8	39	2.4
6	Dr. B.R. Ambedkar Institute Rotary Cancer Hospital, New Delhi	53	6.2	40	5.1	93	5.7
7	Fortis Memorial Research Institute, Gurgaon	21	2.5	14	1.8	35	2.1
8	Action Cancer Hospital, Delhi	1	0.1	33	4.2	34	2.1
9	Medanta Cancer Centre, Gurgaon	14	1.6	11	1.4	25	1.5
10	Artemis Health Institute, Gurgaon	14	1.6	7	0.9	21	1.3
11	Brahm Shakti Sanjivani Super Speciality Hospital, Jhajjar	5	0.6	14	1.8	19	1.2
12	G.H, Jhajjar	13	1.5	6	0.8	19	1.2
13	Paras Hosptials, Gurgaon	9	1.1	9	1.1	18	1.1
14	O.P Jindal Institute of Cancer and Research, Hisar	13	1.5	3	0.4	16	1.0
15	Bhagwan Mahaveer Cancer Hospital and Research Centre, Jaipur	8	0.9	7	0.9	15	0.9
16	City Diagnostic Centre, Rohtak	-	-	14	1.8	14	0.9
17	Max Super Speciality Hospital, New Delhi	5	0.6	8	1.0	13	0.8
18	PDM Dental College and Research Institute, Jhajjar	10	1.2	3	0.4	13	0.8
19	All Other Centres	44	5.2	57	7.2	101	6.2
Total		**849**	**100.0**	**790**	**100.0**	**1639**	**100.0**

* All Other centres which have contributed less than 10 cases

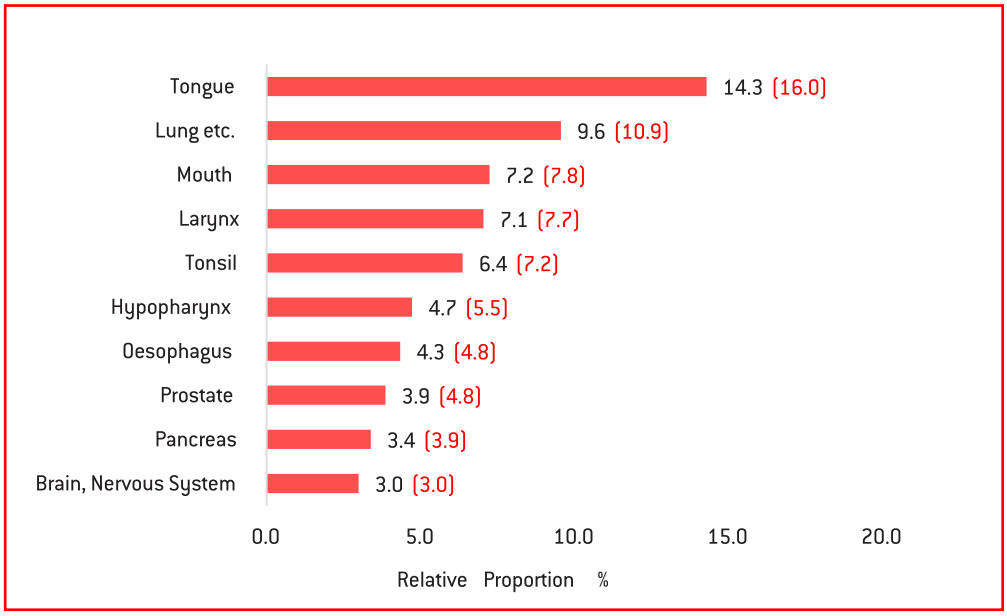
Table 4.8 (c): Salient features of Cancer Incidence

Year	2016		2017		2016-2017	
	Males	Females	Males	Females	Males	Females
Estimated Population	536273	466755	540424	471201	1076697	937956
Total cancers(all sites)	542	307	494	296	1036	603
Crude Rate	101.1	65.8	91.4	62.8	96.2	64.3
Age Adjusted Rate	115.6	64.6	104.4	62.2	109.9	63.4
Truncated Rate	232.6	136.6	204.1	120.3	218.1	128.3

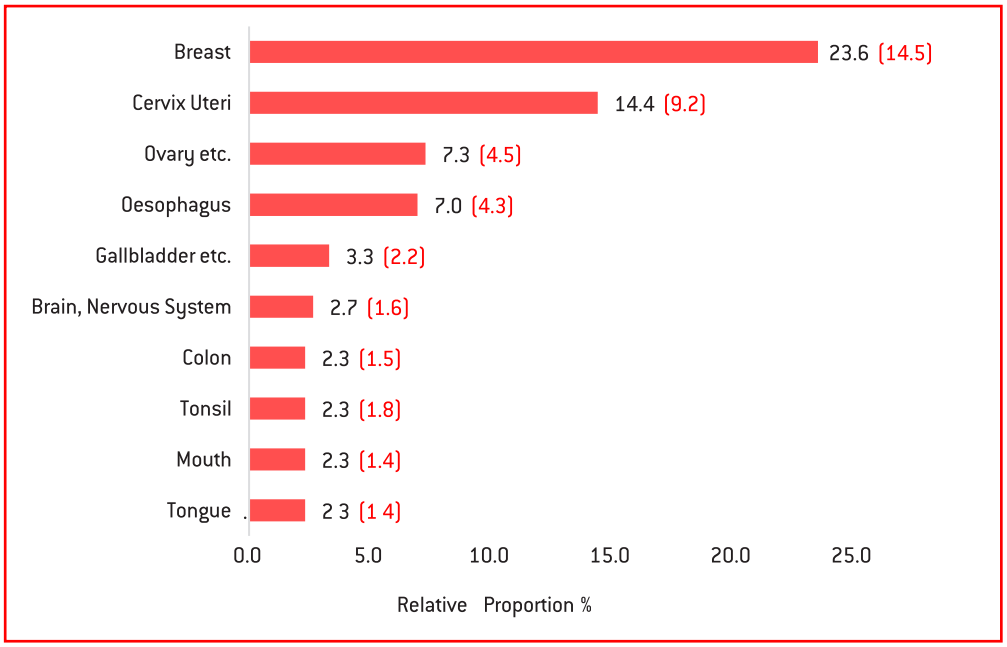
Figure 4.8 (b): Ten Leading Sites of Cancer (2016 - 2017)

(Age Adjusted Rates given in parentheses)

Males



Females



4.9. Kaithal district

Table 4.9 (a): Profile of Kaithal District (2011 Census)	
Area (in sq. kms.)	**2317**
Decadal Growth Rate (2001 - 2011)	**13.6%**
Literacy Rate	
Males	**78.0%**
Females	**59.2%**
Sex Ratio (females per 1000 males)	**881**
Density (Persons per sq. km)	**464**
Total Population	**1074304**
Rural Population (%)	**838293 (78.0)**
Urban Population (%)	**236011(22.0)**

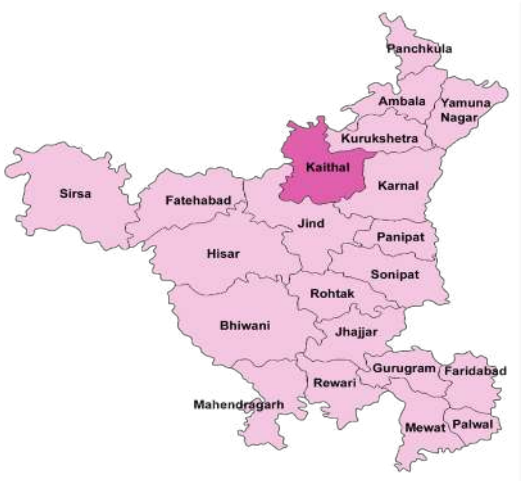


Figure 4.9 (a): Map of Haryana State highlighting Kaithal District

Table 4.9 (b): Centerwise Distribution of Cancers

Number (#) and Relative Proportion (%)

Sl No	Name of the Centre	2016		2017		2016-2017	
		#	%	#	%	#	%
1	Post Graduate Institute of Medical Education Research, Chandigarh	139	17.9	135	19.7	274	18.8
2	Acharya Tulsi Regional Cancer Treatment and Research Institute, Bikaner	152	19.6	99	14.5	251	17.2
3	Pt. B.D. Sharma PGIMS, Rohtak	103	13.3	133	19.4	236	16.2
4	O.P. Jindal Institute of Cancer and Research, Hisar	56	7.2	61	8.9	117	8.0
5	Smt. Indira Gandhi MultiSpeciality Govt Hospital, Kaithal	80	10.3	17	2.5	97	6.6
6	Govt. Medical College and Hospital, Chandigarh	55	7.1	65	9.5	120	8.2
7	Fortis Hospital, Mohali	13	1.7	9	1.3	22	1.5
8	Aadhar Health Institute (Vlcom Health Care Private Limited), Hisar	32	4.1	29	4.2	61	4.2
9	Rajiv Gandhi Cancer Institute and Research Centre, New Delhi	30	3.9	25	3.7	55	3.8
10	Government Medical College/Rajindra Hospital, Patiala	13	1.7	24	3.5	37	2.5
11	Lok Nayak Jai Prakash Hospital, Kurukshetra	12	1.5	14	2.0	26	1.8
12	Grecian super speciality hospital, Mohali	10	1.3	8	1.2	18	1.2
13	M.M. Institute of Medical Sciences and Research, Ambala	11	1.4	4	0.6	15	1.0
14	BPS Government Medical College for Women, Haryana	8	1.0	4	0.6	12	0.8
15	Indus Super Speciality Hospital, Mohali	7	0.9	5	0.7	12	0.8
16	IVY Hospital, Mohali	6	0.8	6	0.9	12	0.8
17	Maharaja Agrasen Medical Colelge Agroha, Hisar	7	0.9	3	0.4	10	0.7
18	All Other Centres	41	5.3	43	6.3	84	5.8
Total		**775**	**100.0**	**684**	**100.0**	**1459**	**100.0**

* All Other centres which have contributed less than 10 cases

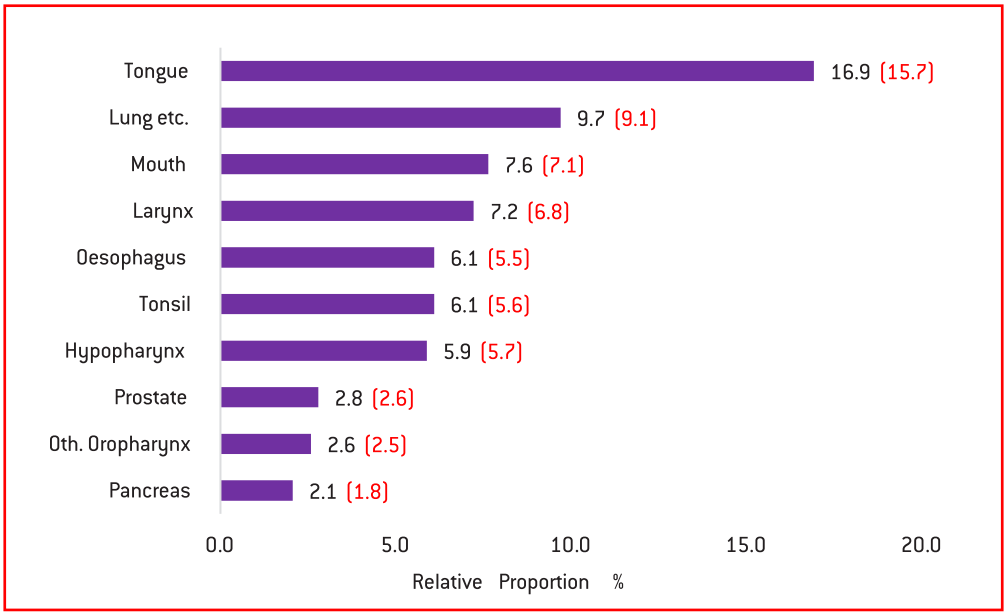
Table 4.9 (c): Salient features of Cancer Incidence

Year	2016		2017		2016-2017	
	Males	Females	Males	Females	Males	Females
Estimated Population	606143	543600	612969	551508	1219112	1095108
Total cancers (all sites)	514	261	455	229	969	490
Crude Rate	84.8	48.0	74.2	41.5	79.5	44.7
Age Adjusted Rate	98.3	49.2	84.2	42.0	91.2	45.6
Truncated Rate	210.7	109.4	185.4	90.0	197.8	99.5

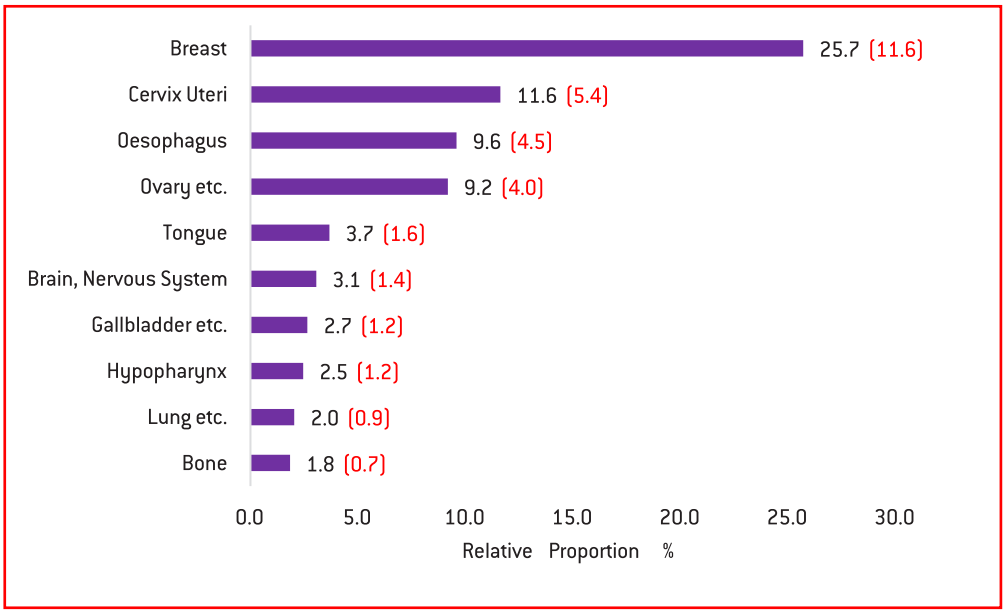
Figure 4.9 (b): Ten Leading Sites of Cancer (2016 - 2017)

(Age Adjusted Rates given in parentheses)

Males



Females



4.10. Karnal district

Table 4.10 (a) : Profile of Karnal District (2011 Census)	
Area (in sq. kms.)	**2520**
Decadal Growth Rate (2001 - 2011)	**18.1%**
Literacy Rate	
Males	**81.8%**
Females	**66.8%**
Sex Ratio (females per 1000 males)	**887**
Density (Persons per sq. km)	**597**
Total Population	**1505324**
Rural Population (%)	**1050514 (69.8)**
Urban Population (%)	**454810 (30.2)**

Figure 4.10 (a): Map of Haryana State highlighting Karnal District

Table 4.10 (b) : Centerwise Distribution of Cancers

Number (#) and Relative Proportion (%)

Sl No	Name of the Centre	2016		2017		2016-2017	
		#	%	#	%	#	%
1	Post Graduate Institute of Medical Education Research, Chandigarh	169	19.5	231	24.7	400	22.2
2	Kalpana Chawla Govt Medical College, Karnal	156	18.0	161	17.2	317	17.6
3	Pt. B.D. Sharma PGIMS, Rohtak	119	13.7	133	14.2	252	14.0
4	Acharya Tulsi Regional Cancer Treatment and Research Institute, Bikaner	86	9.9	53	5.7	139	7.7
5	Rajiv Gandhi Cancer Institute and Research Centre, New Delhi	66	7.6	67	7.2	133	7.4
6	Govt. Medical College and Hospital, Chandigarh	70	8.1	97	10.4	167	9.3
7	Lok Nayak Jai Prakash Hospital, Kurukshetra	12	1.4	21	2.2	33	1.8
8	Dr. B.R. Ambedkar Institute Rotary Cancer Hospital, New Delhi	37	4.3	13	1.4	50	2.8
9	Fortis Hospital, Mohali	17	2.0	18	1.9	35	1.9
10	BPS Government Medical College for Women, Haryana	13	1.5	14	1.5	27	1.5
11	O.P.Jindal Institute of Cancer and Research, Hisar	9	1.0	10	1.1	19	1.1
12	Aadhar Health Institute (Vlcom Health Care Private Limited), Hisar	10	1.2	8	0.9	18	1.0
13	Grecian super speciality hospital, Mohali	10	1.2	8	0.9	18	1.0
14	Fortis Memorial Research Institute, Gurgaon	10	1.2	7	0.7	17	0.9
15	M.M. Institute of Medical Sciences and Research, Ambala	8	0.9	7	0.7	15	0.8
16	Max Super Speciality Hospital, New Delhi	6	0.7	9	1.0	15	0.8
17	Arpana Hospital, Karnal	3	0.3	10	1.1	13	0.7
18	Dr. Anita Pathology lab, Karnal	5	0.6	7	0.7	12	0.7
19	Medanta Cancer Centre, Gurgaon	7	0.8	5	0.5	12	0.7
20	Sri Ganga Ram Hospital, New Delhi	6	0.7	6	0.6	12	0.7
21	Max Super Speciality Hospital,Mohali	9	1.0	2	0.2	11	0.6
22	All Other Centres	38	4.4	47	5.0	85	4.7
Total		**866**	**100.0**	**933**	**100.0**	**1800**	**100.0**

* All Other centres which have contributed less than 10 cases

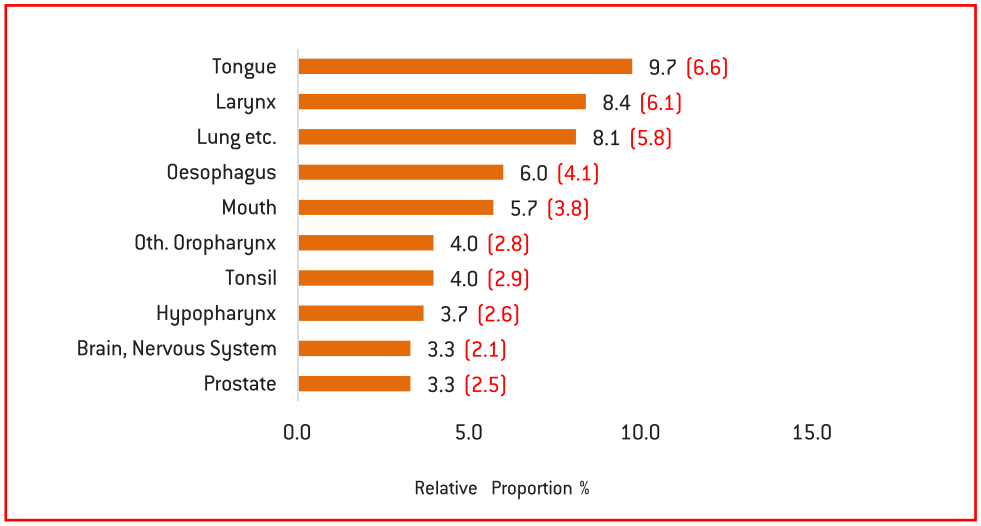
Table 4.10 (c): Salient features of Cancer Incidence

Year	2016		2017		2016-2017	
	Males	Females	Males	Females	Males	Females
Estimated Population	866326	779074	879834	793255	1746160	1572329
Total cancers(all sites)	518	348	519	415	1037	763
Crude Rate	59.8	44.7	59.0	52.3	59.4	48.5
Age Adjusted Rate	69.8	47.0	68.5	54.0	69.2	50.6
Truncated Rate	134.4	105.9	135.0	120.8	134.8	113.5

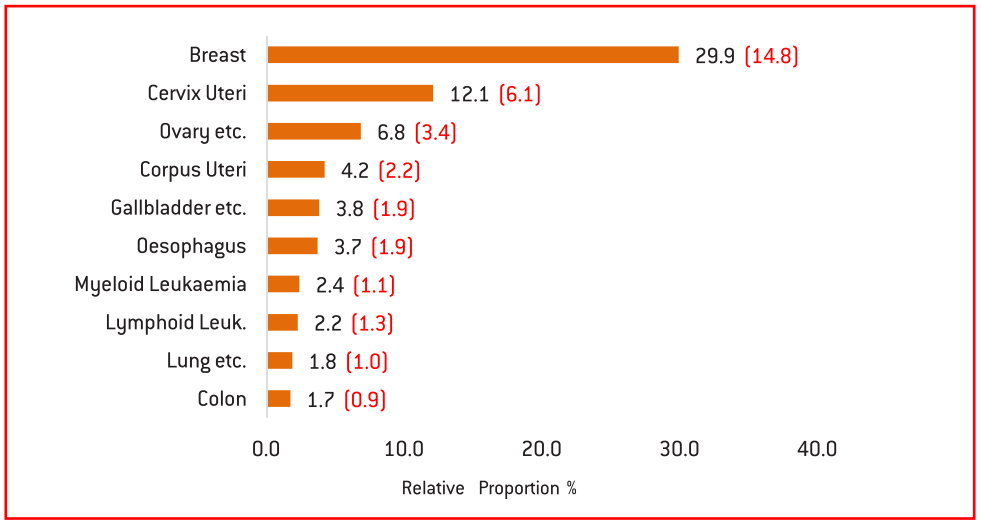
Figure 4.10 (b): Ten Leading Sites of Cancer (2016-2017)

(Age Adjusted Rates given in parentheses)

Males



Females



4.11. Kurukshetra district

Table 4.11 (a) : Profile of Kurukshetra District (2011 Census)	
Area (in sq. kms.)	**1530**
Decadal Growth Rate (2001 - 2011)	**16.9%**
Literacy Rate	
Males	**83.0%**
Females	**68.8%**
Sex Ratio (females per 1000 males)	**888**
Density (Persons per sq. km)	**630**
Total Population	**964655**
Rural Population (%)	**685430 (71.1)**
Urban Population (%)	**279225 (28.9**

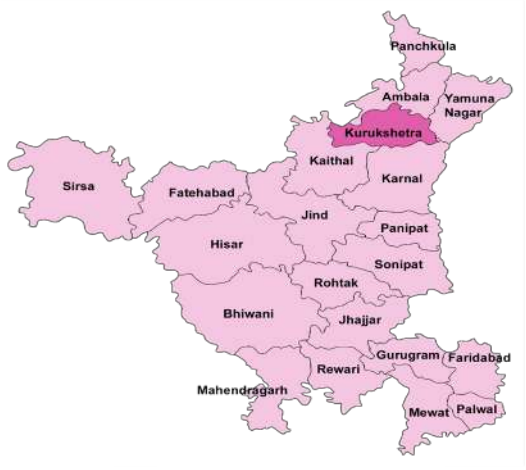


Figure 4.11 (b) : Map of Haryana State highlighting Kurukshetra District

Table 4.11 (b) Centerwise Distribution of Cancers

Number (#) and Relative Proportion (%)

Sl No	Name of the Centre	2016		2017		2016-2017	
		#	%	#	%	#	%
1	Post Graduate Institute of Medical Education Research, Chandigarh	184	29.5	200	28.4	384	28.9
2	Govt. Medical College and Hospital, Chandigarh	130	20.8	159	22.6	289	21.8
3	Lok Nayak Jai Prakash Hospital, Kurukshetra	106	17.0	126	17.9	232	17.5
4	Rajiv Gandhi Cancer Institute and Research Centre, New Delhi	37	5.9	34	4.8	71	5.4
5	Acharya Tulsi Regional Cancer Treatment and Research Institute, Bikaner	27	4.3	27	3.8	54	4.1
6	Adesh Medical College and Hospital, Kurukshetra	2	0.3	33	4.7	35	2.6
7	Fortis Hospital, Mohali	17	2.7	18	2.6	35	2.6
8	Grecian super speciality hospital, Mohali	13	2.1	10	1.4	23	1.7
9	M.M. Institute of Medical Sciences and Research, Ambala	11	1.8	12	1.7	23	1.7
10	Pt. B.D. Sharma PGIMS, Rohtak	10	1.6	9	1.3	19	1.4
11	IVY Hospital, Mohali	5	0.8	12	1.7	17	1.3
12	Aadhar Health Institute (Vlcom Health Care Private Limited), Hisar	5	0.8	8	1.1	13	1.0
13	Max Super Speciality Hospital,Mohali	9	1.4	4	0.6	13	1.0
14	Government Medical College/Rajindra Hospital, Patiala	6	1.0	4	0.6	10	0.8
15	Max Super Speciality Hospital, New Delhi	6	1.0	4	0.6	10	0.8
16	Rotary Ambala Cancer and General Hosptial, Ambala Cantt	4	0.6	6	0.9	10	0.8
17	All Other Centres	52	8.3	37	5.3	89	6.7
Total		**624**	**100.0**	**703**	**100.0**	**1327**	**100.0**

* All Other centres which have contributed less than 10 cases

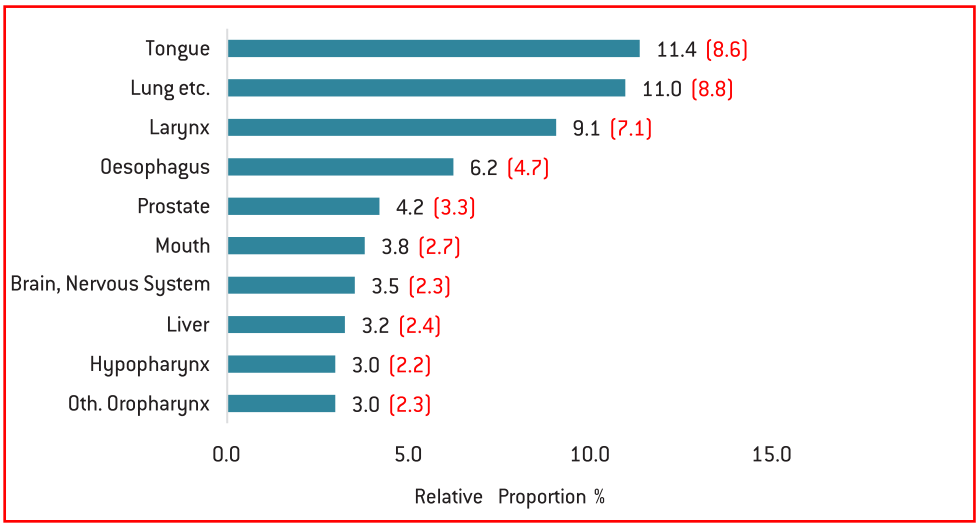
Table 4.11 (c) Salient features of Cancer Incidence

Year	2016		2017		2016-2017	
	Males	Females	Males	Females	Males	Females
Estimated Population	551845	496477	559864	504940	1111709	1001417
Total cancers(all sites)	347	277	393	310	740	587
Crude Rate	62.9	55.8	70.2	61.4	66.6	58.6
Age Adjusted Rate	70.0	55.6	79.3	60.1	74.7	57.9
Truncated Rate	128.3	125.6	125.4	136.7	126.9	131.3

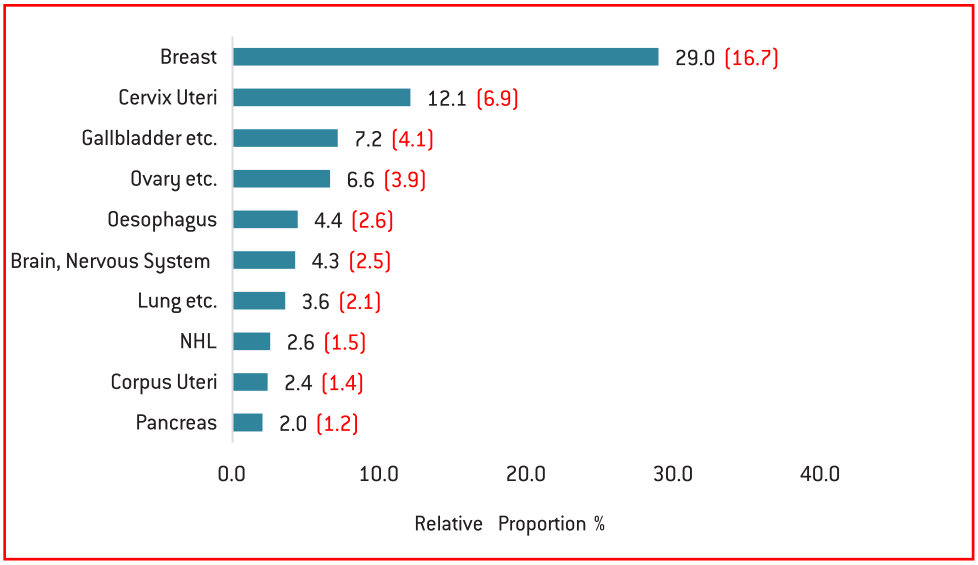
Figure 4.11(b): Ten Leading Sites of Cancer (2016-2017)

(Age Adjusted Rates given in parentheses)

Males



Females



4.12. Mewat district

Table 4.12 (a) : Profile of Mewat District (2011 Census)	
Area (in sq. kms.)	**1507**
Decadal Growth Rate (2001 - 2011)	**38.7 %**
Literacy Rate	
Males	**69.9%**
Females	**36.6%**
Sex Ratio (females per 1000 males)	**907**
Density (Persons per sq. km)	**723**
Total Population	**1089263**
Rural Population (%)	**965157 (88.6)**
Urban Population (%)	**124106 (11.4)**

Figure 4. 12 (a): Map of Haryana State highlighting Mewat District

Table 4.12 (b): Centerwise Distribution of Cancers

Number (#) and Relative Proportion (%)

Sl No	Name of the Centre	2016		2017		2016-2017	
		#	%	#	%	#	%
1	Shaheed Hassan Khan Mewati Govt Medical College, Mewat	97	32.8	93	34.2	190	33.5
2	Acharya Tulsi Regional Cancer Treatment and Research Institute, Bikaner	66	22.3	66	24.3	132	23.2
3	Al Afia Civil Hospital, Mewat	11	3.7	33	12.1	44	7.7
4	Pt. B.D. Sharma PGIMS, Rohtak	32	10.8	8	2.9	40	7.0
5	Dr. B.R. Ambedkar Institute Rotary Cancer Hospital, New Delhi	37	12.5	35	12.9	72	12.7
6	Asian Institute of Medical Sciences, Faridabad	7	2.4	11	4.0	18	3.2
7	Bhagwan Mahaveer Cancer Hospital and Research Centre, Jaipur	9	3.0	9	3.3	18	3.2
8	Rajiv Gandhi Cancer Institute and Research Centre, New Delhi	12	4.1	3	1.1	15	2.6
9	All Other Centres	25	8.4	14	5.1	39	6.9
Total		**296**	**100.0**	**272**	**100.0**	**568**	**100.0**

* All Other centres which have contributed less than 10 cases

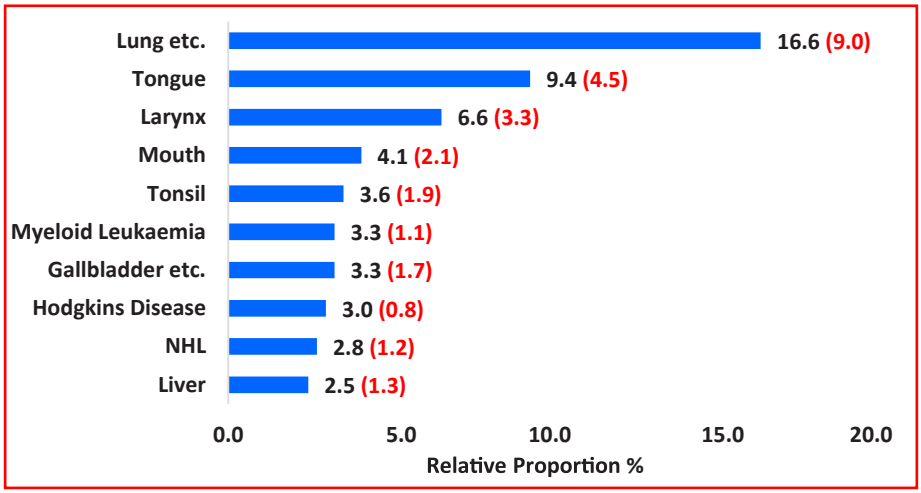
Table 4.12 (c): Salient features of Cancer Incidence

Year	2016		2017		2016-2017	
	Males	Females	Males	Females	Males	Females
Estimated Population	678328	618359	700555	639213	1378883	1257572
Total cancers(all sites)	192	104	170	102	362	206
Crude Rate	28.3	16.8	24.3	16.0	26.3	16.4
Age Adjusted Rate	51.6	30.6	44.4	27.7	47.9	29.1
Truncated Rate	121.5	73.9	89.3	60.2	105.2	66.9

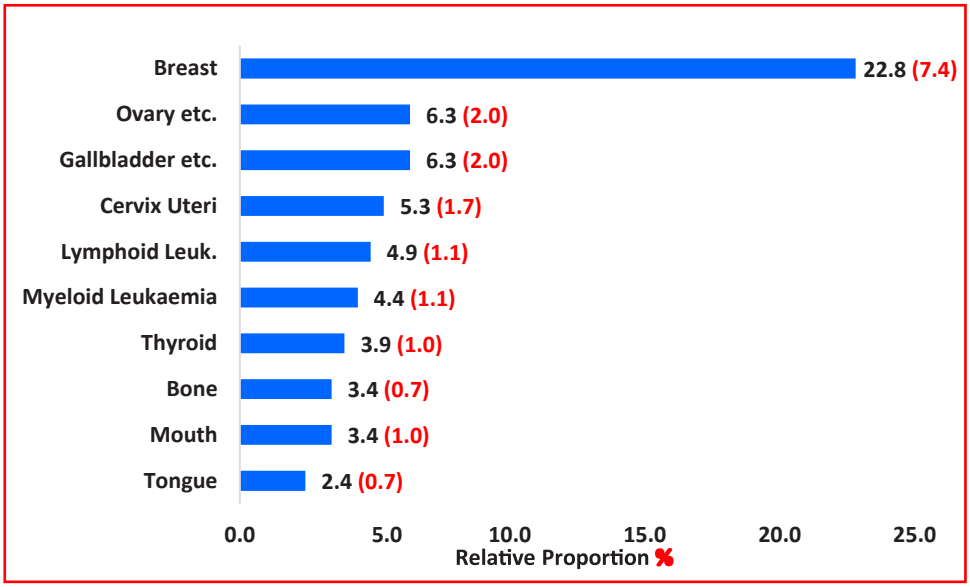
Figure 4.12 (b): Ten Leading Sites of Cancer (2016 - 2017)

(Age Adjusted Rates given in parentheses)

Males



Females



4.13. Mahendragarh district

Table 4.13 (a) : Profile of Mahendragarh District (2011 Census)	
Area (in sq. kms.)	**1899**
Decadal Growth Rate (2001 - 2011)	**13.5%**
Literacy Rate	
Males	**89.7%**
Females	**64.6%**
Sex Ratio (females per 1000 males)	**895**
Density (Persons per sq. km)	**486**
Total Population	**922088**
Rural Population (%)	**789233 (85.6)**
Urban Population (%)	**132855 (14.4)**

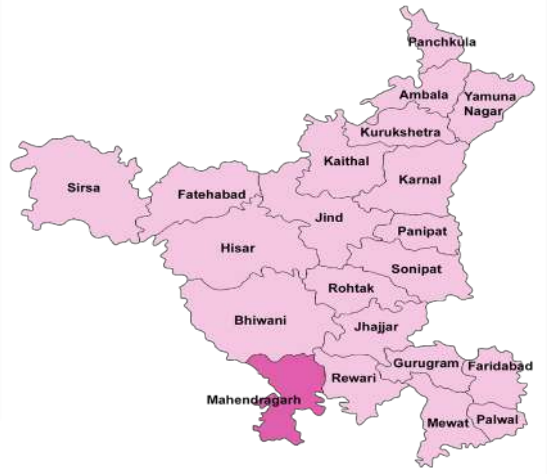


Figure 4.13 (a): Map of Haryana State highlighting Mahendragarh District

Table 4.13 (b) : Centerwise Distribution of Cancers

Number (#) and Relative Proportion (%)

Sl No	Name of the Centre	2016		2017		2016-2017	
		#	%	#	%	#	%
1	Bhagwan Mahaveer Cancer Hospital and Research Centre, Jaipur	121	27.0	99	25.9	220	26.5
2	Pt. B.D. Sharma PGIMS, Rohtak	66	14.7	66	17.3	132	15.9
3	Civil Hospital Narnaul, Mahendragarh	54	12.1	56	14.7	110	13.3
4	Acharya Tulsi Regional Cancer Treatment and Research Institute, Bikaner	42	9.4	21	5.5	63	7.6
5	Fortis Memorial Research Institute, Gurgaon	24	5.4	17	4.5	41	4.9
6	Rajiv Gandhi Cancer Institute and Research Centre, New Delhi	14	3.1	23	6.0	37	4.5
7	Dr. B.R. Ambedkar Institute Rotary Cancer Hospital, New Delhi	59	13.2	27	7.1	86	10.4
8	O.P.Jindal Institute of Cancer and Research, Hisar	8	1.8	14	3.7	22	2.7
9	Paras Hosptials, Gurgaon	9	2.0	6	1.6	15	1.8
10	Medanta Cancer Centre, Gurgaon	4	0.9	10	2.6	14	1.7
11	Artemis Health Institute, Gurgaon	11	2.5	2	0.5	13	1.6
12	R. K. Birla Cancer Center, Jaipur	10	2.2	-	-	10	1.2
13	All Other Centres	26	5.8	41	10.7	67	8.1
Total		**448**	**100.0**	**382**	**100.0**	**830**	**100.0**

* All Other centres which have contributed less than 10 cases

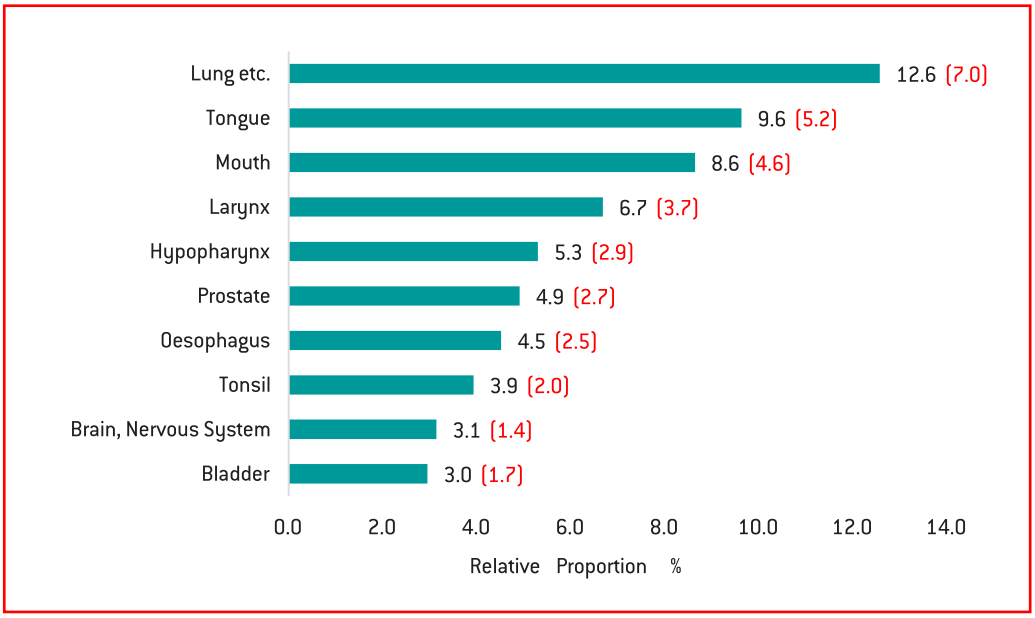
Table 4.13 (c): Salient features of Cancer Incidence

Year	2016		2017		2016-2017	
	Males	Females	Males	Females	Males	Females
Estimated Population	524069	462443	531396	467693	1055465	930136
Total cancers(all sites)	263	185	246	136	509	321
Crude Rate	50.2	40.0	46.3	29.1	48.2	34.5
Age Adjusted Rate	56.1	40.1	50.5	29.0	53.2	34.5
Truncated Rate	102.6	89.4	93.5	61.4	98.0	75.2

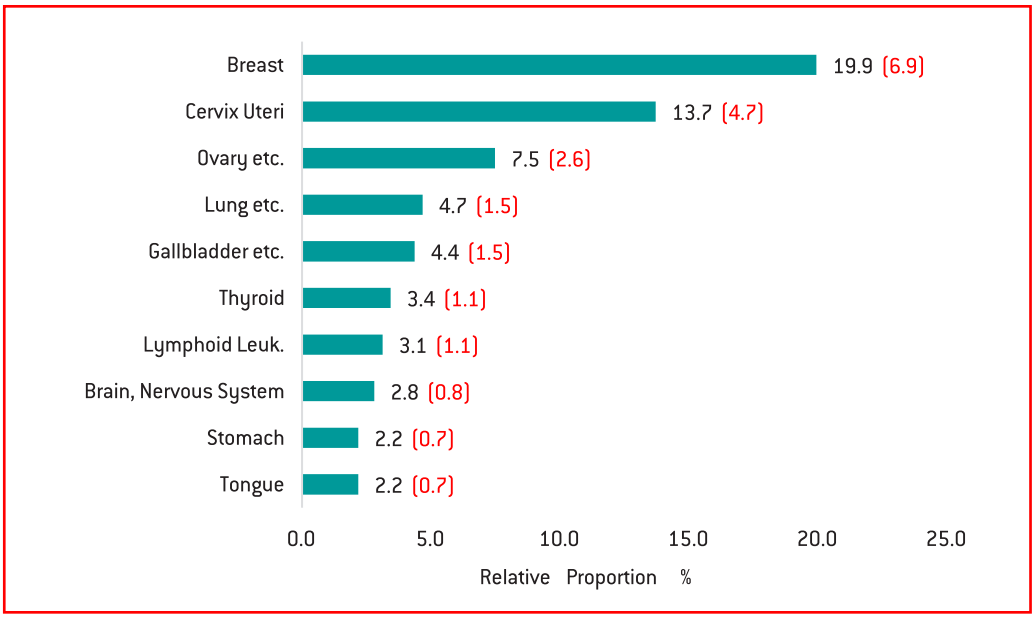
Figure 4.13 (b): Ten Leading Sites of Cancer (2016 - 2017)

(Age Adjusted Rates given in parentheses)

Males



Females



4.14 Panipat district

Table 4.14 (a) : Profile of Panipat District (2011 Census)	
Area (in sq. kms.)	**1268**
Decadal Growth Rate (2001 - 2011)	**24.6%**
Literacy Rate	
Males	**83.7%**
Females	**67.0%**
Sex Ratio (females per 1000 males)	**864**
Density (Persons per sq. km)	**951**
Total Population	**1205437**
Rural Population (%)	**650352 (54.0)**
Urban Population (%)	**555085 (46.0)**

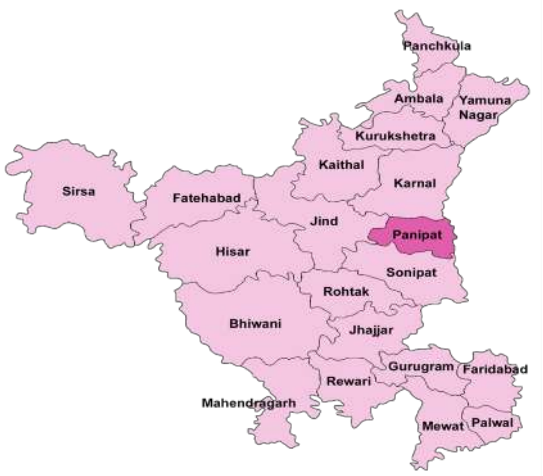


Figure 4.14(a): Map of Haryana State highlighting Panipat District

Table 4.14 (b): Centerwise Distribution of Cancers

Number (#) and Relative Proportion (%)

Sl No	Name of the Centre	2016		2017		2016-2017	
		#	%	#	%	#	%
1	Pt. B.D. Sharma PGIMS, Rohtak	227	32.9	248	37.1	475	35.0
2	Rajiv Gandhi Cancer Institute and Research Centre, New Delhi	114	16.5	103	15.4	217	16.0
3	BPS Government Medical College for Women, Haryana	60	8.7	73	10.9	133	9.8
4	Acharya Tulsi Regional Cancer Treatment and Research Institute, Bikaner	57	8.3	40	6.0	97	7.1
5	Post Graduate Institute of Medical Education Research, Chandigarh	35	5.1	34	5.1	69	5.1
6	Dr. B.R. Ambedkar Institute Rotary Cancer Hospital, New Delhi	49	7.1	27	4.0	76	5.6
7	Civil Hospital, Panipat	21	3.0	13	1.9	34	2.5
8	Asian Institute of Medical Sciences, Faridabad	10	1.4	20	3.0	30	2.2
9	Fortis Memorial Research Institute, Gurgaon	7	1.0	17	2.5	24	1.8
10	Govt. Medical College and Hospital, Chandigarh	15	2.2	7	1.0	22	1.6
11	Sri Ganga Ram Hospital, New Delhi	9	1.3	7	1.0	16	1.2
12	Aadhar Health Institute (Vlcom Health Care Private Limited), Hisar	8	1.2	5	0.7	13	1.0
13	Grecian super speciality hospital, Mohali	10	1.4	2	0.3	12	0.9
14	Max Super Speciality Hospital, New Delhi	3	0.4	7	1.0	10	0.7
15	Max Super Speciality Hospital, Shalimar Bagh, New Delhi	3	0.4	7	1.0	10	0.7
16	Medanta Cancer Centre, Gurgaon	6	0.9	4	0.6	10	0.7
17	O.P.Jindal Institute of Cancer and Research, Hisar	8	1.2	2	0.3	10	0.7
18	All Other Centres	48	7.0	52	7.8	100	7.4
Total		**690**	**100.0**	**668**	**100.0**	**1358**	**100.0**

* All Other centres which have contributed less than 10 cases

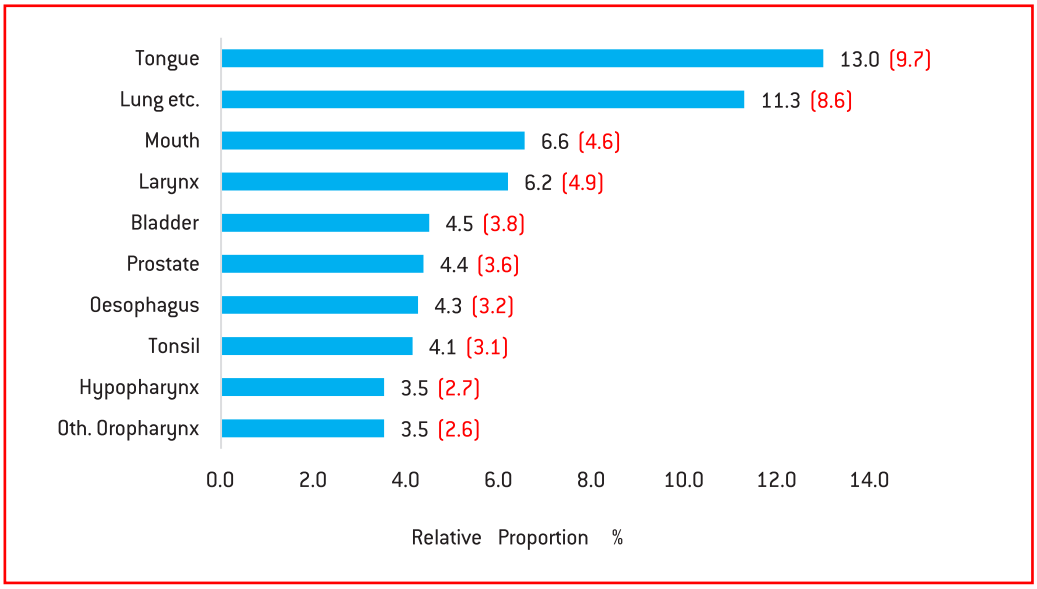
Table 4.14 (c) Salient features of Cancer Incidence

Year	2016		2017		2016-2017	
	Males	Females	Males	Females	Males	Females
Estimated Population	720207	635477	734860	651033	1455067	1286510
Total cancers(all sites)	413	277	411	257	824	534
Crude Rate	57.3	43.6	55.9	39.5	56.6	41.5
Age Adjusted Rate	74.4	51.6	73.4	45.7	73.9	48.6
Truncated Rate	148.5	113.1	139.8	95.6	144.1	104.2

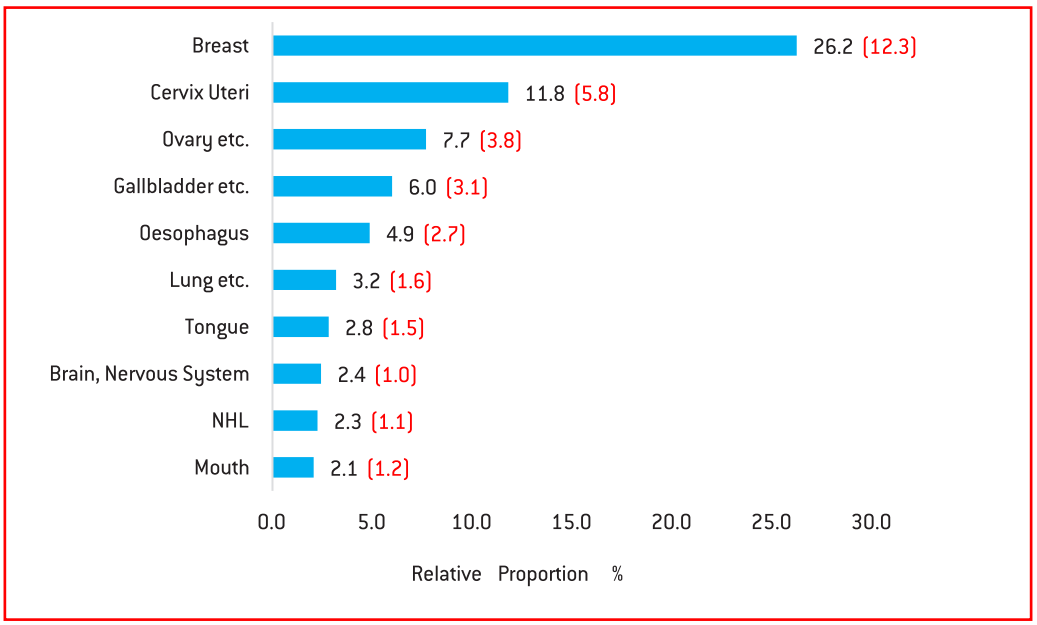
Figure 4.14 (c): Ten Leading Sites of Cancer (2016 - 2017)

(Age Adjusted Rates given in parentheses)

Males



Females



4.15. Panchkula district

Table 4.15 (a) : Profile of Panchkula District (2011 Census)	
Area (in sq. kms.)	**898**
Decadal Growth Rate (2001 - 2011)	**19.8%**
Literacy Rate	
Males	**87.0%**
Females	**76.0%**
Sex Ratio (females per 1000 males)	**873**
Density (Persons per sq. km)	**625**
Total Population	**561293**
Rural Population (%)	**248063 (44.2)**
Urban Population (%)	**313230 (55.8)**

Figure 4.15(a): Map of Haryana State highlighting Panchkula District

Table 4.15 (b) : Centerwise Distribution of Cancers

Number (#) and Relative Proportion (%)

Sl No	Name of the Centre	2016		2017		2016-2017	
		#	%	#	%	#	%
1	Post Graduate Institute of Medical Education Research, Chandigarh	239	48.3	240	50.6	479	49.4
2	General / Civil Hospital, Panchkula	56	11.3	65	13.7	146	15.1
3	Govt. Medical College and Hospital, Chandigarh	60	12.1	69	14.6	104	10.7
4	IVY Hospital, Mohali	21	4.2	13	2.7	34	3.5
5	Alchemist Hospital Ltd, Panchkula	20	4.0	5	1.1	25	2.6
6	Max Super Speciality Hospital,Mohali	17	3.4	5	1.1	22	2.3
7	Rajiv Gandhi Cancer Institute and Research Centre, New Delhi	9	1.8	11	2.3	20	2.1
8	Indus Super Speciality Hospital, Mohali	5	1.0	8	1.7	13	1.3
9	Fortis Hospital, Mohali	40	8.1	34	7.2	74	7.6
10	All Other Centres	28	5.7	24	5.1	52	5.4
Total		**495**	**100.0**	**474**	**100.0**	**969**	**100.0**

* All Other centres which have contributed less than 10 cases

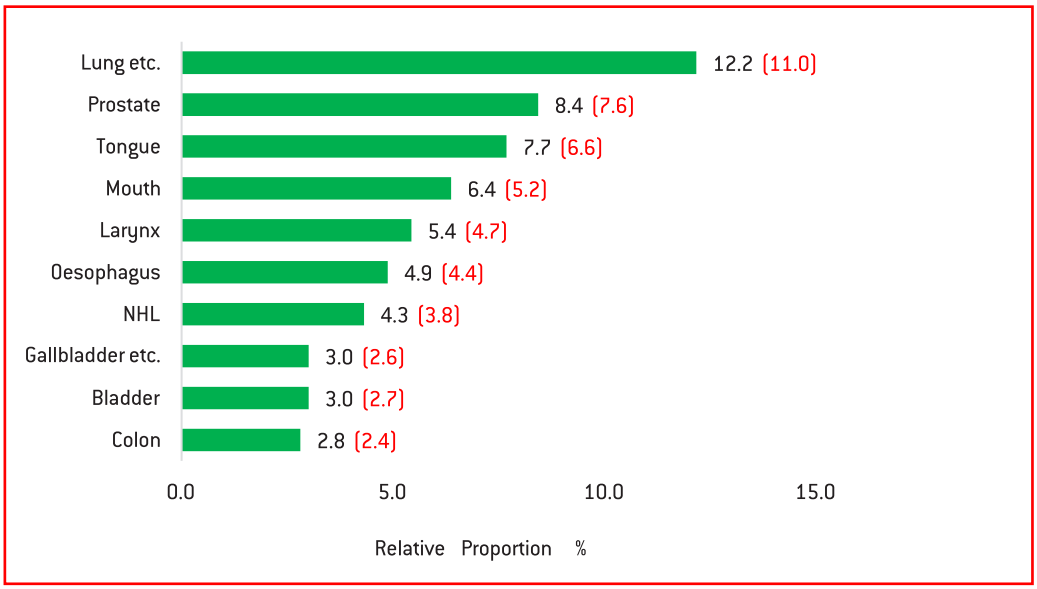
Table 4.15 (c): Salient features of Cancer Incidence

Year	2016		2017		2016-2017	
	Males	Females	Males	Females	Males	Females
Estimated Population	325310	293052	330354	299355	655664	592407
Total cancers(all sites)	259	236	275	199	534	435
Crude Rate	79.6	80.5	83.2	66.5	81.4	73.4
Age Adjusted Rate	85.0	82.1	89.3	67.2	87.2	74.5
Truncated Rate	143.0	156.2	154.6	131.7	148.9	143.8

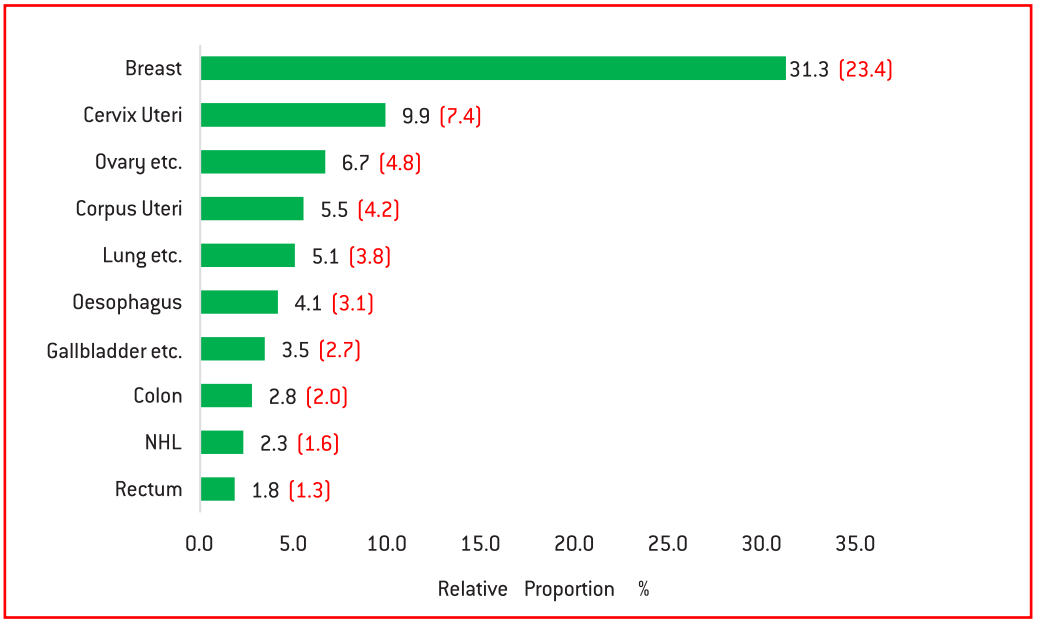
Figure 4.15 (b): Ten Leading Sites of Cancer (2016-2017)

(Age Adjusted Rates given in parentheses)

Males



Females



4.16. Palwal district

Table 4.16 (a) : Profile of Palwal District (2011 Census)	
Area (in sq. kms.)	**1359**
Decadal Growth Rate (2001 - 2011)	**25.8 %**
Literacy Rate	
Males	**82.7 %**
Females	**54.2 %**
Sex Ratio (females per 1000 males)	**880**
Density (Persons per sq. km)	**767**
Total Population	**1042708**
Rural Population (%)	**806164 (77.3)**
Urban Population (%)	**236544 (22.7)**

Figure 4.16 (a): Map of Haryana State highlighting Palwal District

Table 4.16 (b) : Centerwise Distribution of Cancers

Number (#) and Relative Proportion (%)

Sl No	Name of the Centre	2016		2017		2016-2017	
		#	%	#	%	#	%
1	Asian Institute of Medical Sciences, Faridabad	76	26.6	77	24.8	153	25.7
2	Dr. B.R. Ambedkar Institute Rotary Cancer Hospital, New Delhi	101	35.3	89	28.7	190	31.9
3	Shaheed Hassan Khan Mewati Govt Medical College, Mewat	18	6.3	30	9.7	48	8.1
4	Rajiv Gandhi Cancer Institute and Research Centre, New Delhi	21	7.3	26	8.4	47	7.9
5	Govt Hospital, Palwal	12	4.2	31	10.0	43	7.2
6	Acharya Tulsi Regional Cancer Treatment and Research Institute, Bikaner	7	2.4	12	3.9	19	3.2
7	All Other Centres	51	17.8	45	14.5	96	16.1
Total		**286**	**100.0**	**310**	**100.0**	**596**	**100.0**

* All Other centres which have contributed less than 10 cases

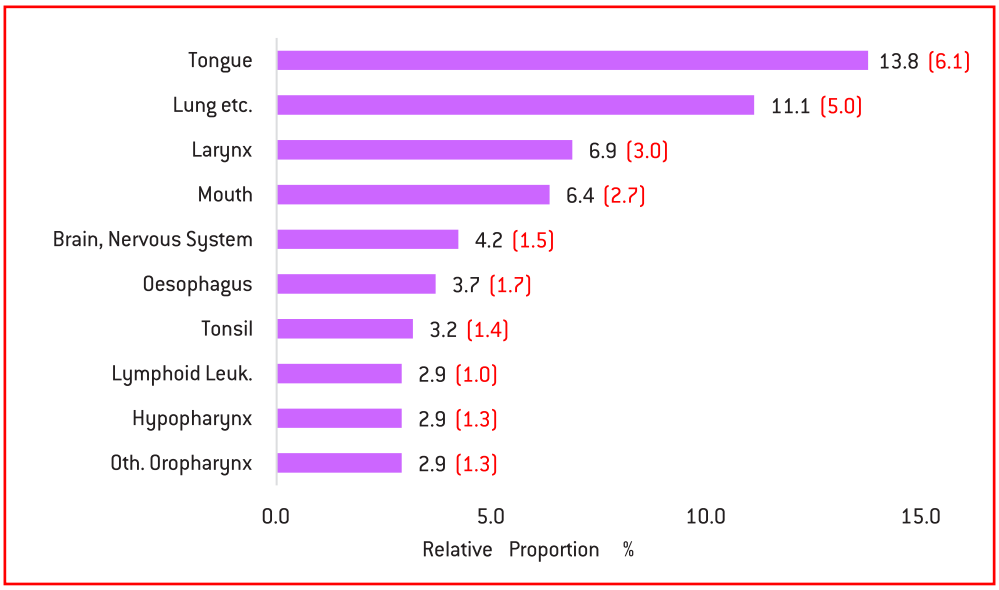
Table 4.16 (c): Salient features of Cancer Incidence

Year	2016		2017		2016-2017	
	Males	Females	Males	Females	Males	Females
Estimated Population	623233	555116	637040	568646	1260273	1123762
Total cancers(all sites)	191	95	187	123	378	218
Crude Rate	30.6	17.1	29.4	21.6	30.0	19.4
Age Adjusted Rate	43.0	21.9	42.0	28.1	42.5	25.0
Truncated Rate	95.2	49.0	88.3	64.2	91.7	56.7

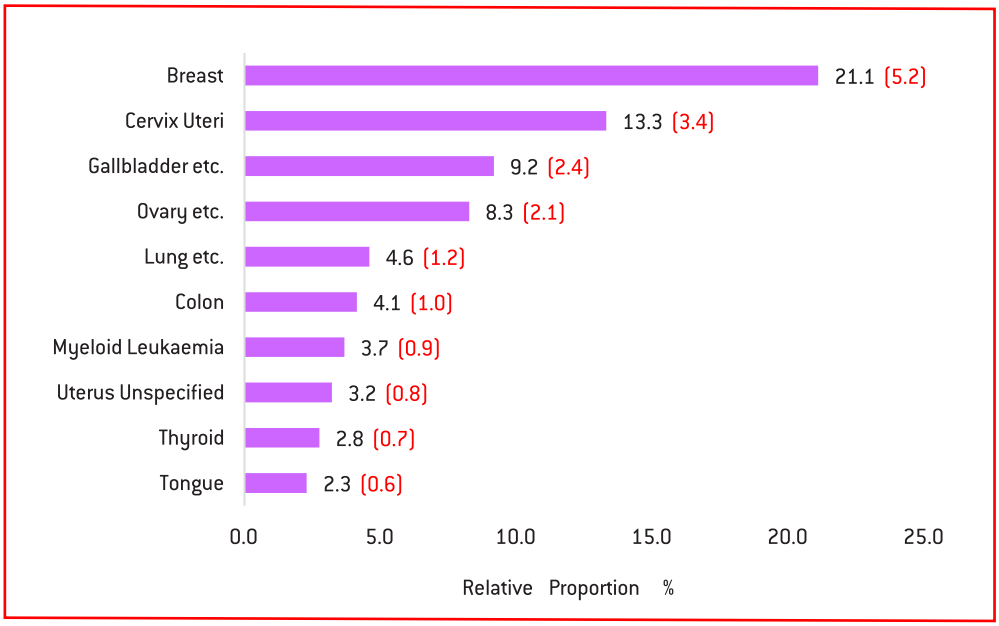
Figure 4.16 (b): Ten Leading Sites of Cancer (2016 - 2017)

(Age Adjusted Rates given in parentheses)

Males



Females



4.17. Rohtak district

Table 4.17 (a): Profile of Rohtak District (2011 Census)	
Area (in sq. kms.)	**1745**
Decadal Growth Rate (2001 - 2011)	**12.9%**
Literacy Rate	
Males	**87.7%**
Females	**71.7%**
Sex Ratio (females per 1000 males)	**867**
Density (Persons per sq. km)	**608**
Total Population	**1061204**
Rural Population (%)	**615040 (58.0)**
Urban Population (%)	**446164 (42.0)**

Figure 4.17 (a): Map of Haryana State highlighting Rohtak District

Table 4.17 (b): Centerwise Distribution of Cancers

Number (#) and Relative Proportion (%)

Sl No	Name of the Centre	2016		2017		2016-2017	
		#	%	#	%	#	%
1	Pt. B.D. Sharma PGIMS, Rohtak	875	73.7	919	70.8	1794	72.2
2	Rajiv Gandhi Cancer Institute and Research Centre, New Delhi	103	8.7	98	7.6	201	8.1
3	Acharya Tulsi Regional Cancer Treatment and Research Institute, Bikaner	39	3.3	31	2.4	70	2.8
4	O.P.Jindal Institute of Cancer and Research, Hisar	20	1.7	23	1.8	43	1.7
5	City Diagnostic Centre, Rohtak	2	0.2	38	2.9	40	1.6
6	Action Cancer Hospital, Delhi	-	-	29	2.2	29	1.2
7	Fortis Memorial Research Institute, Gurgaon	15	1.3	14	1.1	29	1.2
8	Aadhar Health Institute (Vlcom Health Care Private Limited), Hisar	9	0.8	17	1.3	26	1.0
9	Sri Ganga Ram Hospital, New Delhi	18	1.5	8	0.6	26	1.0
10	Narula X-ray Clinic & Laboratory, Rohtak	-	-	22	1.7	22	0.9
11	Medanta Cancer Centre, Gurgaon	15	1.3	6	0.5	21	0.8
12	Dr. B.R. Ambedkar Institute Rotary Cancer Hospital, New Delhi	23	1.9	17	1.3	40	1.6
13	Lifeline Healthcare, Rohtak	3	0.3	13	1.0	16	0.6
14	Max Super Speciality Hospital, New Delhi	4	0.3	10	0.8	14	0.6
15	Nirwana Diagnostic Centre, Rohtak	-	-	13	1.0	13	0.5
16	Post Graduate Institute of Medical Education Research, Chandigarh	6	0.5	6	0.5	12	0.5
17	Asian Institute of Medical Sciences, Faridabad	6	0.5	5	0.4	11	0.4
18	All Other Centres	50	4.2	29	2.2	79	3.2
Total		**1188**	**100.0**	**1298**	**100.0**	**2486**	**100.0**

* All Other centres which have contributed less than 10 cases

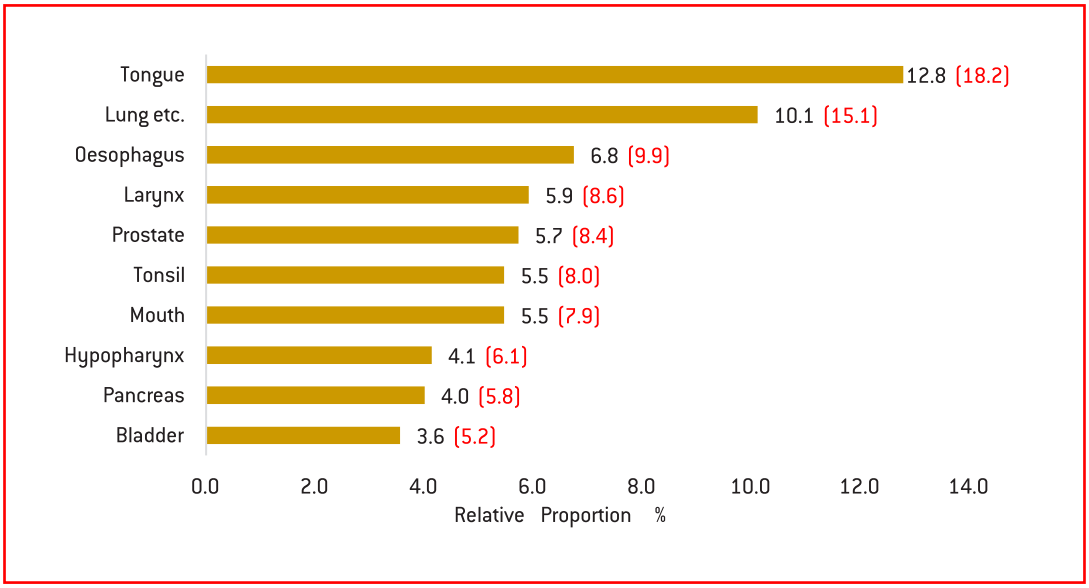
Table 4.17 (c): Salient features of Cancer Incidence

Year	2016		2017		2016-2017	
	Males	Females	Males	Females	Males	Females
Estimated Population	602969	529124	609666	536242	1212635	1065366
Total cancers(all sites)	717	471	854	444	1571	915
Crude Rate	118.9	89.0	140.1	82.8	129.6	85.9
Age Adjusted Rate	131.2	86.4	156.6	80.2	143.9	83.3
Truncated Rate	268.0	180.4	260.0	165.3	263.9	172.8

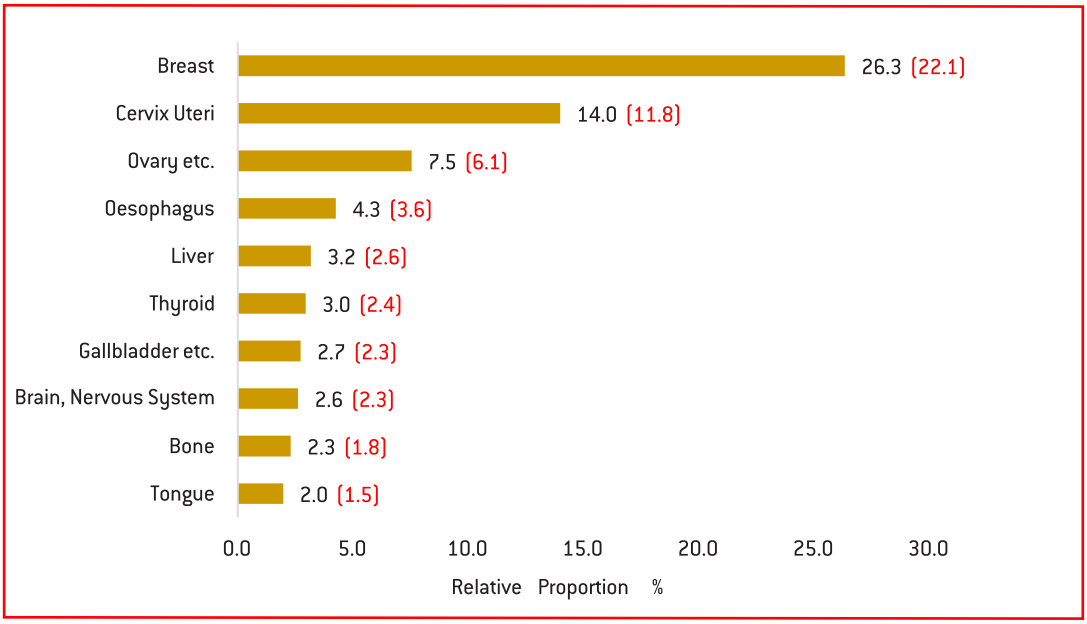
Figure 4.17 (b): Leading Sites of Cancer (2016 - 2017)

(Age Adjusted Rates given in parentheses)

Males



Females



4.18. Rewari district

Table 4.18 (a) : Profile of Rewari District (2011 Census)	
Area (in sq. kms.)	**1594**
Decadal Growth Rate (2001 - 2011)	**17.6%**
Literacy Rate	
Males	**91.4%**
Females	**69.6%**
Sex Ratio (females per 1000 males)	**898**
Density (Persons per sq. km)	**565**
Total Population	**900332**
Rural Population (%)	**666902 (74.1)**
Urban Population (%)	**233430 (25.9)**

Figure 4.18 (a): Map of Haryana State highlighting Rewari District

Table 4.18 (b) : Centerwise Distribution of Cancers

Number (#) and Relative Proportion (%)

Sl No	Name of the Centre	2016		2017		2016-2017	
		#	%	#	%	#	%
1	Dr Gajendra Yadavs Pathology Laboratory, Rewari	191	26.9	65	12.6	256	20.9
2	Pt. B.D. Sharma PGIMS, Rohtak	124	17.5	132	25.5	256	20.9
3	Bhagwan Mahaveer Cancer Hospital and Research Centre, Jaipur	67	9.4	53	10.3	120	9.8
4	Civil Hospital, Rewari	48	6.8	61	11.8	109	8.9
5	Rajiv Gandhi Cancer Institute and Research Centre, New Delhi	51	7.2	38	7.4	89	7.3
6	Medanta Cancer Centre, Gurgaon	22	3.1	15	2.9	37	3.0
7	Dr. B.R. Ambedkar Institute Rotary Cancer Hospital, New Delhi	51	7.2	27	5.2	78	6.4
8	Artemis Health Institute, Gurgaon	24	3.4	9	1.7	33	2.7
9	Paras Hosptials, Gurgaon	17	2.4	16	3.1	33	2.7
10	Acharya Tulsi Regional Cancer Treatment and Research Institute, Bikaner	20	2.8	10	1.9	30	2.4
11	Fortis Memorial Research Institute, Gurgaon	17	2.4	12	2.3	29	2.4
12	Asian Institute of Medical Sciences, Faridabad	9	1.3	13	2.5	22	1.8
13	R. K. Birla Cancer Center, Jaipur	22	3.1	-	-	22	1.8
14	Max Super Speciality Hospital, New Delhi	8	1.1	8	1.5	16	1.3
15	O.P.Jindal Institute of Cancer and Research, Hisar	6	0.8	8	1.5	14	1.1
16	Action Cancer Hospital, Delhi	-	-	10	1.9	10	0.8
17	All Other Centres	33	4.6	40	7.7	73	5.9
Total		**710**	**100.0**	**517**	**100.0**	**1227**	**100.0**

* All Other centres which have contributed less than 10 cases

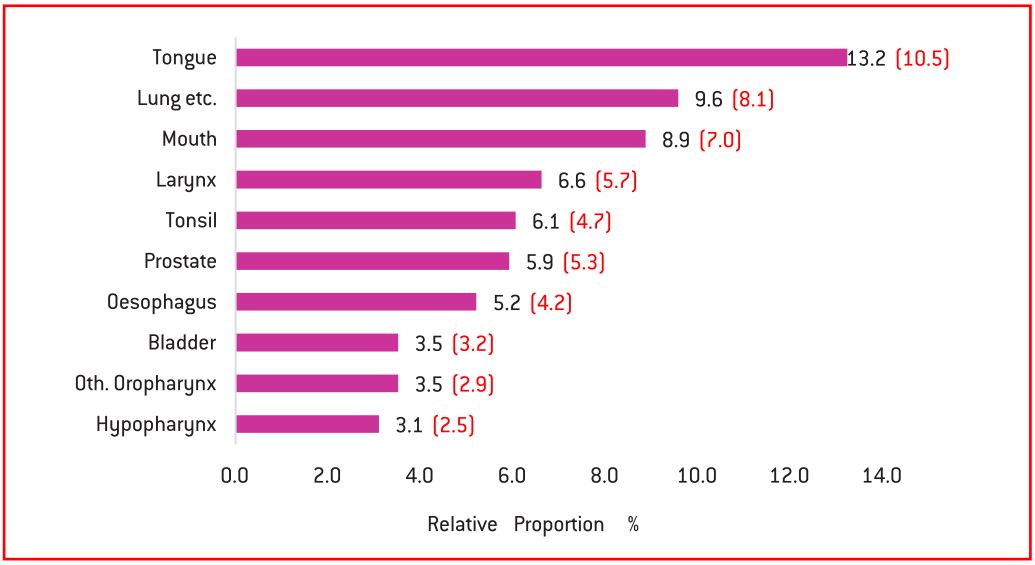
Table 4.18 (c) : Salient features of Cancer Incidence

Year	2016		2017		2016-2017	
	Males	Females	Males	Females	Males	Females
Estimated Population	517386	464418	525883	471999	1043269	936417
Total cancers(all sites)	401	309	309	208	710	517
Crude Rate	77.5	66.5	58.8	44.1	68.1	55.2
Age Adjusted Rate	91.1	67.6	69.7	45.1	80.3	56.2
Truncated Rate	171.8	144.0	123.7	94.5	147.4	118.8

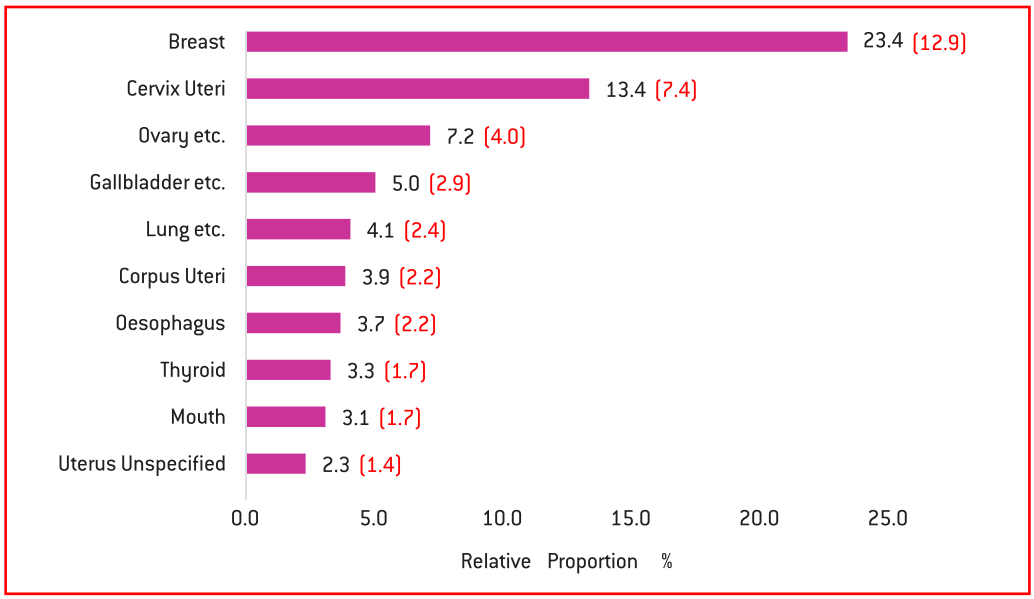
Figure 4.18 (b): Ten Leading Sites of Cancer (2016 - 2017)

(Age Adjusted Rates given in parentheses)

Males



Females



4.19. Sirsa district

Table 4.19 (a) : Profile of Sirsa District (2011 Census)	
Area (in sq. kms.)	**4277**
Decadal Growth Rate (2001 - 2011)	**16.0%**
Literacy Rate	
Males	**76.4%**
Females	**60.4%**
Sex Ratio (females per 1000 males)	**897**
Density (Persons per sq. km)	**303**
Total Population	**1295189**
Rural Population (%)	**975941 (75.4)**
Urban Population (%)	**319248 (24.6)**

Figure 4.19 (a): Map of Haryana State highlighting Sirsa District

Table 4.19 (b): Centerwise Distribution of Cancers

Number (#) and Relative Proportion (%)

Sl No	Name of the Centre	2016		2017		2016-2017	
		#	%	#	%	#	%
1	Acharya Tulsi Regional Cancer Treatment and Research Institute, Bikaner	375	45.3	276	40.5	651	43.1
2	O.P.Jindal Institute of Cancer and Research, Hisar	70	8.5	62	9.1	132	8.7
3	Civil Hospital, Sirsa	25	3.0	63	9.2	88	5.8
4	Bhagwan Mahaveer Cancer Hospital and Research Centre, Jaipur	45	5.4	39	5.7	84	5.6
5	Aadhar Health Institute (Vlcom Health Care Private Limited), Hisar	29	3.5	46	6.7	75	5.0
6	Pt. B.D. Sharma PGIMS, Rohtak	46	5.6	28	4.1	74	4.9
7	Rajiv Gandhi Cancer Institute and Research Centre, New Delhi	30	3.6	23	3.4	53	3.5
8	Post Graduate Institute of Medical Education Research, Chandigarh	24	2.9	25	3.7	49	3.2
9	Guru Gobind Singh Medical College Hospital, Faridkot	17	2.1	17	2.5	34	2.3
10	Maharaja Agrasen Medical Colelge Agroha, Hisar	10	1.2	17	2.5	27	1.8
11	Max Super Speciality Hospital,Bathinda	21	2.5	5	0.7	26	1.7
12	ACCULAB, Sirsa	1	0.1	23	3.4	24	1.6
13	Garg Path Lab, Sirsa	19	2.3	4	0.6	23	1.5
14	Global Imaging and Pathlabs Private Limited, Sirsa	22	2.7	-	-	22	1.5
15	Govt. Medical College and Hospital, Chandigarh	10	1.2	8	1.2	18	1.2
16	Dr. Vermas Pathlab, Sirsa	9	1.1	8	1.2	17	1.1
17	All Other Centres	74	8.9	38	5.6	112	7.4
Total		**827**	**100.0**	**682**	**100.0**	**1509**	**100.0**

* All Other centres which have contributed less than 10 cases

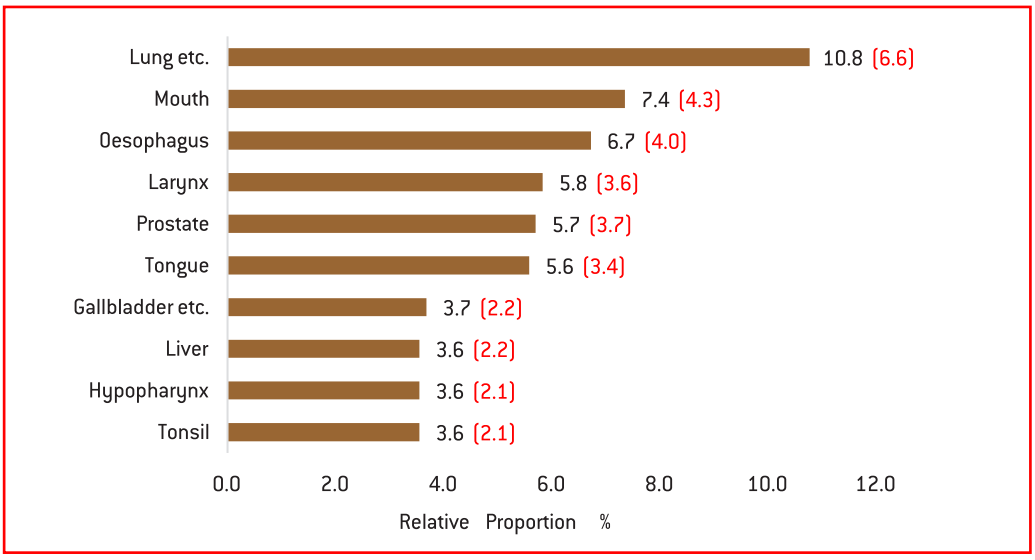
Table 4.19 (c): Salient features of Cancer Incidence

Year	2016		2017		2016-2017	
	Males	Females	Males	Females	Males	Females
Estimated Population	735607	666243	745998	676810	1481605	1343053
Total cancers(all sites)	449	378	340	342	789	720
Crude Rate	61.0	56.7	45.6	50.5	53.3	53.6
Age Adjusted Rate	68.7	57.1	51.0	51.4	59.8	54.2
Truncated Rate	137.8	128.2	101.3	108.3	119.2	118.1

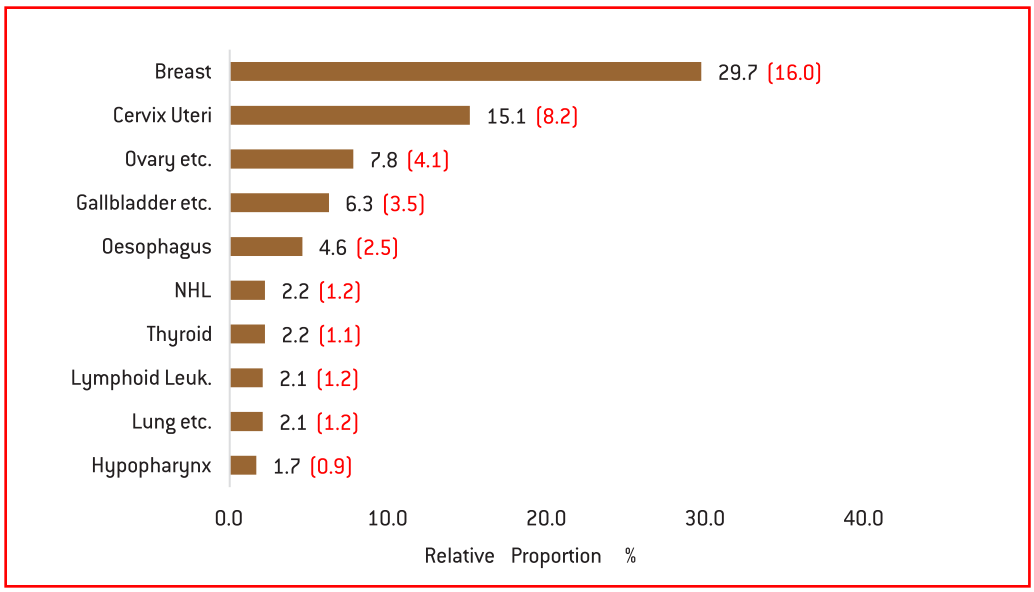
Figure 4.19 (b): Ten Leading Sites of Cancer (2016 - 2017)

(Age Adjusted Rates given in parentheses)

Males



Females



4.20. Sonipat district

Table 4.20 (a) : Profile of Sonipat District (2011 Census)	
Area (in sq. kms.)	**2122**
Decadal Growth Rate (2001 - 2011)	**13.4%**
Literacy Rate	
Males	**87.2%**
Females	**69.8%**
Sex Ratio (females per 1000 males)	**856**
Density (Persons per sq. km)	**683**
Total Population	**1450001**
Rural Population (%)	**996637 (68.7)**
Urban Population (%)	**453364 (31.3)**

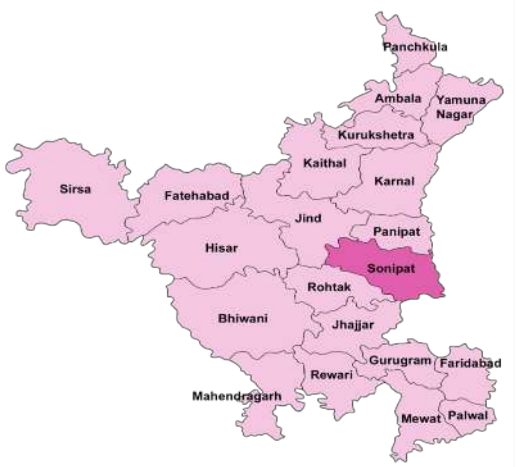


Figure 4.20 (a): Map of Haryana State highlighting Sonipat District

Table 4.20 (b) : Centerwise Distribution of Cancers

Number (#) and Relative Proportion (%)

Sl No	Name of the Centre	2016		2017		2016-2017	
		#	%	#	%	#	%
1	Pt. B.D. Sharma PGIMS, Rohtak	394	35.0	467	39.5	861	37.3
2	Rajiv Gandhi Cancer Institute and Research Centre, New Delhi	163	14.5	119	10.1	282	12.2
3	BPS Government Medical College for Women, Haryana	114	10.1	120	10.2	234	10.1
4	Hari Pathology Lab, Sonipat	50	4.4	68	5.8	118	5.1
5	Acharya Tulsi Regional Cancer Treatment and Research Institute, Bikaner	66	5.9	31	2.6	97	4.2
6	Civil Hospital, Sonepat	22	2.0	58	4.9	80	3.5
7	Asian Institute of Medical Sciences, Faridabad	28	2.5	47	4.0	75	3.3
8	FIMS Hospital, Sonepat	48	4.3	23	1.9	71	3.1
9	Dr. B.R. Ambedkar Institute Rotary Cancer Hospital, New Delhi	76	6.7	52	4.4	128	5.5
10	Action Cancer Hospital, Delhi	-	-	27	2.3	27	1.2
11	Max Super Speciality Hospital, New Delhi	17	1.5	10	0.8	27	1.2
12	Satyakiran Healthcare Pvt Ltd, Sonipat	24	2.1	3	0.3	27	1.2
13	Tulip Multispeciality Hospital Pvt Ltd, Sonipat	8	0.7	13	1.1	21	0.9
14	O.P.Jindal Institute of Cancer and Research, Hisar	10	0.9	10	0.8	20	0.9
15	Max Super Speciality Hospital, Shalimar Bagh, New Delhi	8	0.7	11	0.9	19	0.8
16	Sri Ganga Ram Hospital, New Delhi	13	1.2	5	0.4	18	0.8
17	Max Super Speciality Hospital, PPG, Delhi	9	0.8	7	0.6	16	0.7
18	Medanta Cancer Centre, Gurgaon	8	0.7	7	0.6	15	0.7
19	Fortis Memorial Research Institute, Gurgaon	4	0.4	10	0.8	14	0.6
20	City Diagnostic Centre, Rohtak	-	-	12	1.0	12	0.5
21	Post Graduate Institute of Medical Education Research, Chandigarh	4	0.4	8	0.7	12	0.5
22	Aadhar Health Institute (Vlcom Health Care Private Limited), Hisar	3	0.3	7	0.6	10	0.4
23	All Other Centres	57	5.1	66	5.6	123	5.3
Total		**1124**	**100.0**	**1181**	**100.0**	**2307**	**100.0**

* All Other centres which have contributed less than 10 cases

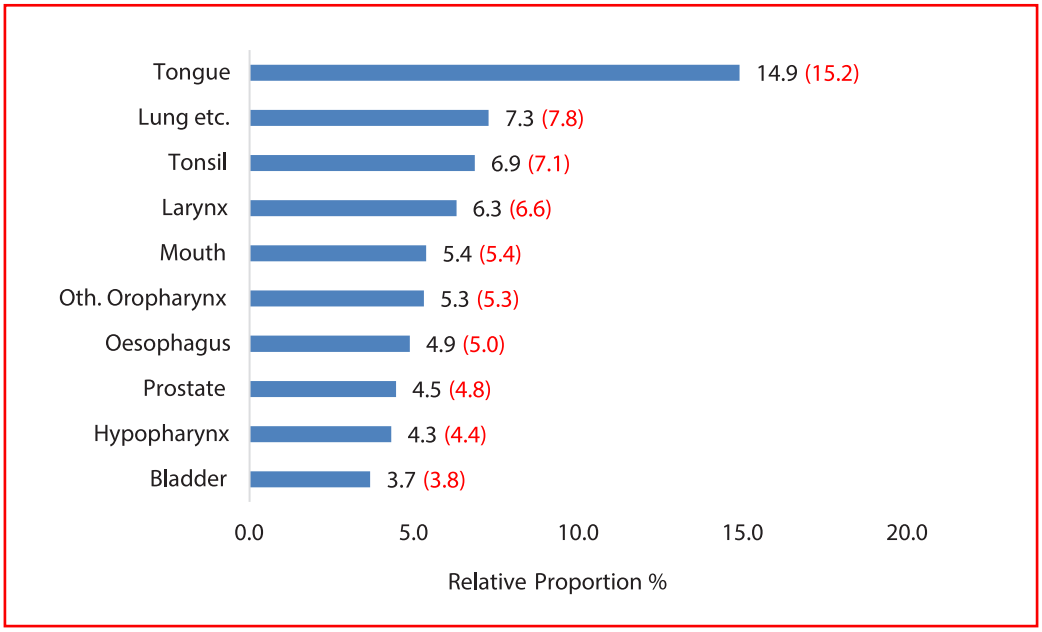
Table 4.20 (c) : Salient features of Cancer Incidence

Year	2016		2017		2016-2017	
	Males	Females	Males	Females	Males	Females
Estimated Population	831165	719152	840863	729027	1672028	1448179
Total cancers(all sites)	699	427	717	464	1416	891
Crude Rate	84.1	59.4	85.3	63.6	84.7	61.5
Age Adjusted Rate	100.1	61.5	102.7	67.0	101.4	64.3
Truncated Rate	199.1	128.7	182.1	149.0	190.5	139.0

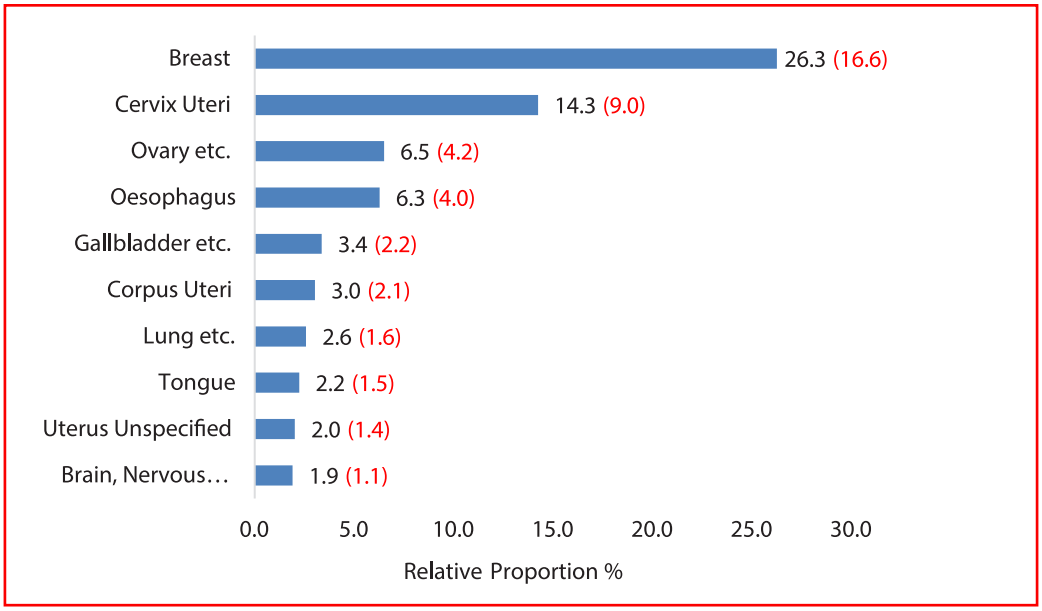
Figure 4.19 (b): Ten Leading Sites of Cancer (2016 - 2017)

(Age Adjusted Rates given in parentheses)

Males



Females



4.21. Yamunanagar district

Table 4.21 (a) : Profile of Yamunanagar District (2011 Census)	
Area (in sq. kms.)	**1768**
Decadal Growth Rate (2001 - 2011)	**16.6%**
Literacy Rate	
Males	**83.8%**
Females	**71.4%**
Sex Ratio (females per 1000 males)	**877**
Density (Persons per sq. km)	**687**
Total Population	**1214205**
Rural Population (%)	**741376(61.1)**
Urban Population (%)	**472829 (38.9)**

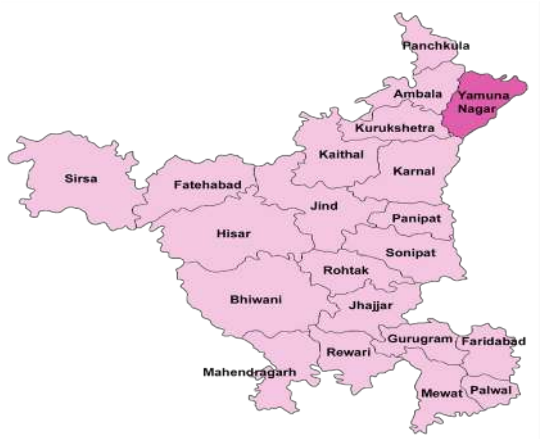


Figure 4.21 (a): Map of Haryana State highlighting Yamunanagar District

Table 4.21 (b) : Centerwise Distribution of Cancers

Number (#) and Relative Proportion (%)

Sl No	Name of the Centre	2016		2017		2016-2017	
		#	%	#	%	#	%
1	Post Graduate Institute of Medical Education Research, Chandigarh	263	29.3	264	30.3	527	29.8
2	MLGH, Yamunanagar	208	23.2	200	23.0	408	23.1
3	Govt. Medical College and Hospital, Chandigarh	115	12.8	147	16.9	262	14.8
4	Jain Clinical Lab, Yamunanagar	58	6.5	45	5.2	103	5.8
5	M.M. Institute of Medical Sciences and Research, Ambala	44	4.9	53	6.1	97	5.5
6	Fortis Hospital, Mohali	24	2.7	13	1.5	37	2.1
7	Rajiv Gandhi Cancer Institute and Research Centre, New Delhi	27	3.0	23	2.6	50	2.8
8	Grecian super speciality hospital, Mohali	27	3.0	11	1.3	38	2.1
9	Acharya Tulsi Regional Cancer Treatment and Research Institute, Bikaner	20	2.2	13	1.5	33	1.9
10	Asian Institute of Medical Sciences, Faridabad	10	1.1	9	1.0	19	1.1
11	Chadha Hospital, Yamunanagar	10	1.1	9	1.0	19	1.1
12	IVY Hospital, Mohali	10	1.1	9	1.0	19	1.1
13	Alchemist Hospital Ltd, Panchkula	7	0.8	7	0.8	14	0.8
14	Nidaan Diagnostic Centre, Yamunanagar	3	0.3	11	1.3	14	0.8
15	Dr. Nidhi Path Lab, Yamunanagar	9	1.0	2	0.2	11	0.6
16	All Other Centres	63	7.0	55	6.3	118	6.7
Total		**898**	**100.0**	**871**	**100.0**	**1769**	**100.0**

* All Other centres which have contributed less than 10 cases

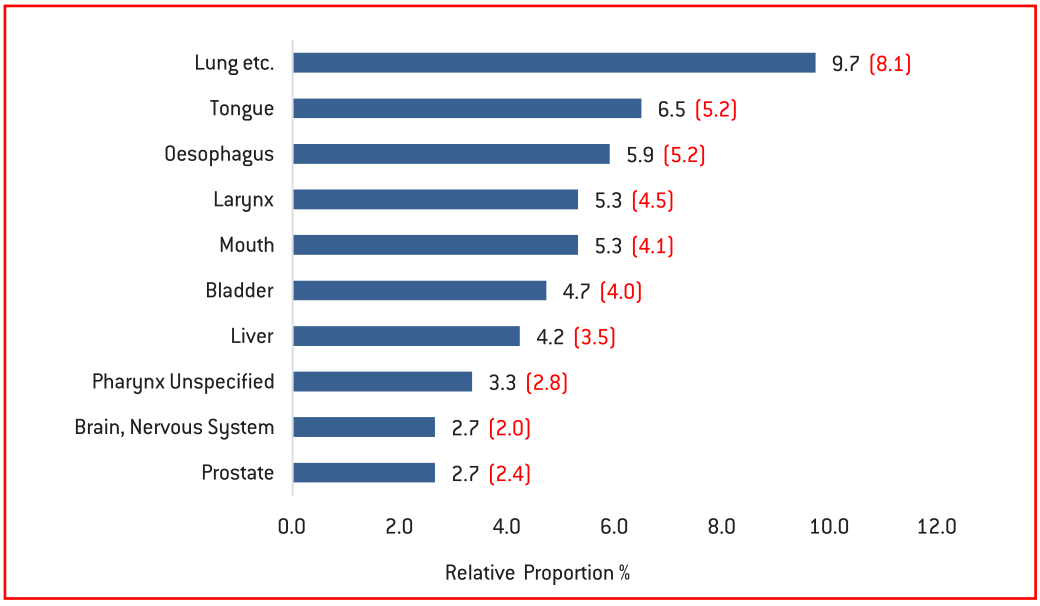
Table 4.21 (c): Salient features of Cancer Incidence

Year	2016		2017		2016-2017	
	Males	Females	Males	Females	Males	Females
Estimated Population	698703	618991	708906	629157	1407609	1248148
Total cancers(all sites)	504	394	513	358	1017	752
Crude Rate	72.1	63.7	72.4	56.9	72.3	60.2
Age Adjusted Rate	83.0	65.3	80.3	57.7	81.7	61.5
Truncated Rate	134.9	135.8	138.2	124.1	136.6	129.9

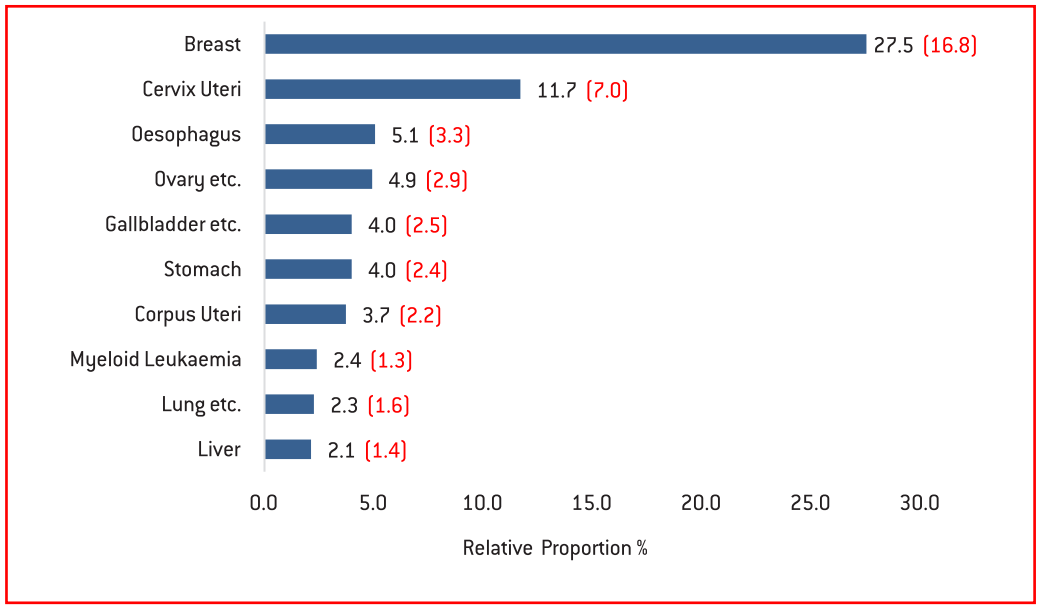
Figure 4.21 (a): Ten Leading Sites of Cancer (2016-2017)

(Age Adjusted Rates given in parentheses)

Males



Females



Chapter 5

SUMMARY OF SPECIFIC SITES OF CANCER

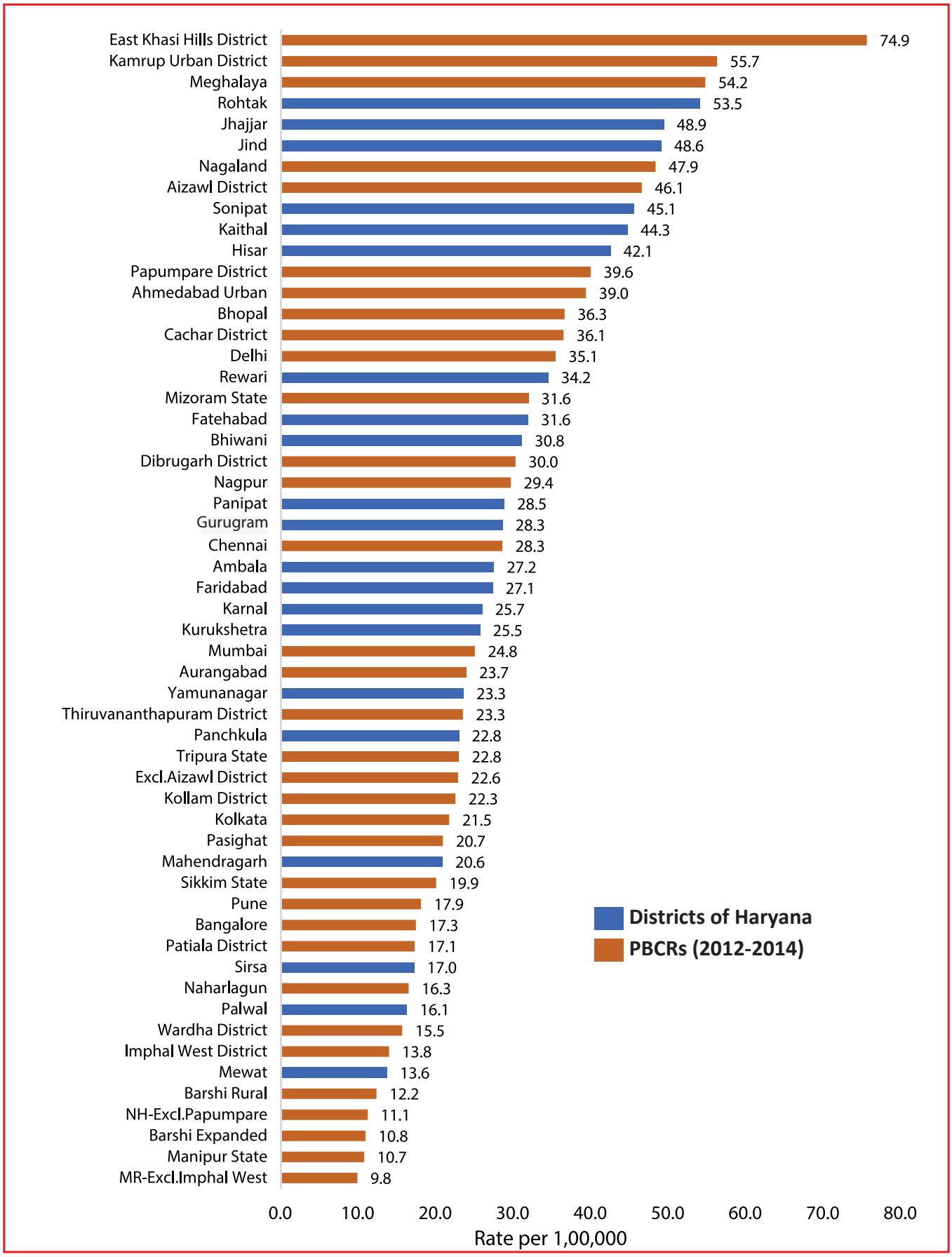
The following chapter provide a summary of some statistical and scientific details on specific sites of cancer. The sites are as per The International Classification of Diseases (WHO: ICD-10), for easy comparability of incidence rates with cancer registries throughout the world.

In giving an account of the individual sites (according to ICD-10) of cancer in this chapter, the succeeding guidelines have been followed for selecting the specific sites. All districts of Haryana state were tabulated with top ten leading sites of cancer. Those sites which featured in top ten in most of the districts after above tabulation were chosen for elaborating in specific sites of cancer. Those sites where at least five districts showed a higher or comparable AAR with the highest AAR of that site among districts of Haryana. Sites of cancer with less than ten cases, are excluded from the bar charts so as to avoid overestimation or misinterpretation. However, in order to place the facts in right perspective the appropriate shades of colour depending on the AAR are portrayed for districts regardless of the numbers of cancers for that site.

The bar charts give the comparison of the age adjusted incidence rates per 1, 00,000 persons (AAR) of the specific sites of cancer. The comparison is made between the 21 districts in Haryana in order from the highest AAR for said site of cancer and AAR (average annual of 2012-14) of that site in PBCRs under NCDIR-NCRP. A map of India with 21 districts displayed as units is also portrayed. Depending on AAR (higher of AAR between 2016-2017) of that site - districts displayed grade shading. The higher the AAR the darker the shade. Where data is sparse grey shading done. Districts with AAR are labelled (with values of AARs in parentheses).

District wise Comparison of Age Adjusted Incidence Rates (AARs) with that of PBCRs under NCDIR- for Head and Neck Cancers is being carried out. Among males, the district of Rohtak (53.5), Jhajjar (48.9) and Jind (48.6) had lower AAR as compared to PBCRs of Meghalaya and Kamrup Urban. These rates are higher than some PBCRs i.e. registries in western (Ahmedabad and Nagpur) Eastern (Kolkata) and Northern (Delhi) India. The AARs for Head and Neck of districts across Haryana state among females have recorded lower rates (Jhajjar -7.6 and Gurgaon -7.1) in the state wide atlas.

Figure 5.1. District wise Comparison of Age Adjusted Incidence Rates (AARs) with that of PBCRs under NCDIR- NCRP- Head and Neck Cancers – Males



Map 5.1. District wise Comparison of Age Adjusted Incidence Rates (AARs)
Head and Neck Cancers (ICD-10: C01-06, C09-C14 & C32) – Males

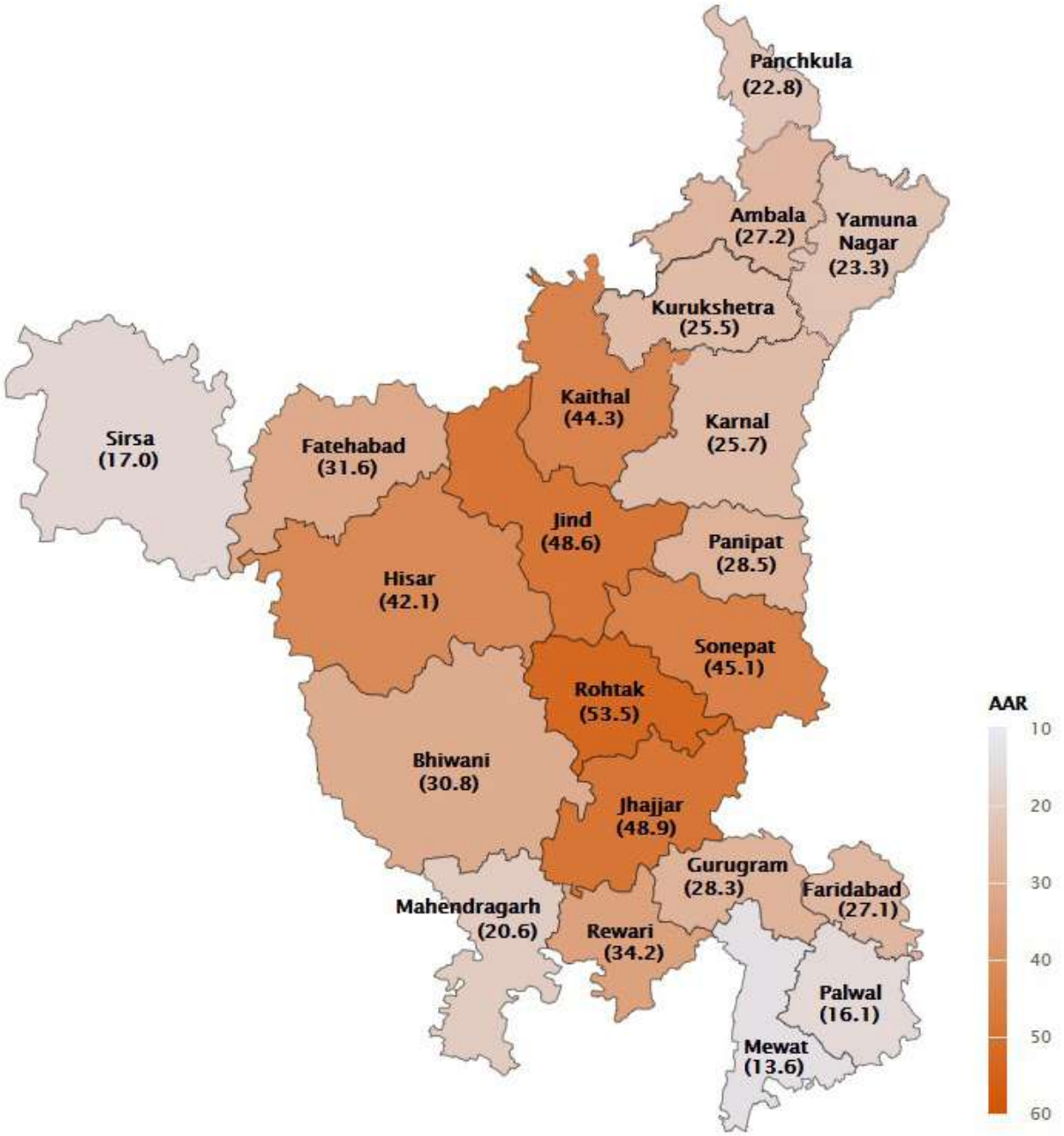
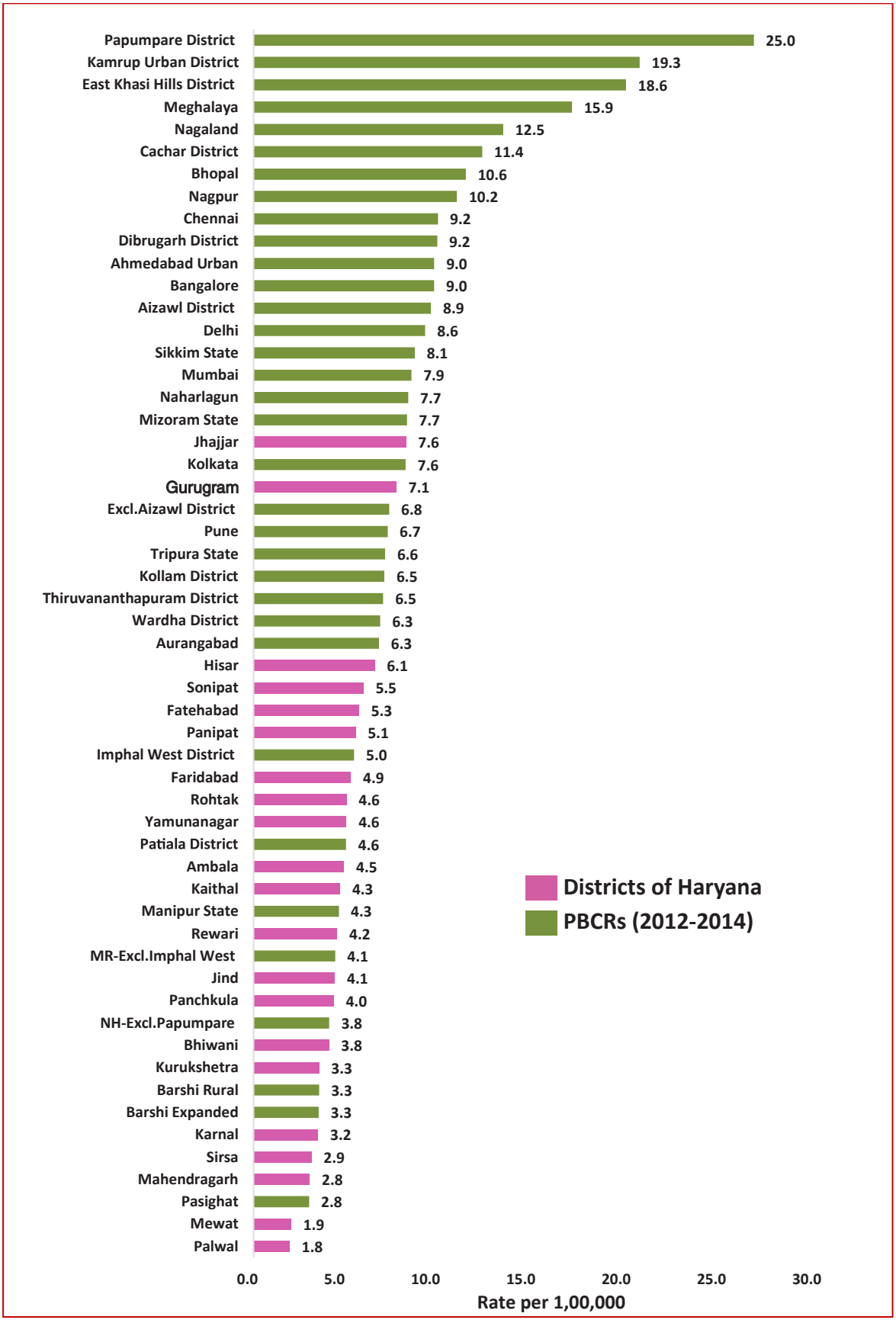


Figure 5.2. District wise Comparison of Age Adjusted Incidence Rates (AARs) with that of PBCRs under NCDIR – Head and Neck Cancers - Females



Map 5.2. District wise Comparison of Age Adjusted Incidence Rates (AARs) Head and Neck Cancers (ICD-10: C01-06, C09-C14 & C32) – Females

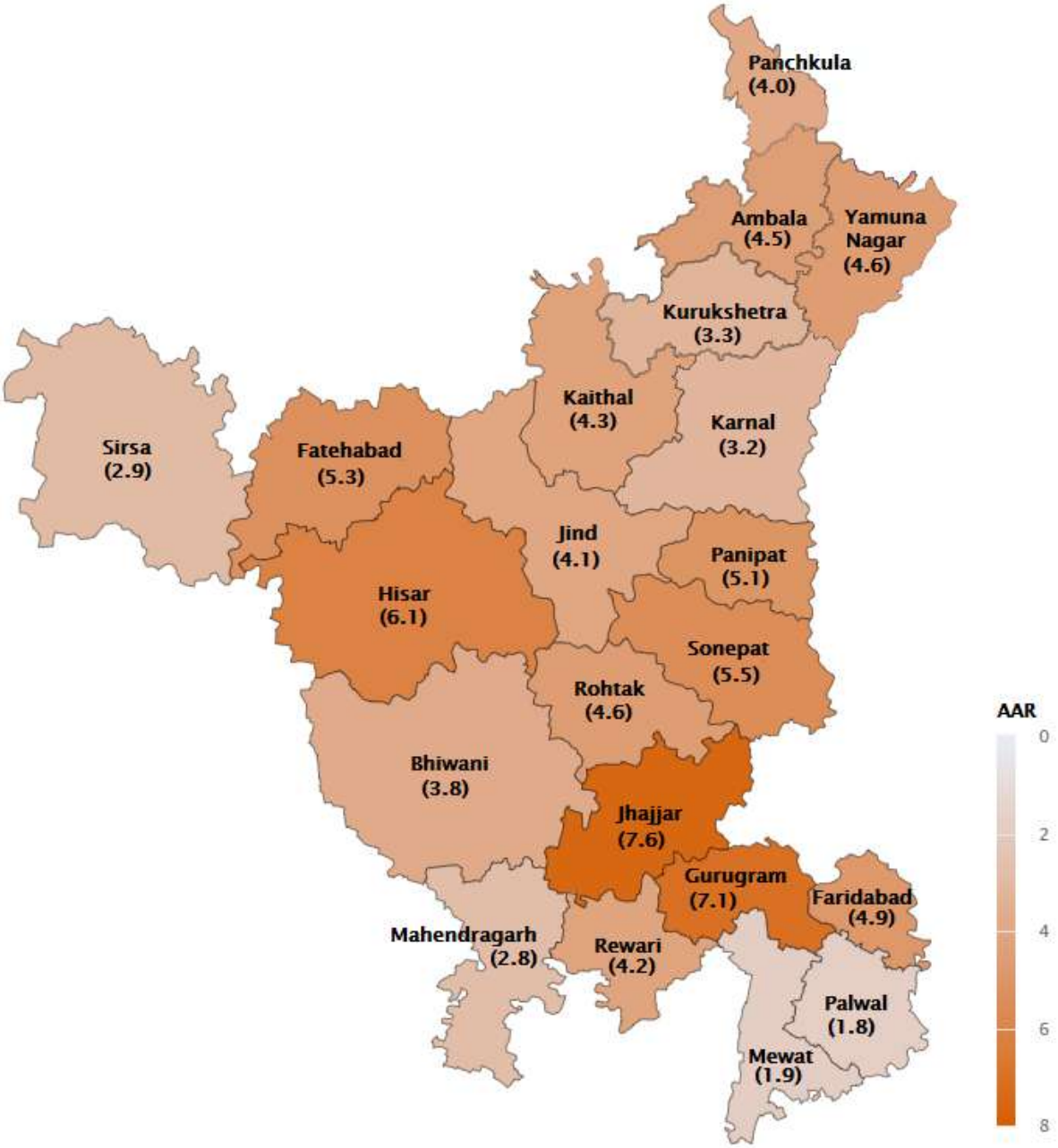
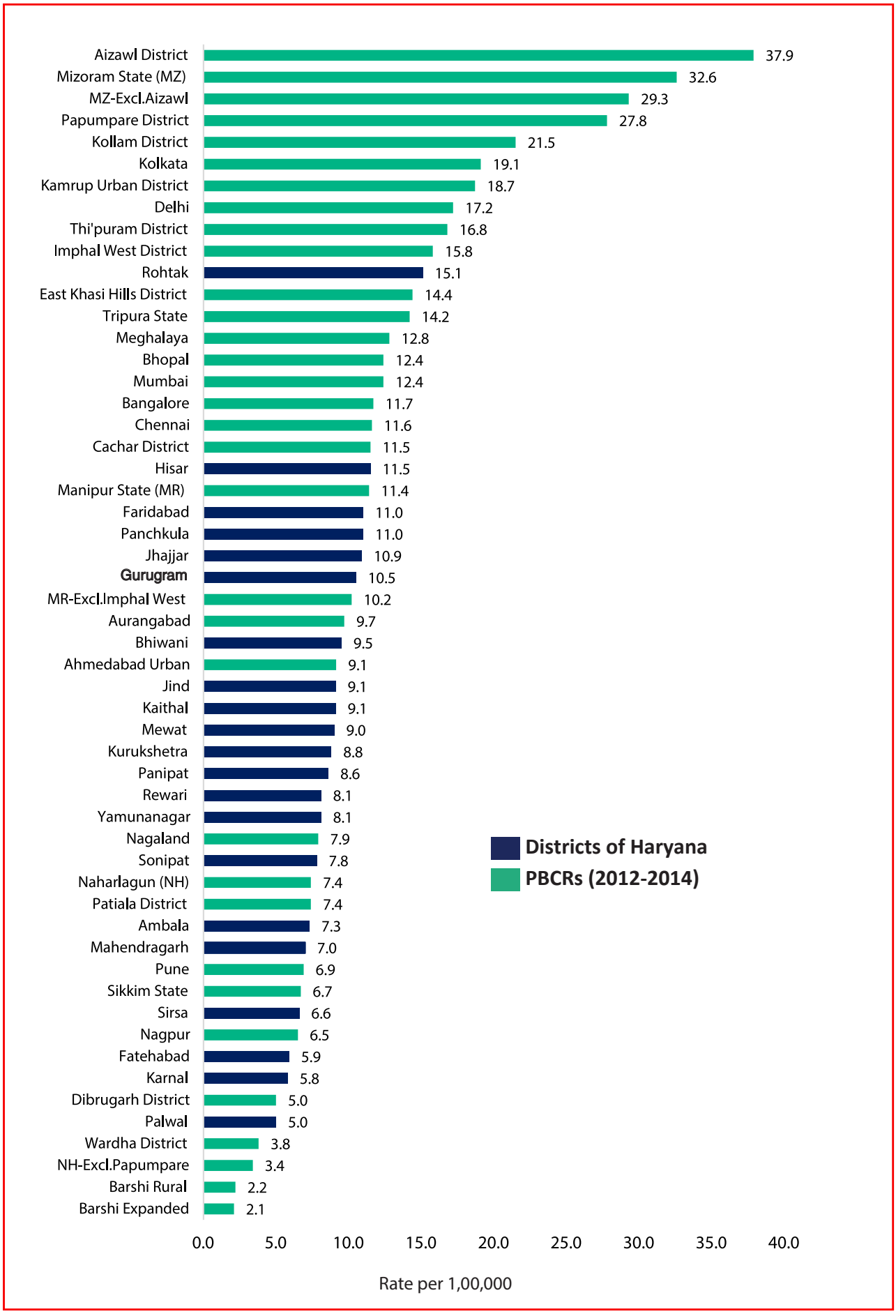


Figure 5.3. District wise Comparison of Age Adjusted Incidence Rates (AARs) with that of PBCRs under NCDIR- Lung etc. (C33-34) - Males



Map 5.3. District wise Comparison of Age Adjusted Incidence Rates (AARs) Lung etc. (C33-34) – Males

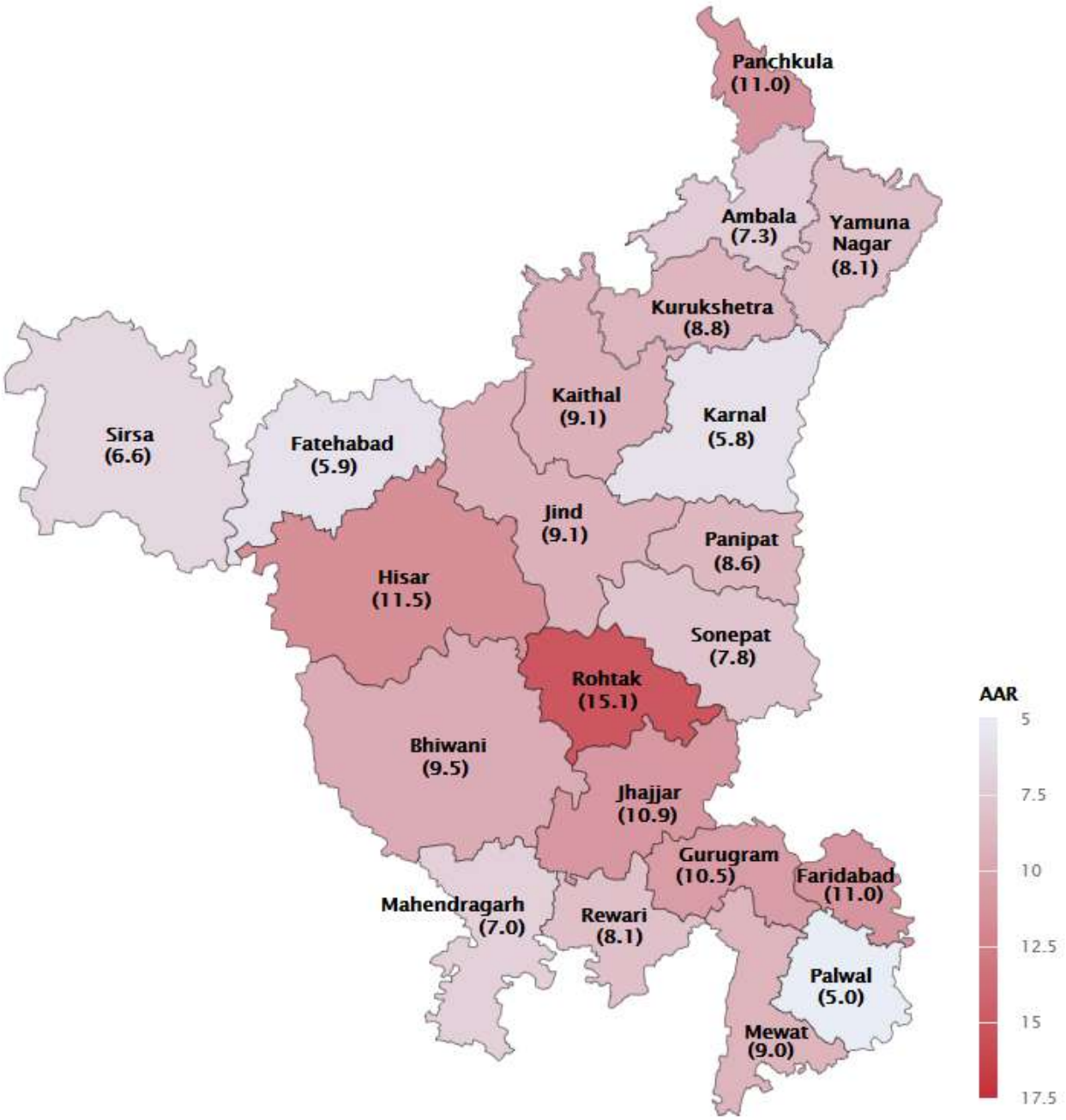
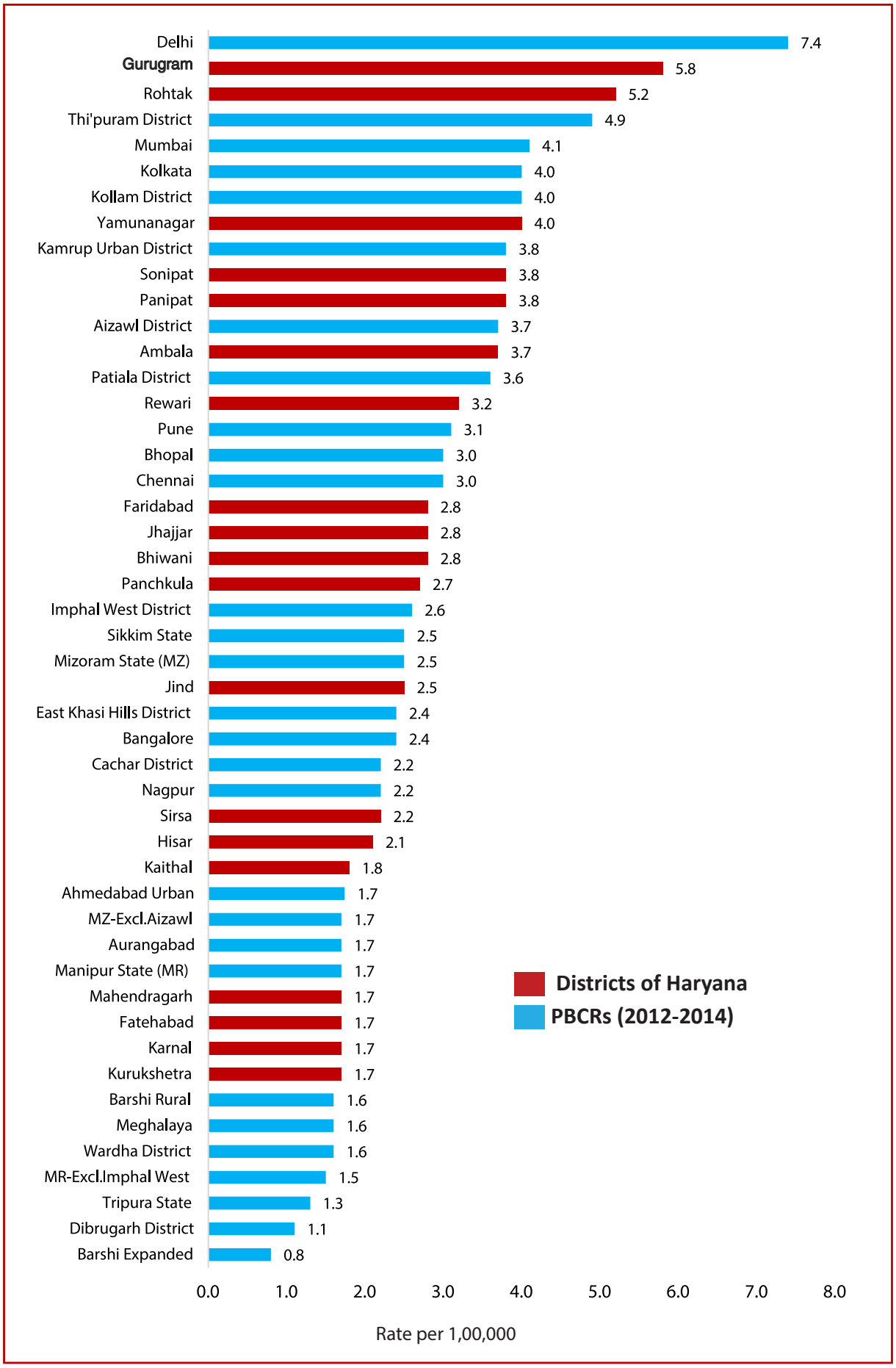


Figure 5.4. District wise comparison of Age Adjusted Incidence Rates (AARs) with that of PBCRs under NCDIR - Urinary Bladder (ICD-10: C67) - Males



Map 5.4. District wise Comparison of Age Adjusted Incidence Rates (AARs) Urinary Bladder (ICD-10: C67) – Males

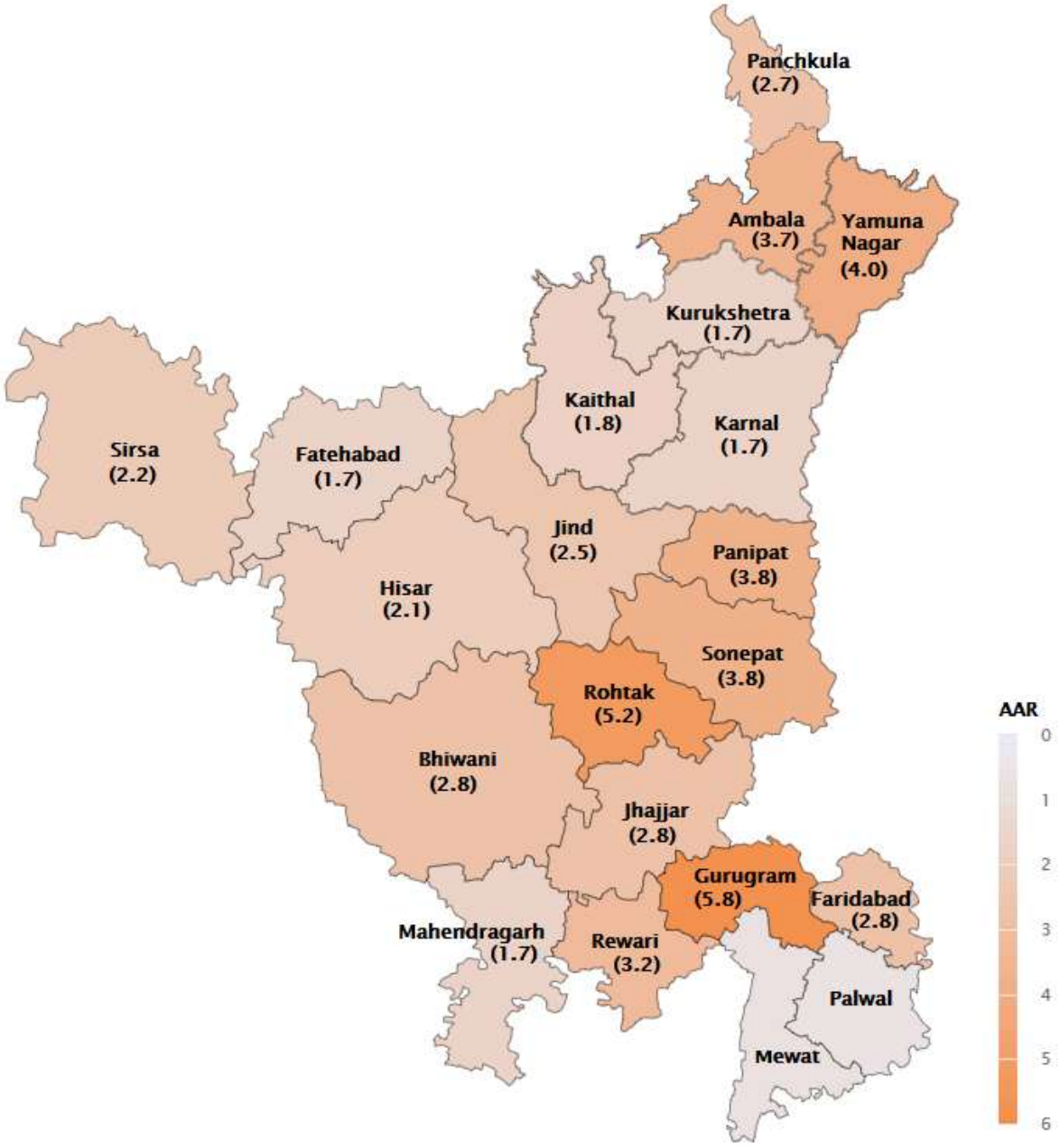
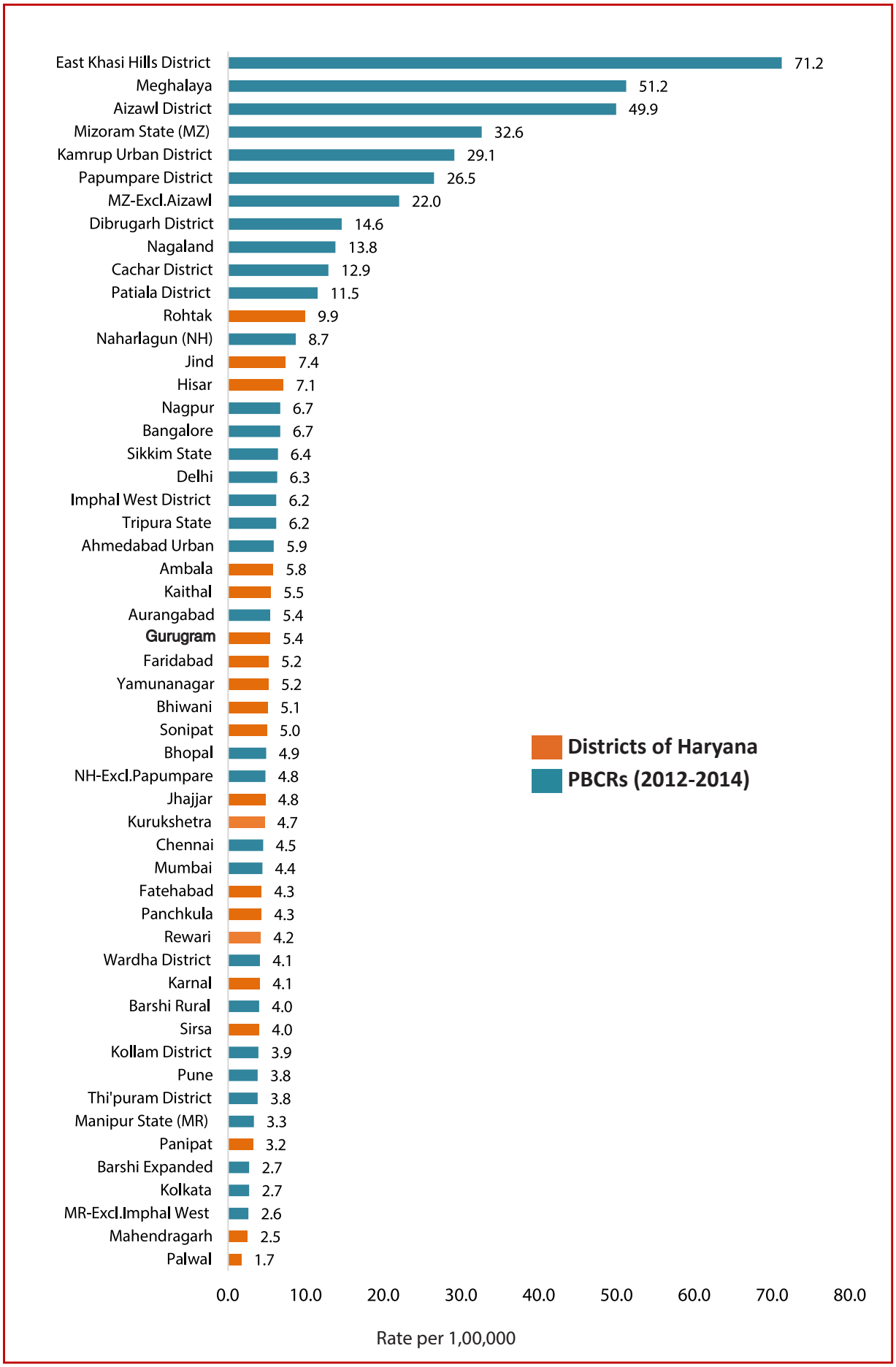


Figure 5.5. District wise Comparison of Age Adjusted Incidence Rates (AARs) with that of PBCRs under NCDIR - Males - Oesophagus (C15) - Males



Map 5.5. District wise Comparison of Age Adjusted Incidence Rates (AARs)
Oesophagus (C15) - Males

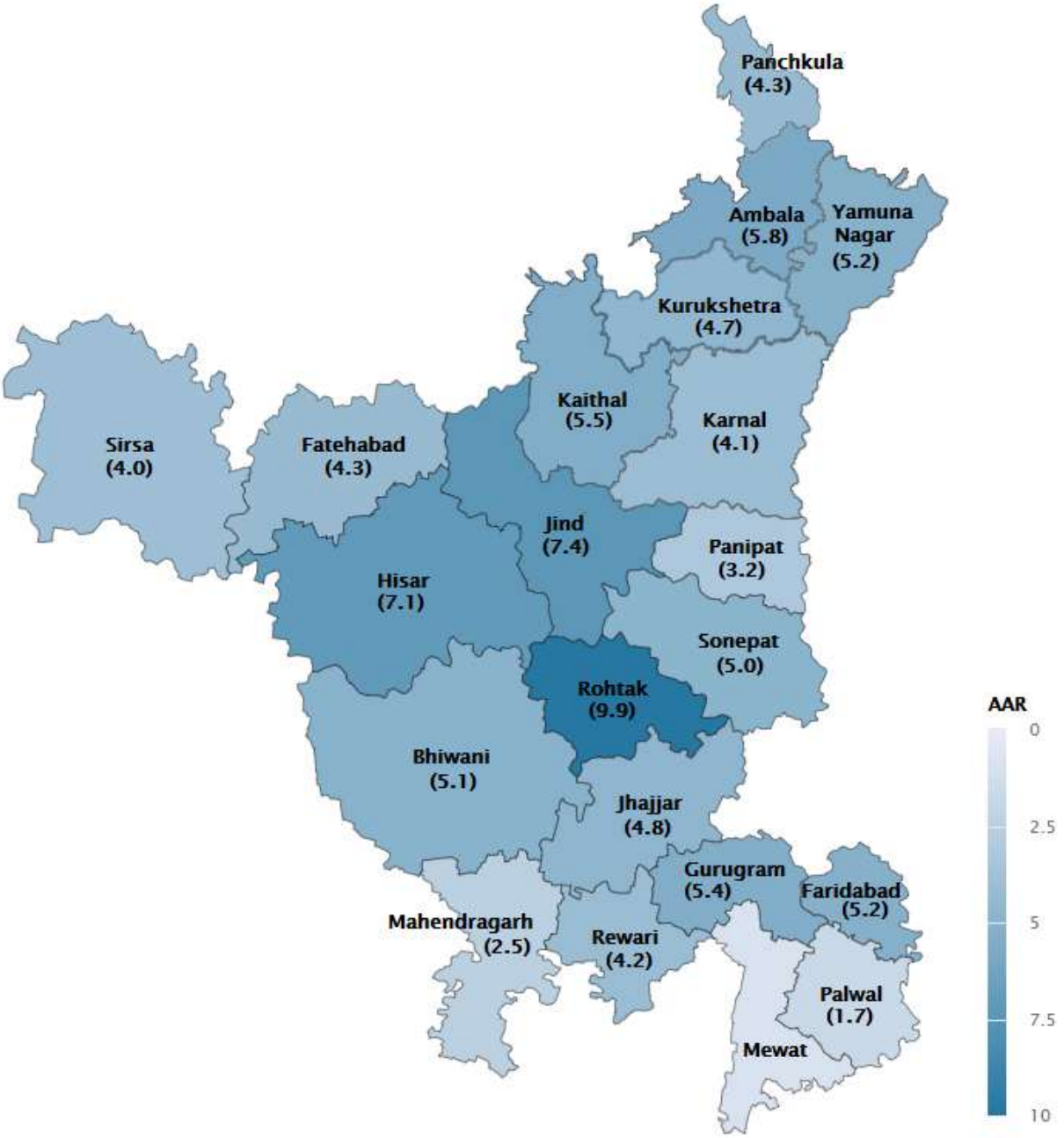
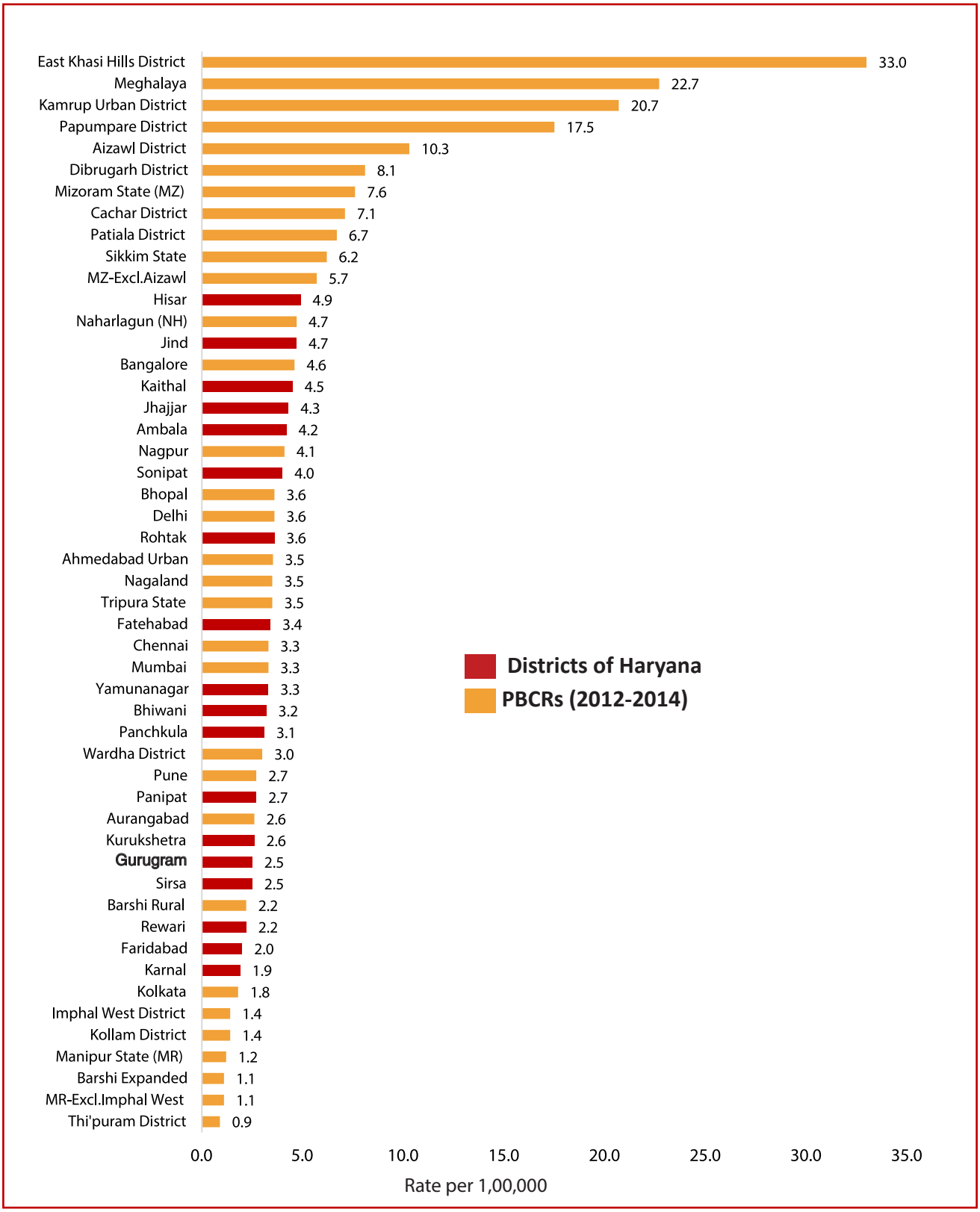


Figure 5.6. District wise Comparison of Age Adjusted Incidence Rates (AARs) with that of PBCRs under NCDIR - Oesophagus (C15) - Females



Map 5.6. District wise Comparison of Age Adjusted Incidence Rates (AARs)
Oesophagus (C15) – Females

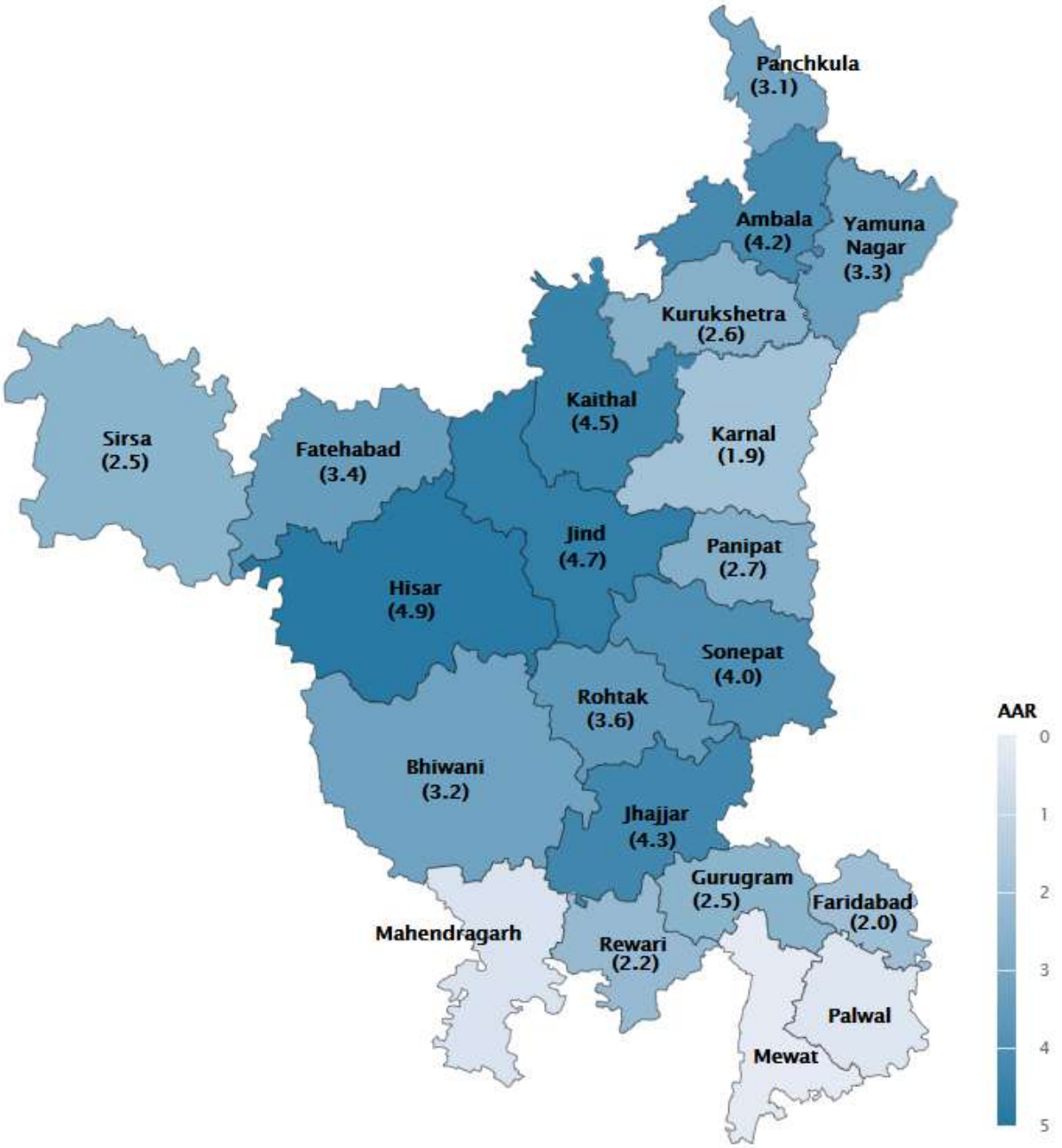
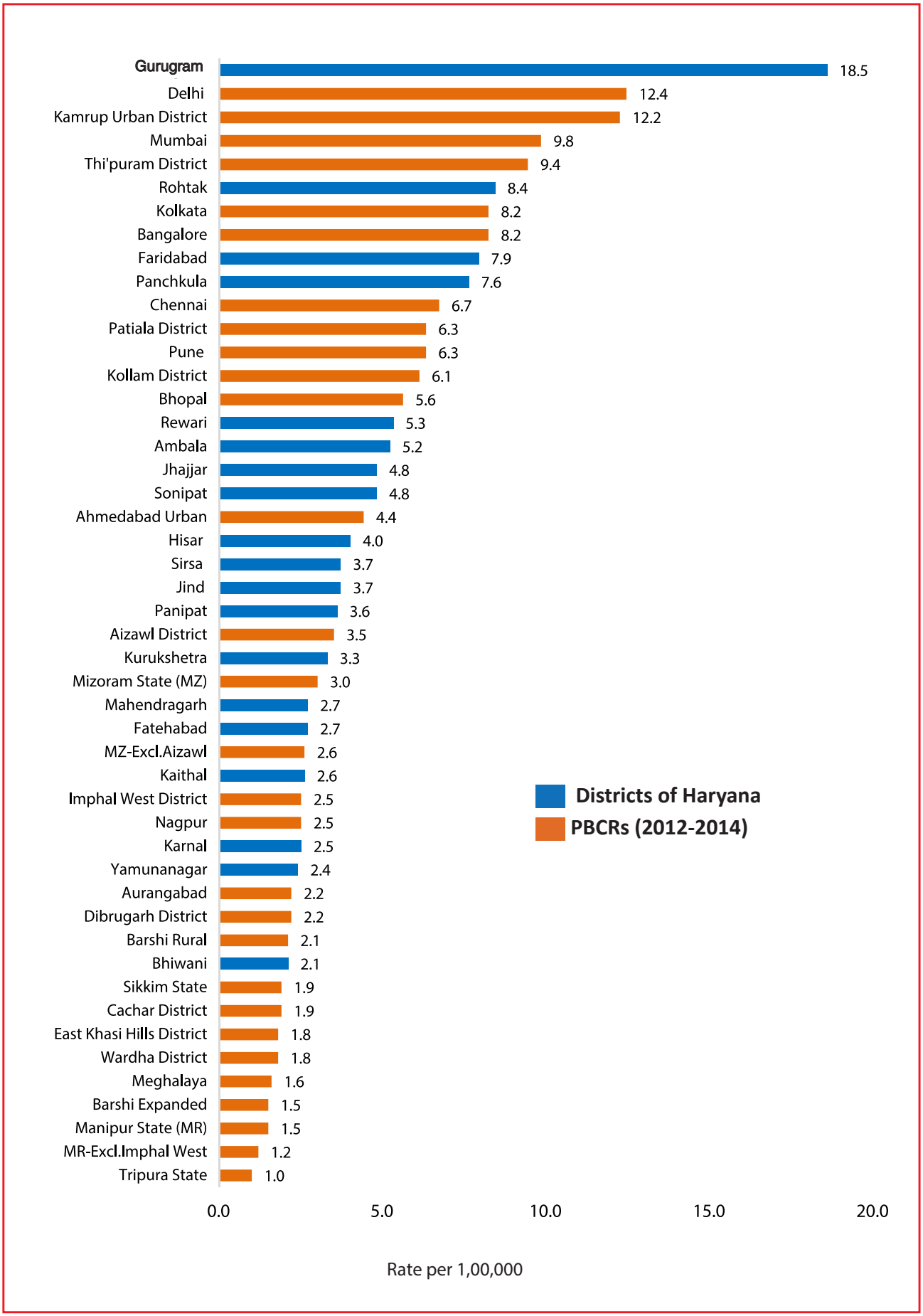


Figure 5.7. District wise Comparison of Age Adjusted Incidence Rates (AARs) with that of PBCRs under NCDIR - Prostate (C61) - Males



Map 5.7 District wise Comparison of Age Adjusted Incidence Rates (AARs) Prostate (C61) - Males

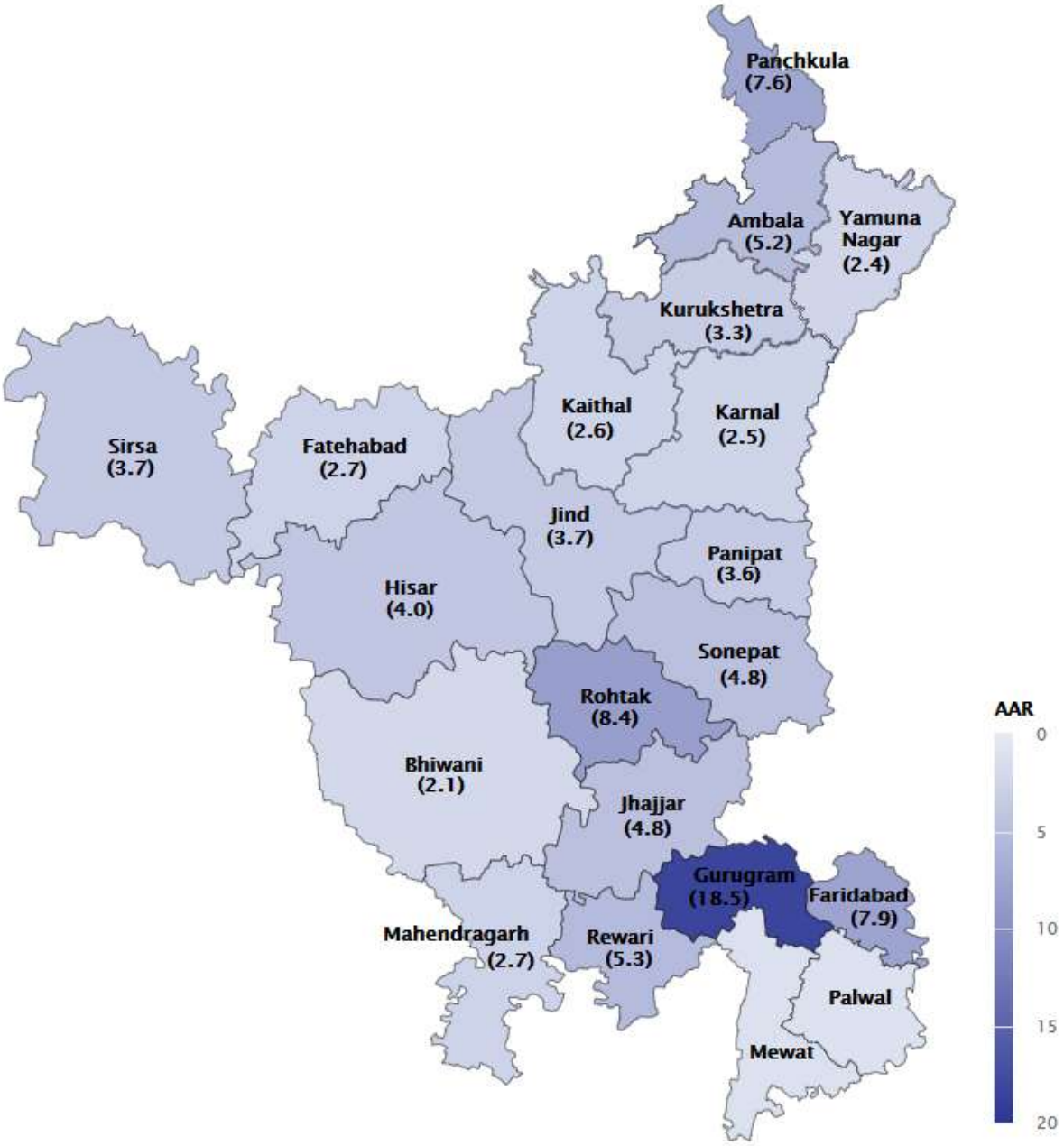
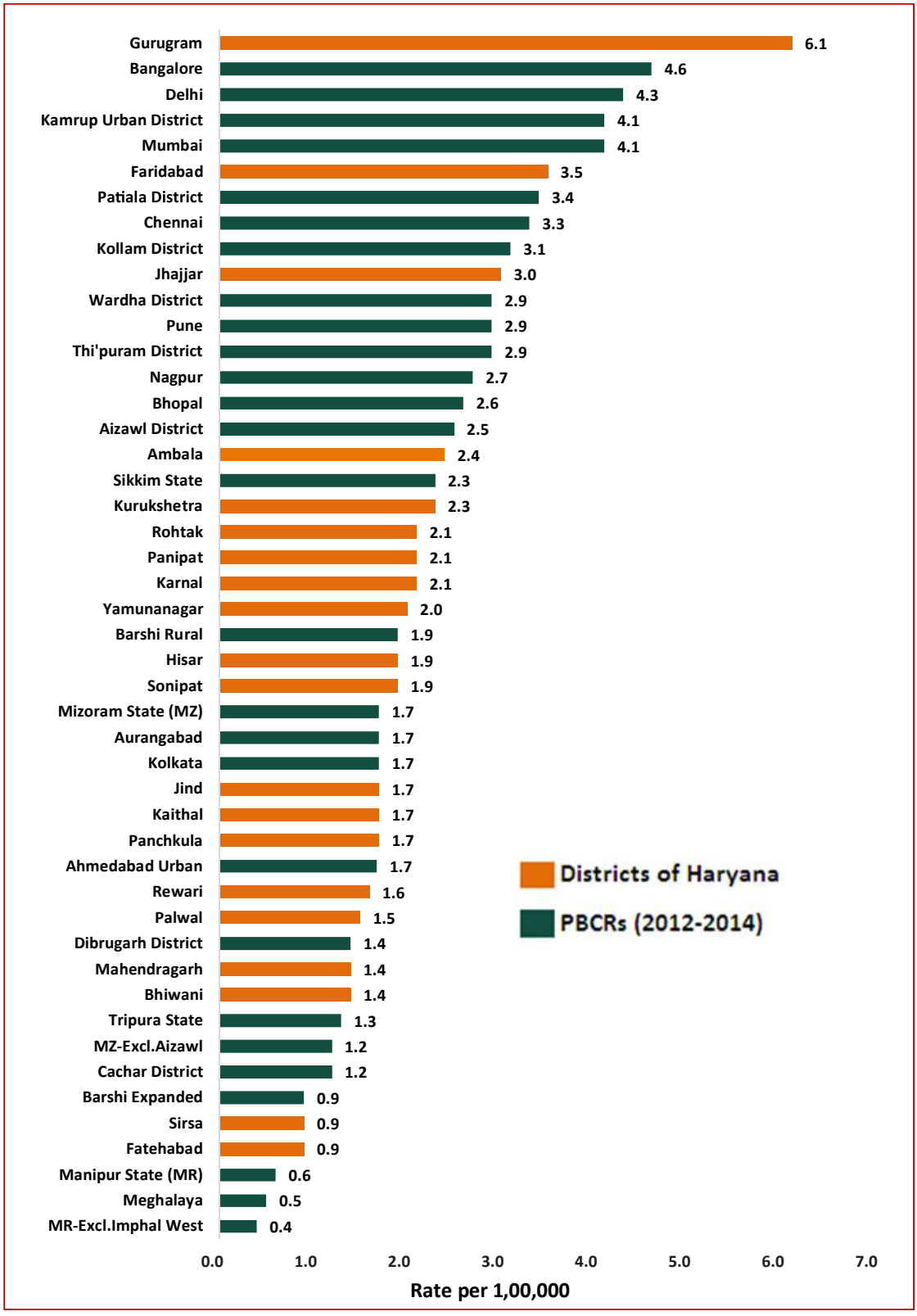


Figure 5.8 District wise Comparison of Age Adjusted Incidence Rates (AARs) with that of PBCRs under NCDIR- Brain, Nervous System (C70-72) - Males



Map 5.8 District wise Comparison of Age Adjusted Incidence Rates (AARs) Brain, Nervous System (C70-72) -Males

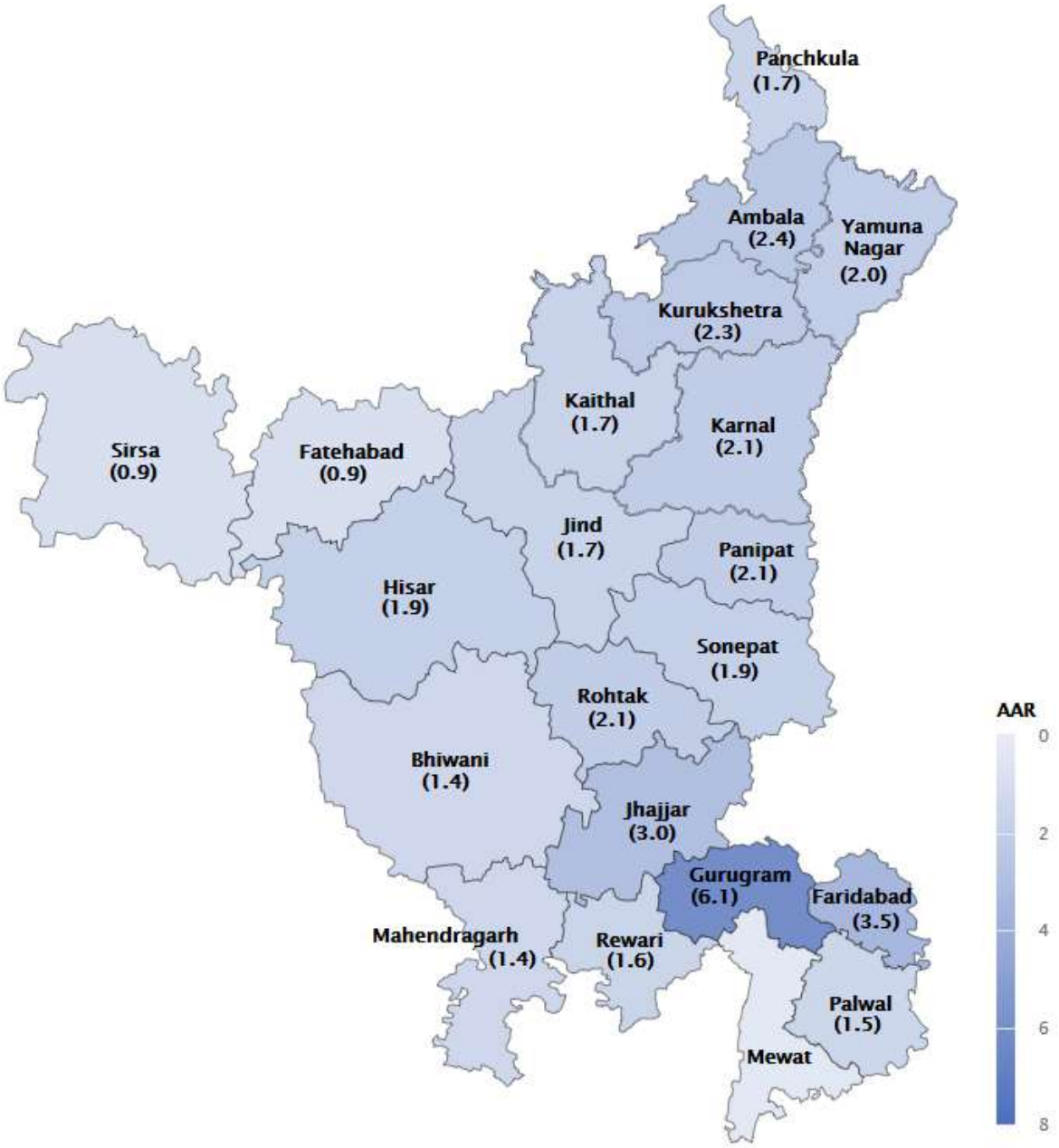
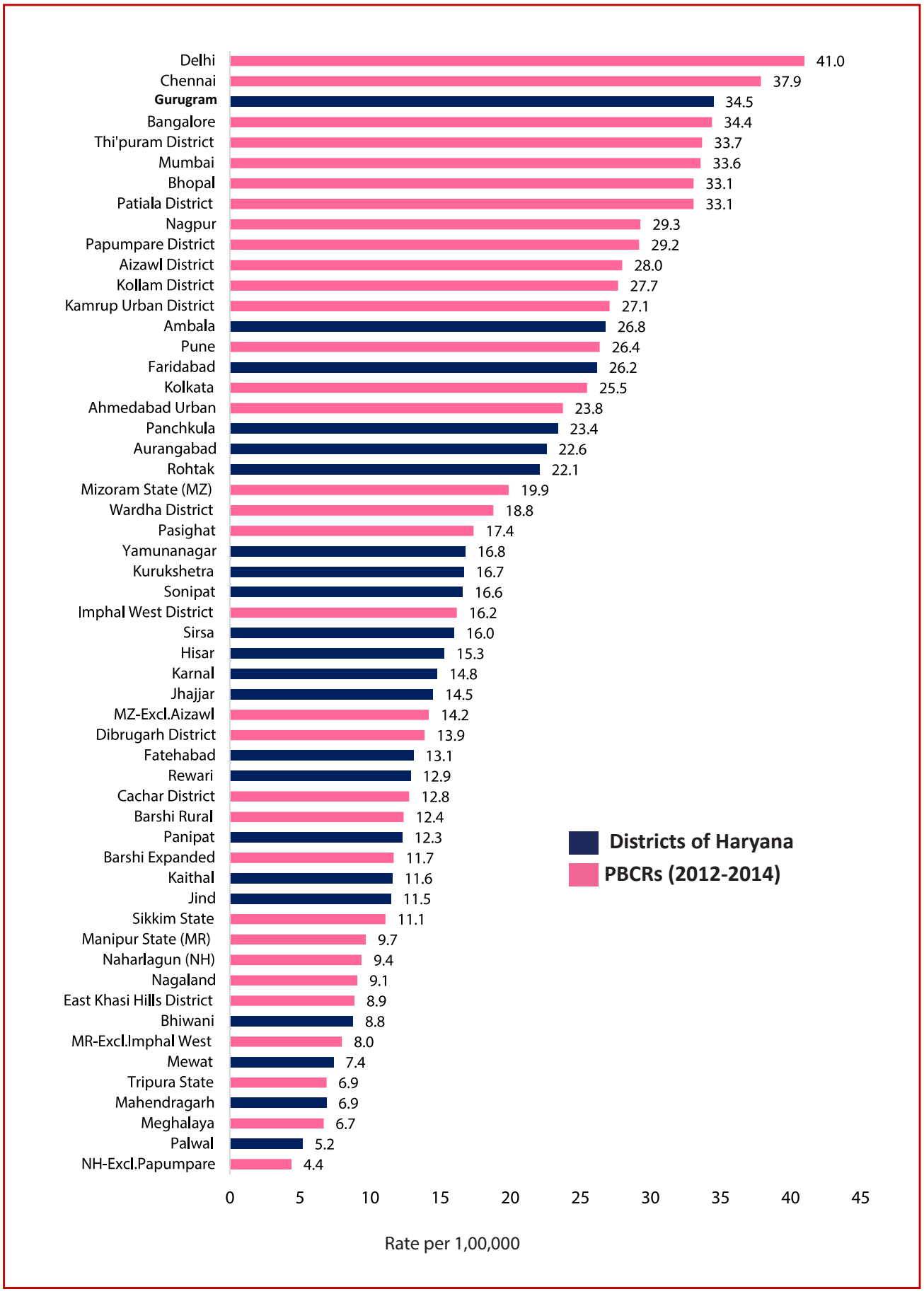


Figure 5.9. District wise Comparison of Age Adjusted Incidence Rates (AARs) with that of PBCRs under NCDIR - Breast (C50) - Females



Map 5.9. District wise Comparison of Age Adjusted Incidence Rates (AARs) Breast (C50) - Females

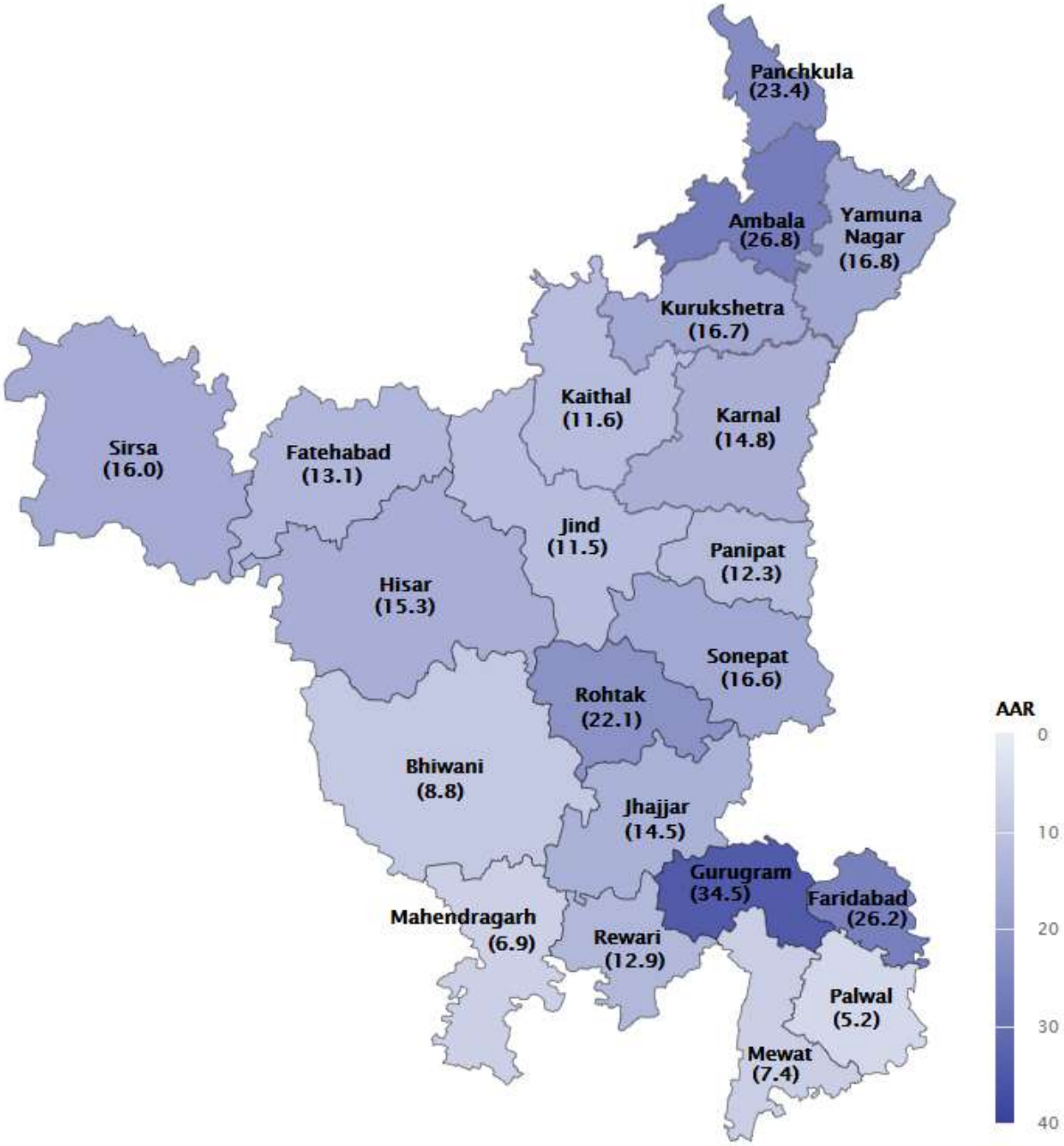
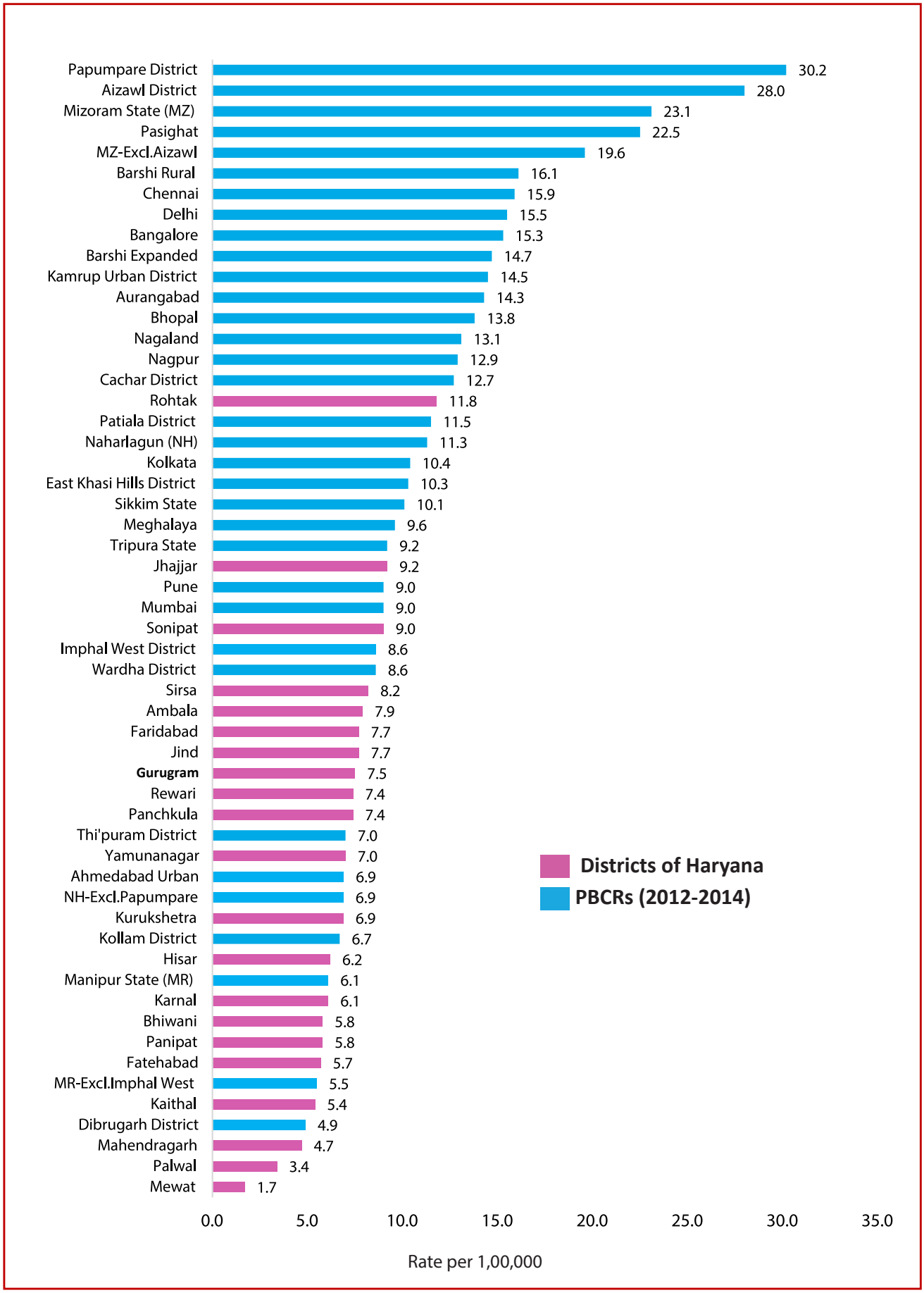


Figure 5.10. District wise Comparison of Age Adjusted Incidence Rates (AARs) with that of PBCRs under NCDIR - Cervix Uteri (C53) - Females



Map 5.10 District wise Comparison of Age Adjusted Incidence Rates (AARs)
Cervix Uteri (C53) - Females

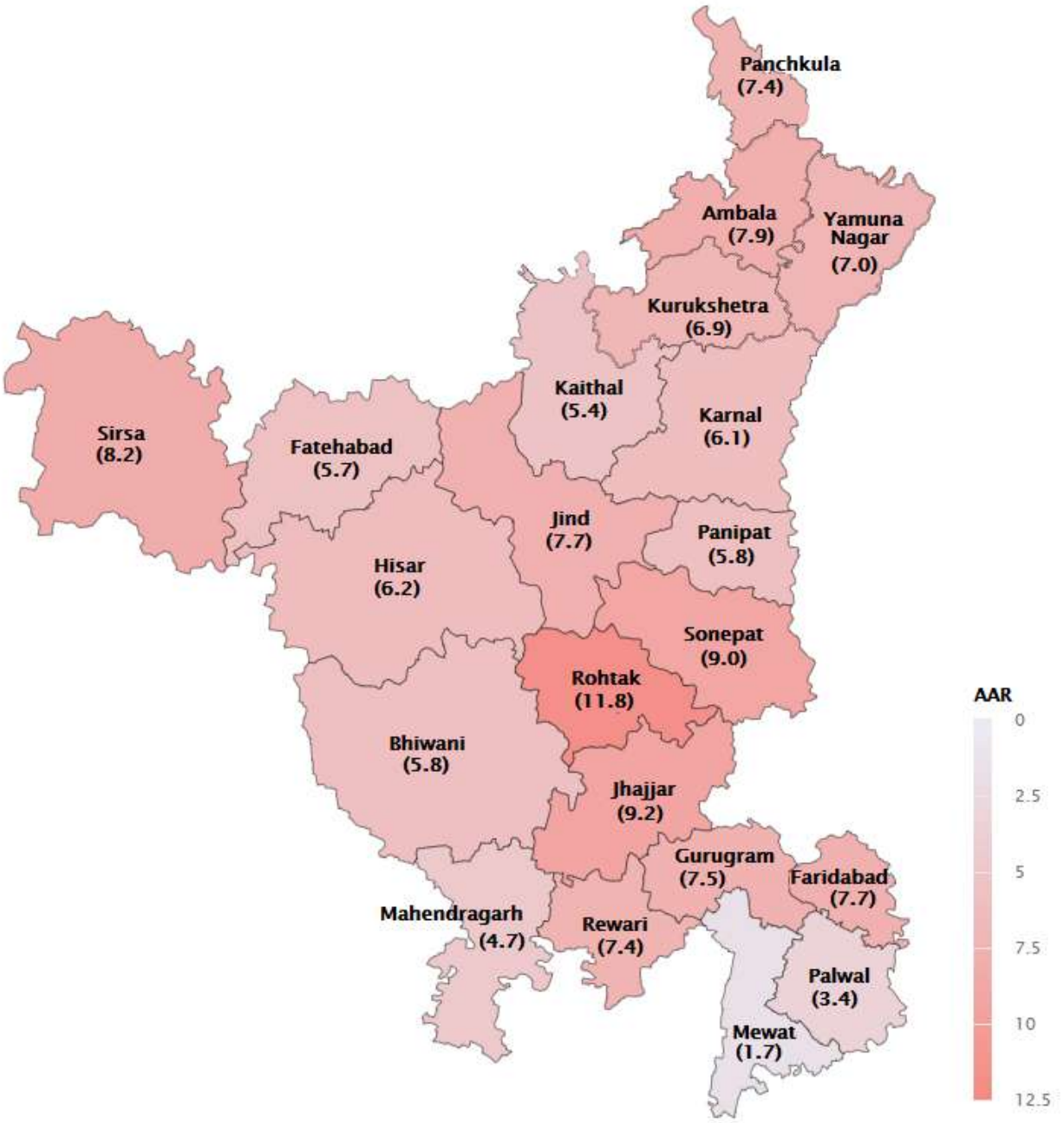
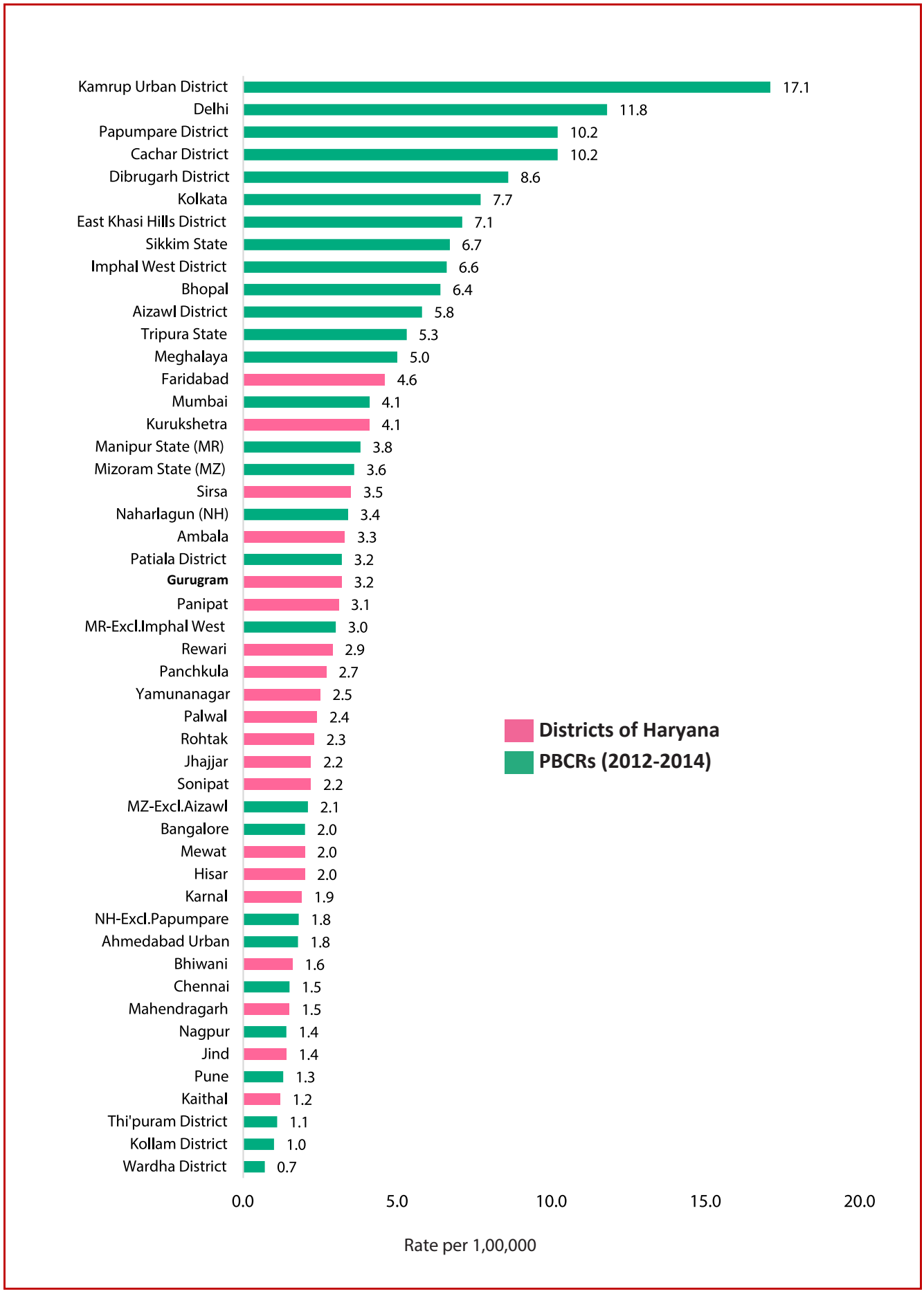


Figure 5.11. District wise Comparison of Age Adjusted Incidence Rates (AARs) with that of PBCRs under NCDIR - Gallbladder etc. (C23-24) - Females



Map 5.11. District wise Comparison of Age Adjusted Incidence Rates (AARs) Gallbladder etc. (C23-24) - Females

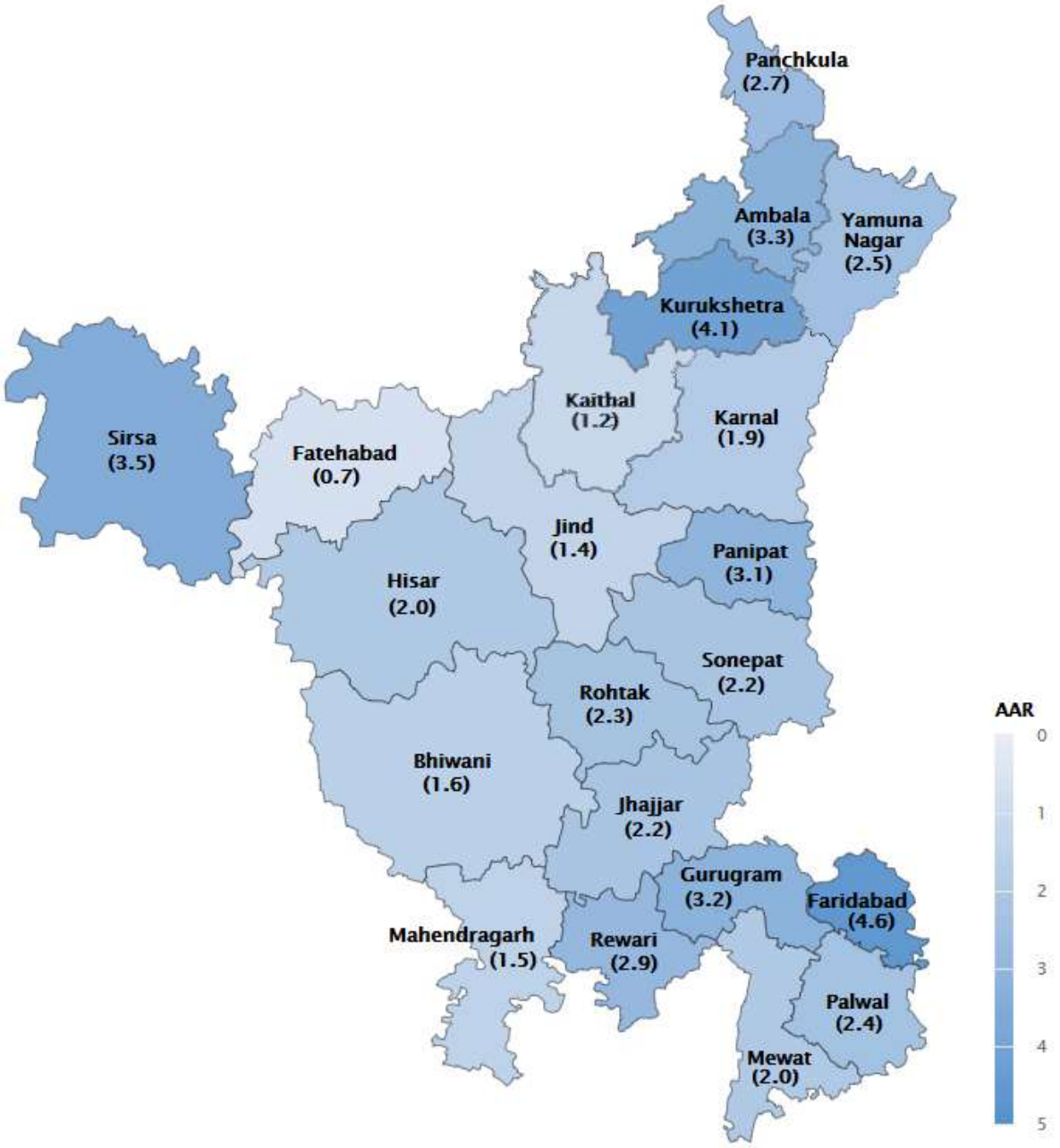
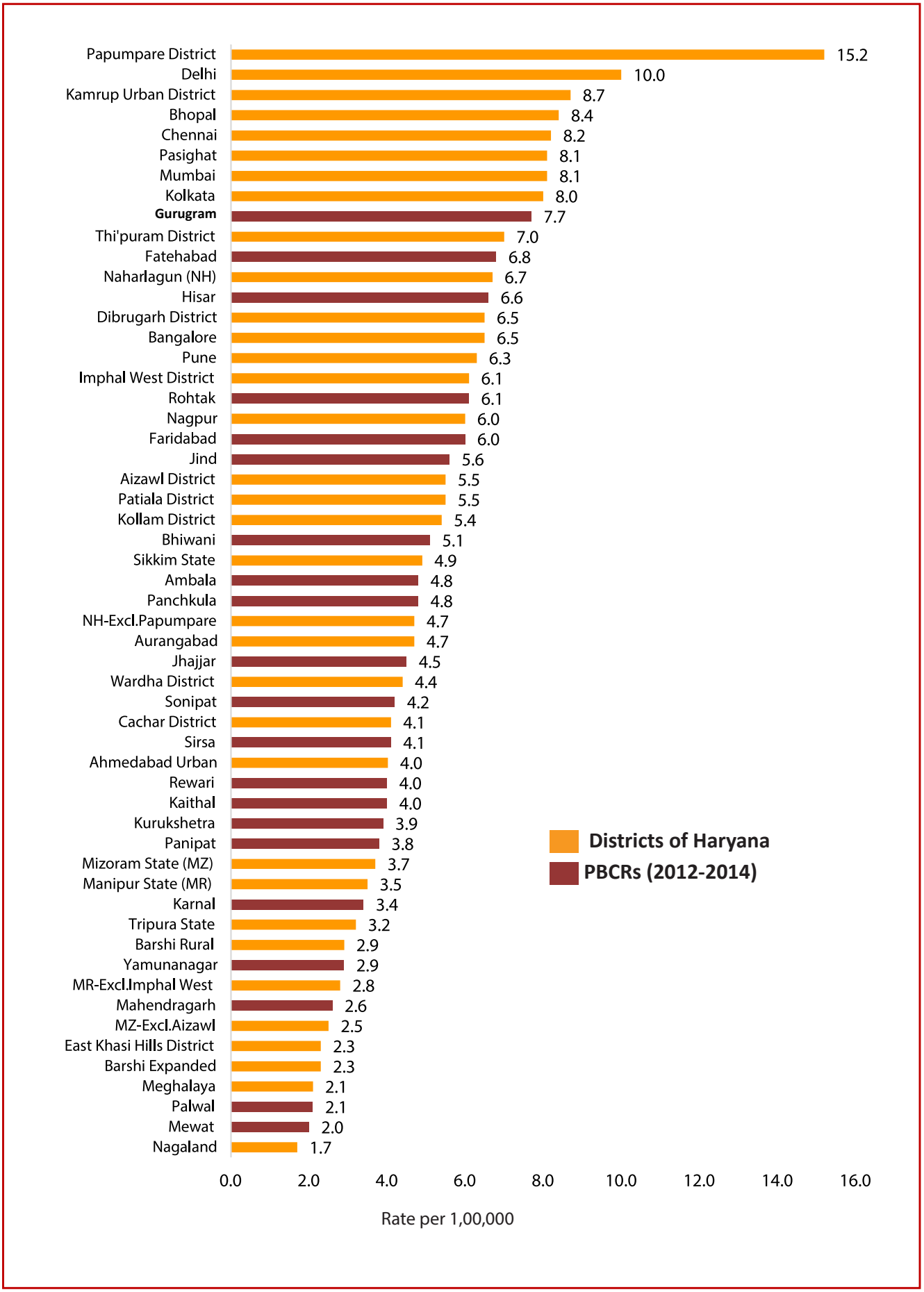


Figure 5.12. District wise Comparison of Age Adjusted Incidence Rates (AARs) with that of PBCRs under NCDIR - Ovary etc. (C56) - Females



Map 5.12. District wise Comparison of Age Adjusted Incidence Rates (AARs) Ovary etc. (C56) -Females

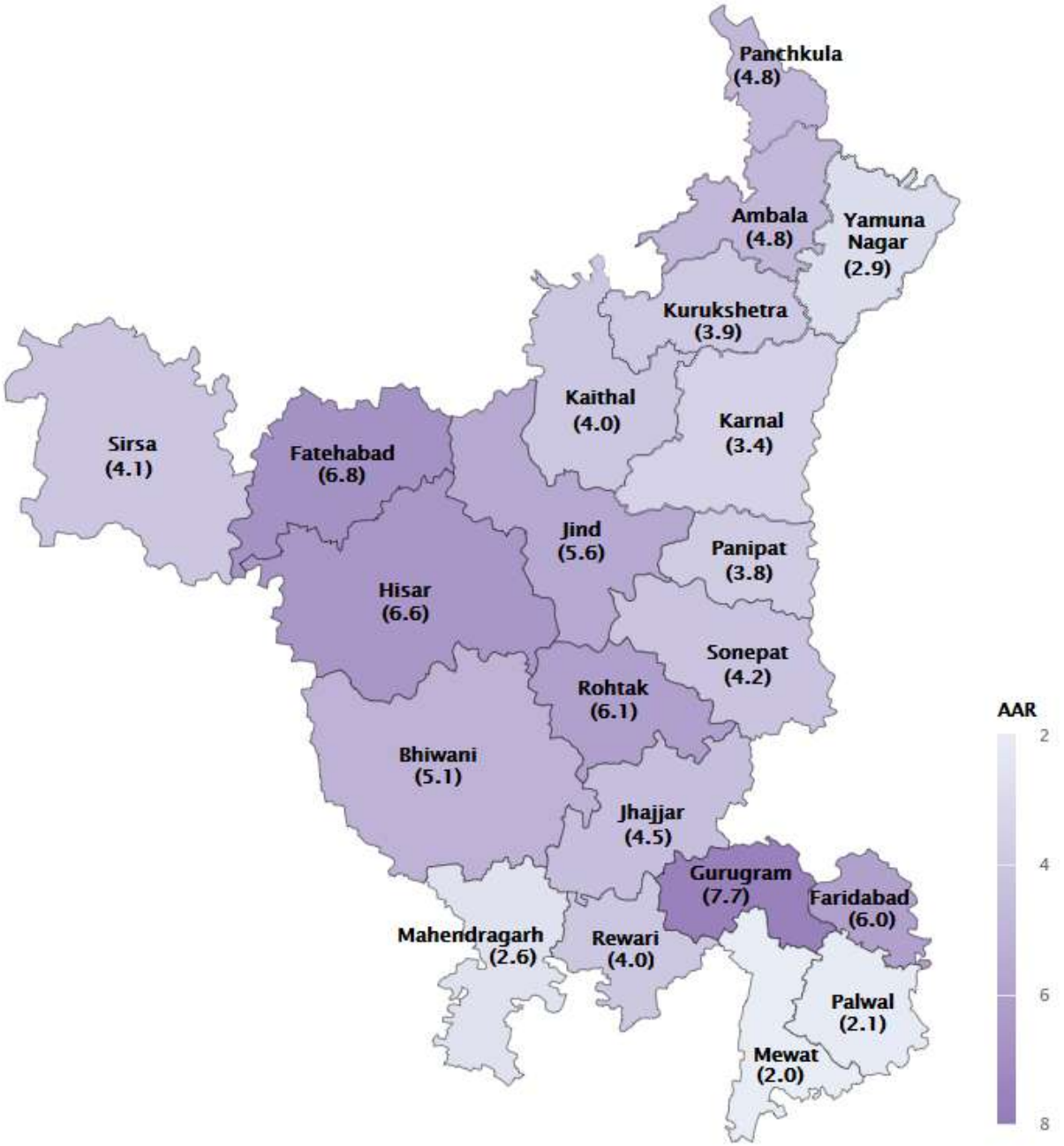
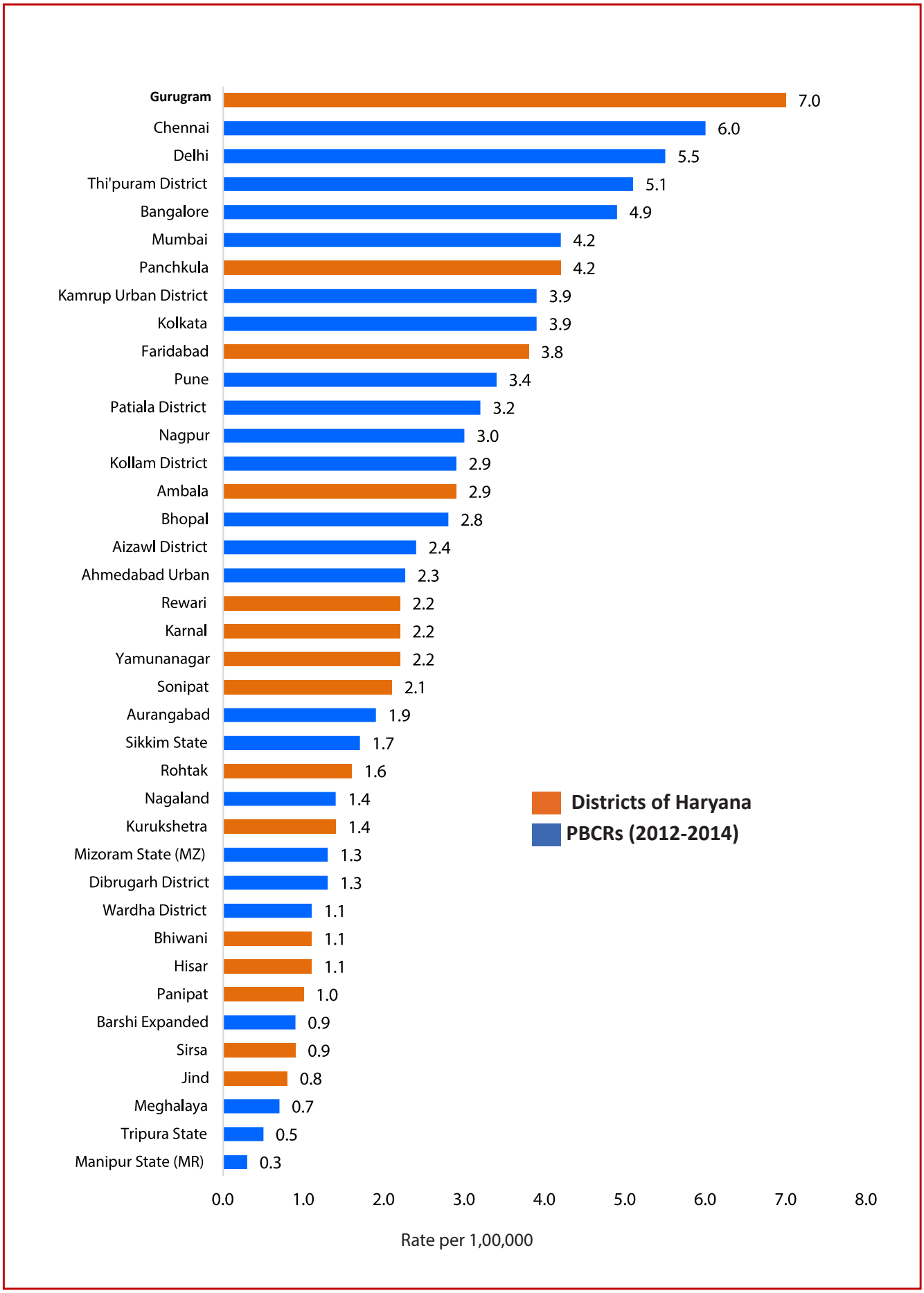


Figure 5.13. District wise Comparison of Age Adjusted Incidence Rates (AARs) with that of PBCRs under NCDIR - Corpus Uteri (C54) - Females



Chapter 6

CANCERS IN CHILDHOOD

The childhood cancers for the 0-14 age group have been reported for the period 2016-2017 in this chapter for state of Haryana. The proportion of childhood cancers relative to cancers in all age groups varied between 1.2% - 3.7% (Table 6.1).

In boys, the relative proportion was lowest in Fatehabad, Jhajjar and Rewari District (1.4%) and highest in Palwal districts (4.0%). In girls, it varied from 0.8% in Fatehabad and highest in Mewat district (4.4%). Cancer incidence rates for childhood cancers are generally expressed per million children and not as per hundred thousand that is followed for cancers in all ages or in adults (IARC - 1996).

Figure 6.1 compares the AAR per million of broad types of childhood cancers in boys and girls across the districts. Gurugram district had the highest AAR per million for all types of childhood cancers in boys 137.6 and in girls, Ambala District had the highest AAR per million as 80.6.

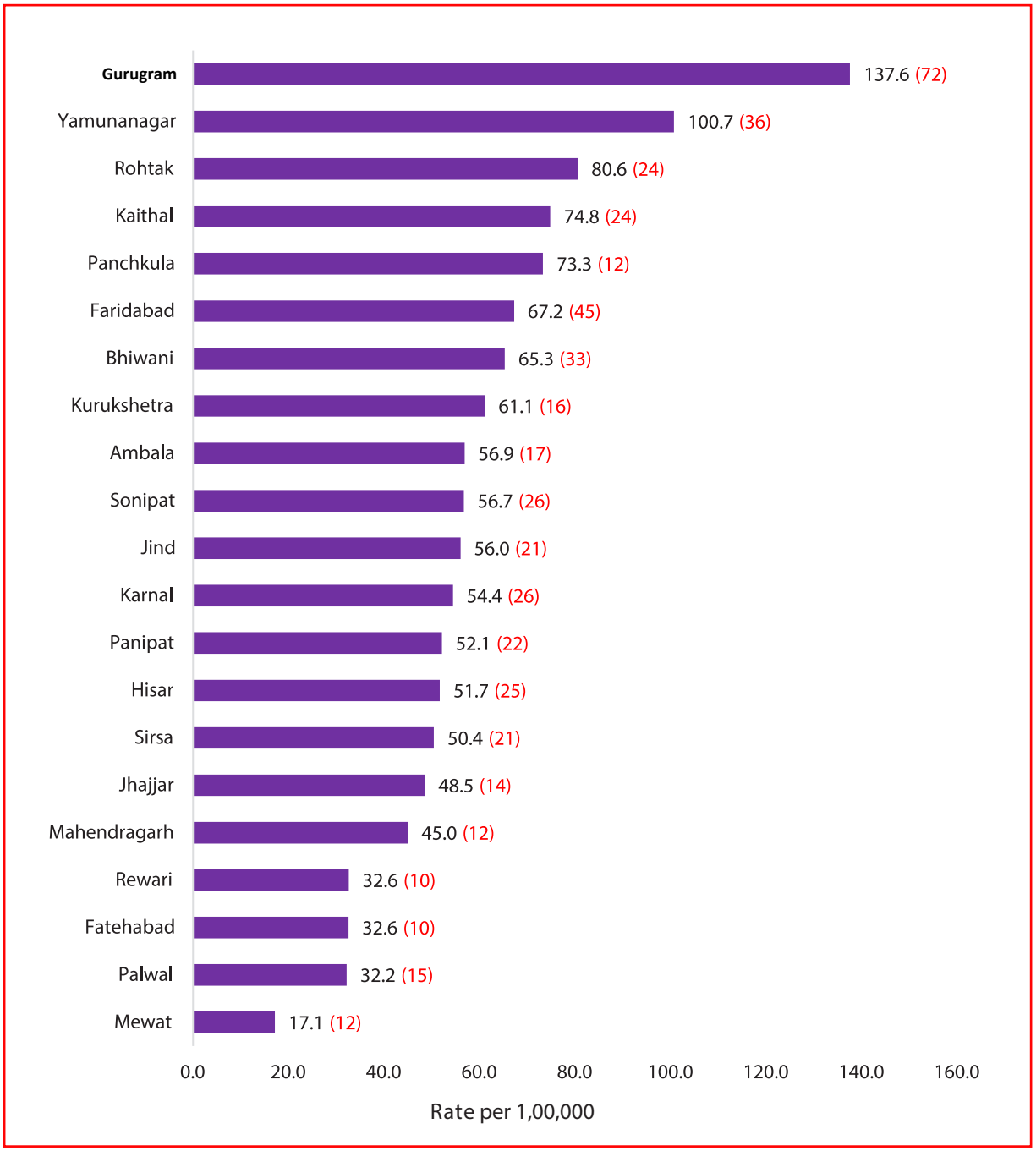
Figures 6.2 and 6.3 compare the AAR per million of broad types of childhood cancers in boys and girls for leukaemias and lymphomas. Districts contributing greater than or equal to five cases under each type have been considered for representation in the graph.

Table 6.1. Number (#) and Relative Proportion (%) of Cancers in Childhood relative to all Cancers (2016-2017)

Districts	Boys			Girls			Both Sexes		
	All Cancers	#	%	All Cancers	#	%	All Cancers	#	%
Panchkula	534	12	2.2	435	10	2.3	969	22	2.3
Ambala	1094	17	1.6	1029	18	1.7	2123	35	1.6
Yamunanagar	1017	36	3.5	752	17	2.3	1769	53	3.0
Kurukshetra	740	16	2.2	587	5	0.9	1327	21	1.6
Kaithal	969	24	2.5	490	9	1.8	1459	33	2.3
Karnal	1036	26	2.5	763	23	3.0	1799	49	2.7
Panipat	822	22	2.7	533	11	2.1	1355	33	2.4
Sonipat	1415	26	1.8	888	14	1.6	2303	40	1.7
Jind	1359	21	1.5	680	10	1.5	2039	31	1.5
Fatehabad	694	10	1.4	480	4	0.8	1174	14	1.2
Sirsa	789	21	2.7	720	11	1.5	1509	32	2.1
Hisar	1722	25	1.5	1027	9	0.9	2749	34	1.2
Bhiwani	1214	33	2.7	777	22	2.8	1991	55	2.8
Rohtak	1569	24	1.5	913	12	1.3	2482	36	1.5
Jhajjar	1036	14	1.4	601	12	2.0	1637	26	1.6
Mahendragarh	509	12	2.4	321	9	2.8	830	21	2.5
Rewari	710	10	1.4	517	7	1.4	1227	17	1.4
Gurugram	2092	72	3.4	1819	25	1.4	3911	97	2.5
Faridabad	1512	45	3.0	1330	27	2.0	2842	72	2.5
Mewat	362	12	3.3	206	9	4.4	568	21	3.7
Palwal	378	15	4.0	218	5	2.3	596	20	3.4

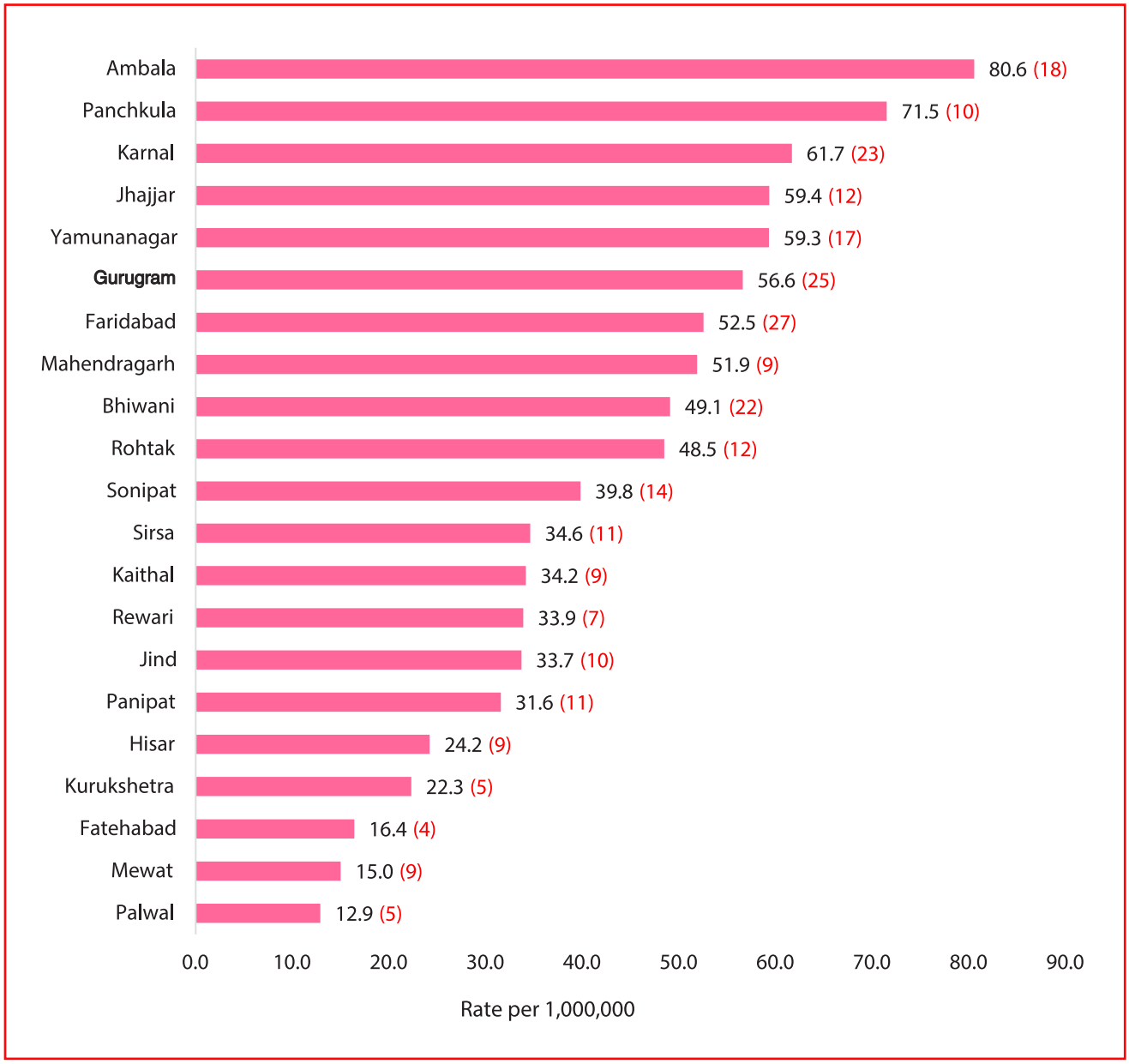
Figure 6.1. Age Adjusted Incidence Rates (AAR per million) of Broad Types of Cancers in childhood (0-14 years) All Types (2016-2017) (No. of cases given in parentheses)

Boys



* On observation of above graph it's seen that some districts having higher rates have lower number of cases mentioned in parentheses. This is because the rates have been calculated keeping in view - population of the district

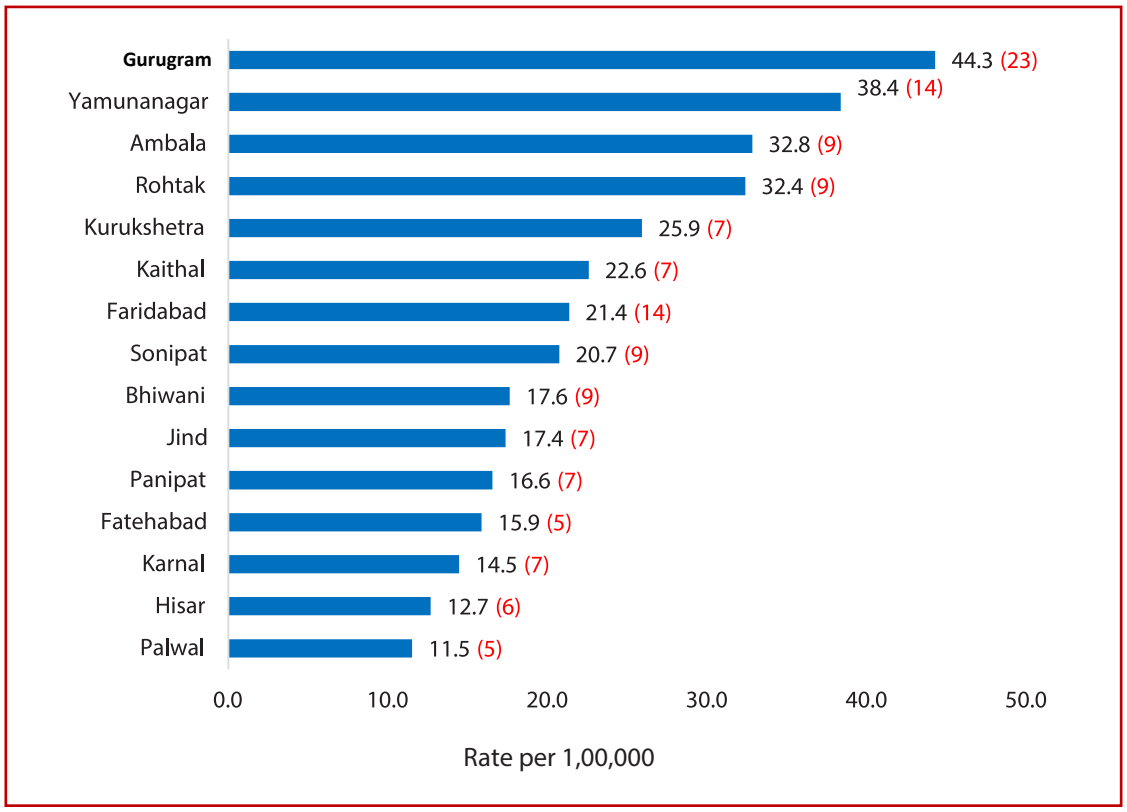
Girls



* On observation of above graph it's seen that some districts having higher rates have lower number of cases mentioned in parentheses. This is because the rates have been calculated keeping in view - population of the district

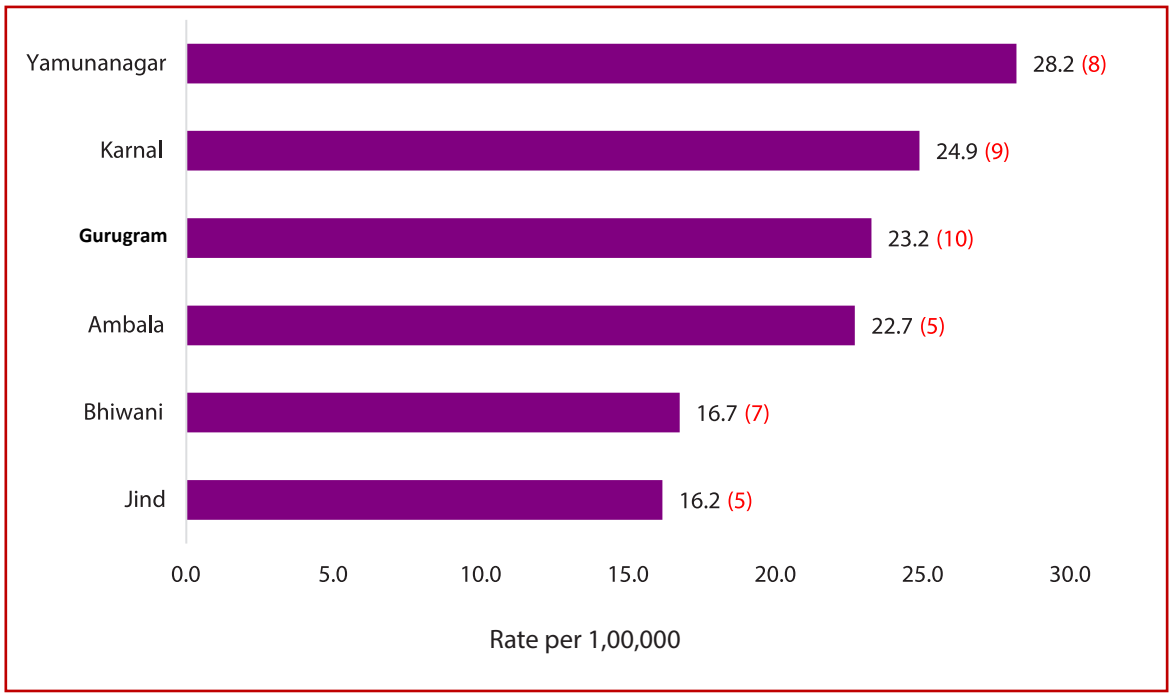
Figure 6.2. Age Adjusted Incidence Rates (AAR per million) of Broad Types of Cancers in Childhood (0-14 years) LEUKAEMIAS (2016-2017) (No. of cases given in parentheses)

Boys



* Districts contributing greater than or equal to five cases under each type have been considered for representation in the graph.

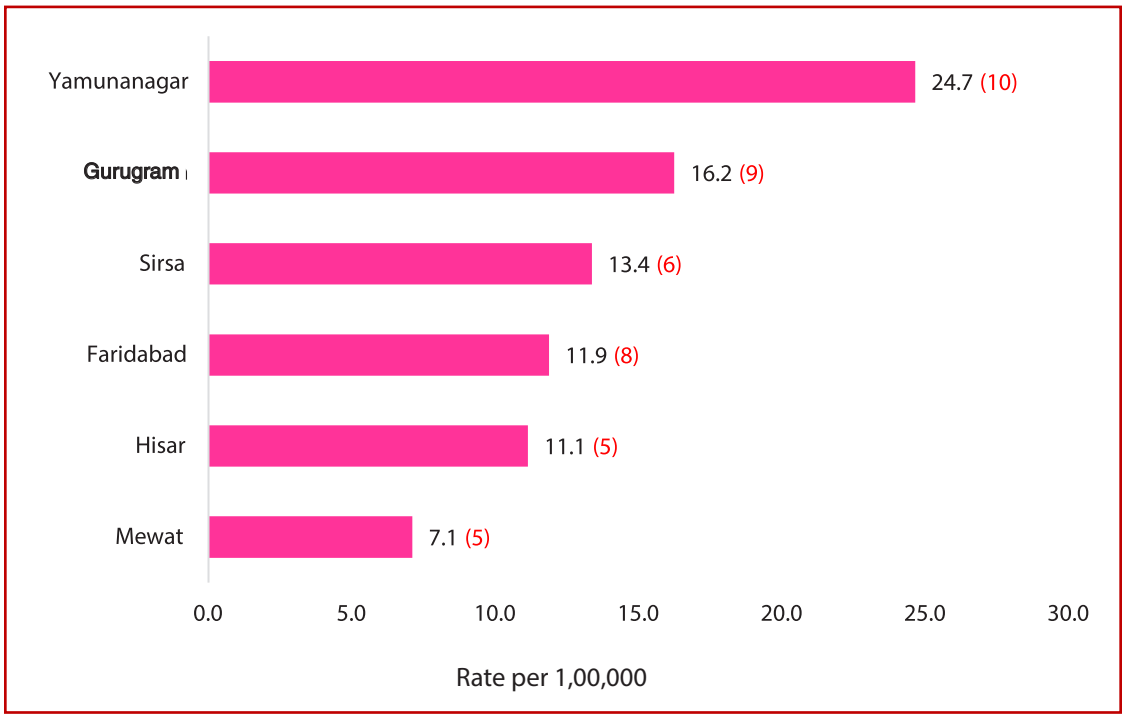
Girls



* Districts contributing greater than or equal to five cases under each type have been considered for representation in the graph.

Figure 6.3. Age Adjusted Incidence Rates (AAR per million) of Broad Types of Cancers in Childhood (0-14 years) LYMPHOMAS (2016-2017) (No. of cases given in parentheses)

Boys



Districts contributing greater than or equal to five cases under each type have been considered for representation in the graph.

Chapter 7

SITES OF CANCER ASSOCIATED WITH THE USE OF TOBACCO

This part of the chapter indicates the impact of the use of tobacco on the occurrence of cancer through overall proportions and specific anatomical sites of cancer. Table 7.1 gives the number and relative proportion of Tobacco Related Cancers (IARC - 1987) in different Districts of Haryana.

Kaithal district of Haryana had the highest relative proportion with 58.6% among males and Kaithal and Hisar district had 20.8 % & 20.6 % among females respectively. Among males, the lowest proportion of tobacco related cancers (TRCs) was in Gurugram district (37.2%) whereas in females the lowest proportion for TRCs was observed in Mewat District (10.2%). Figure 7.1 depicts the proportion of tobacco related cancers relative to all sites of cancer for 21 districts. Figure 7.2 illustrates the proportion of specific sites of cancer among all tobacco related cancers (TRCs) for 21 districts of Haryana.

Males

In males, Tongue cancer was the leading site in 13 districts out of 21 districts with its contribution ranging from 8.0% in Ambala District to 17.1% in Jind District. Lung cancer was the leading site in 8 districts, ranging from 8.0 % in Gurugram District to 16.6% in Mewat district.

Females

In females, Oesophagus cancer was the leading site among tobacco related cancers in 14 districts. Cancer of the Lung was the leading site in 6 districts for females. Lung cancer ranged from 2.5% in Gurugram district to 5.1% in Panchkula district.

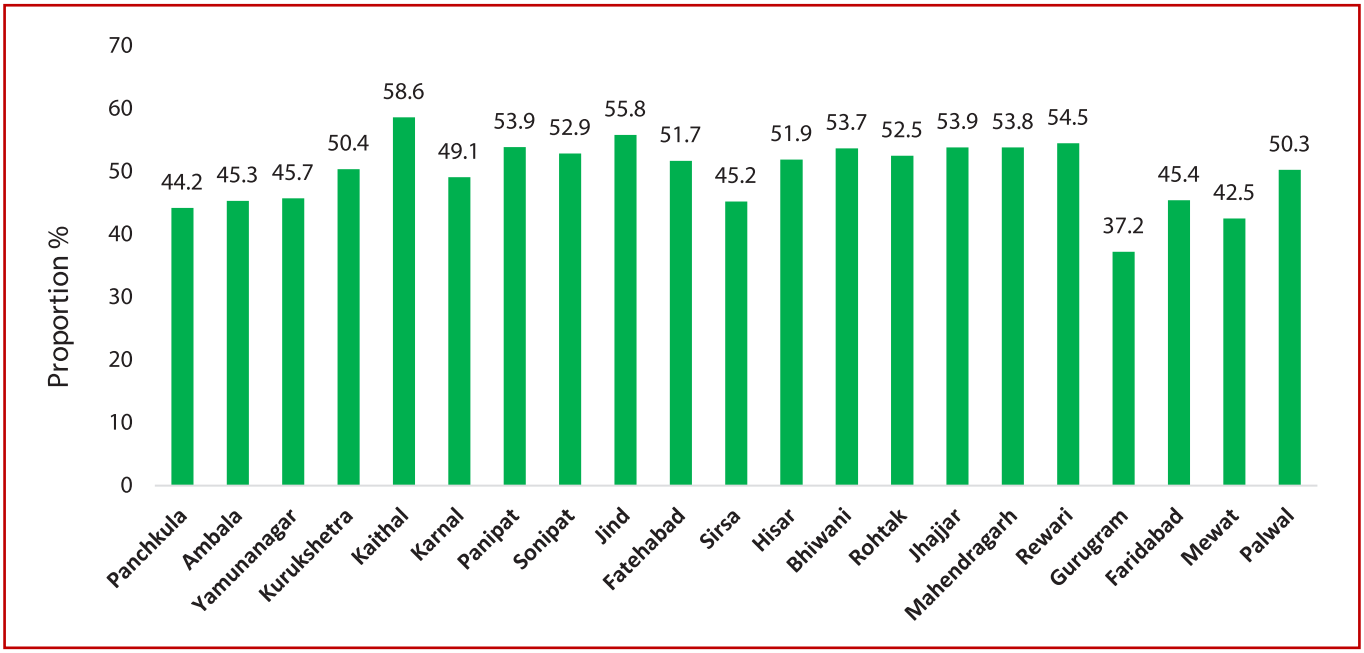
Oesophageal cancer's contribution ranged from 3.7% in Karnal district to 9.6 % in Kaithal District for females. Mewat district has mouth cancer as the leading site and Gurugram district has Tongue as the leading sites with proportions of 3.4% and 2.5% respectively.

Tables 7.1: Number (#) and Relative Proportion (%) of TRC

Districts	Males		Females	
	#	%	#	%
Panchkula	236	44.2	63	14.5
Ambala	496	45.3	138	13.4
Yamunanagar	465	45.7	107	14.2
Kurukshetra	373	50.4	78	13.3
Kaithal	568	58.6	102	20.8
Karnal	509	49.1	87	11.4
Panipat	444	53.9	96	18.0
Sonipat	749	52.9	154	17.3
Jind	760	55.8	124	18.2
Fatehabad	359	51.7	90	18.7
Sirsa	357	45.2	89	12.4
Hisar	894	51.9	212	20.6
Bhiwani	652	53.7	135	17.3
Rohtak	825	52.5	113	12.3
Jhajjar	558	53.9	111	18.4
Mahendragarh	274	53.8	45	14.0
Rewari	387	54.5	80	15.5
Gurugram	779	37.2	207	11.4
Faridabad	687	45.4	138	10.4
Mewat	154	42.5	21	10.2
Palwal	190	50.3	28	12.8

Fig 7.1 Proportion (%) of Tobacco Related Cancers (TRCs) Relative to All Sites of Cancers

Males



Females

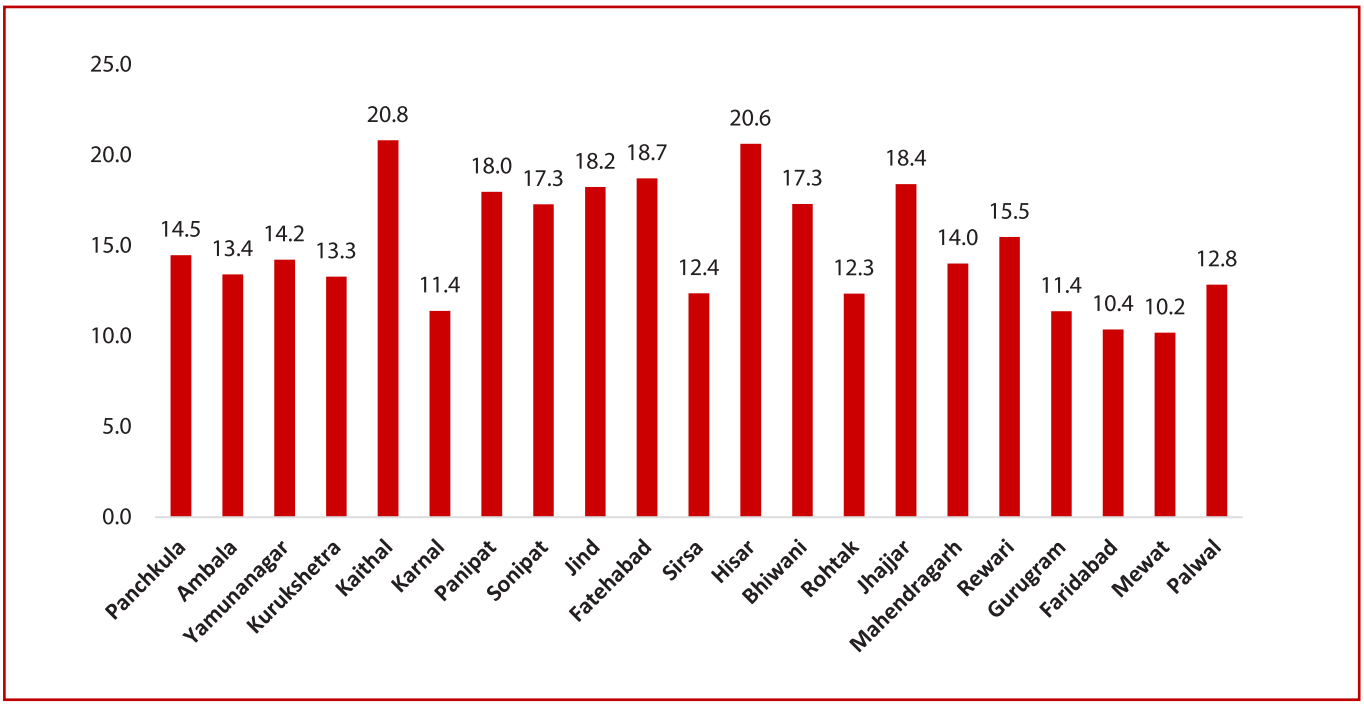
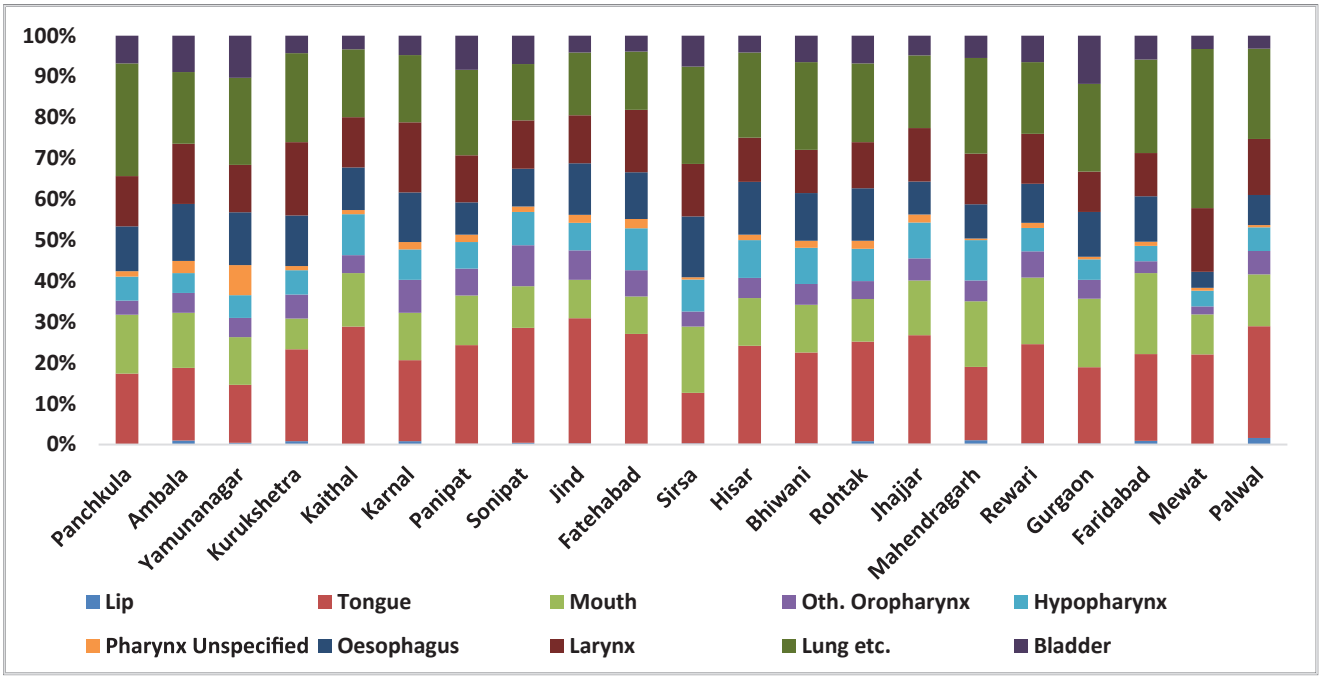
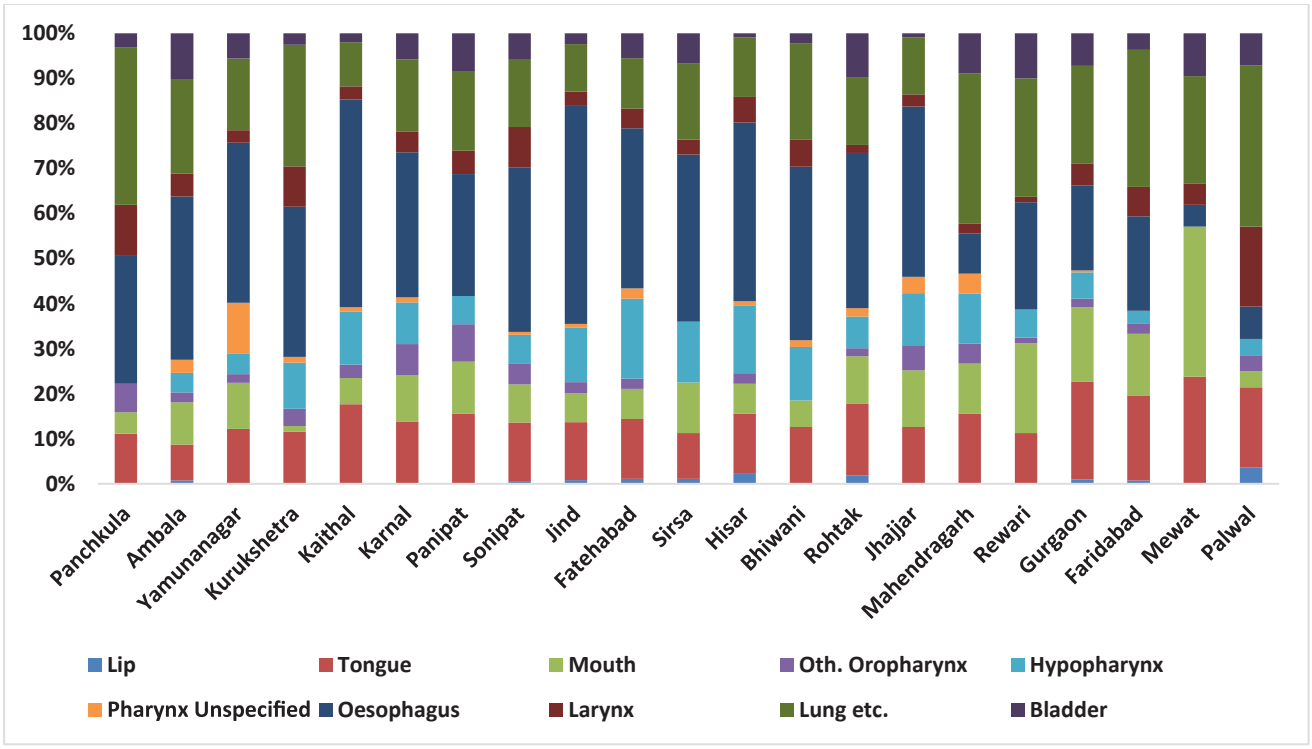


Fig 7.2. Proportion (%) of Specific Tobacco Related Sites relative to all Tobacco Related Cancers (TRCs)

Males



Females



Chapter 8

PROFILE OF CANCER IN COLLABORATING CENTERS

8.1. Co-ordinating Unit – DGHS, Panchkula

The Co-ordinating unit was set up in the O/o DGHS, Panchkula, Haryana at the commencement of the project. The Chief Coordinator & Co-Chief Coordinator supervised and monitored the different activities of the project "Development of an Atlas of Cancer in Haryana State" which was also referred to as Haryana Cancer Atlas (HCA).The coordinating unit supervised the team which performed several administrative tasks such as organizing meetings/workshops for the staff of collaborating centres and providing the required training/assistance to the staff at the collaborating centres to ensure proper data transmission. Several steps were taken to setup the collaborating centres:

A meeting was held at Office of DGHS, Panchkula, Haryana on 10th March 2016 under the chairmanship of Sh. P.K. Mahapatra then Addl. Chief Secretary Health, Haryana regarding implementation plan for Haryana Cancer Atlas. Memorandum of Understanding (MoU) for cooperation in the performance of work was signed between NCDIR, Bangalore & Health Department, Haryana. For implementation of this project, state declared cancer as Notifiable disease whereby every case of cancer from Haryana, diagnosed/treated is to be mandatorily reported/uploaded online.

The Health Minister of state of Haryana convened a meeting of all civil surgeons in the state on 20 May 2016 encouraging them to actively contribute to the data of Haryana Cancer Atlas.

The Inaugural workshop on "Development of An Atlas of Cancer in Haryana State" in collaboration with NCDIR, Bangalore was held on 20-21st May, 2016 at Red Bishop, Panchkula which was attended by participants from various Govt. & private centers within & outside the State (Chandigarh, Delhi, Haryana, Punjab & Rajasthan).

An e-monitoring module in the Haryana Cancer Atlas website was used by the chief coordinator, office of DGHS, to view the information on the participating centres, data contributed by the registered centres and the district wise status of data.

Various diagnostic/treating centres (Govt./private, within and outside the state) were registered with NCDIR for uploading of cancer cases and login-id & passwords were issued to these centres. Staff under the HCA project (MSW, Statistician & DEO) were provided training in AIIMS, New Delhi regarding data collection, case details, maintenance of record etc. Also training continued during the field visits. The HCA Team visited various Govt./Private Hospitals/Centers for data collection, registration of centres to ensure maximum coverage of cases. The cases thus collected were transmitted through the HCA website using a separate login which was provided to the co-ordinating unit by NCDIR.

Review & Field Visits:

- Regional review meetings were held on February, 2017 in Medanta Medicity Gurgaon to strengthen and rejuvenate the project related activities of the centers in Districts/State.
- The NCDIR Team along with the staff at the co-ordinating unit had visited Jind, Kaithal, Kurukshetra, Panchkula, Yamunanagar, Chandigarh & Mohali in March, 2018 to review the activity.
- Project progress was reviewed & discussed in a meeting under the Chairmanship of then Addl. Chief Secretary-Health in June, 2018. Many centres are contributing data under HBCR since when HCA was being implemented hence many HBCRs are established.
- As of now more than 100 centres are providing data under HCA. About 65,496 cancer cases have been uploaded till 01.03.2019.

Challenges/Limitations:

- Lack of Awareness among health professionals – Registries are the eyes and ears of any disease control programme. Specialist/General practitioners are not aware of importance of Cancer Registries. Even the Tertiary Care Institutes (TCIs) were not maintaining such registries.
- Complete details – Majority centres were not maintaining patient details as required in the Registry format.
- No cancer diagnostic/treating Facility- Many districts had diagnostic centres. Patients were visiting nearby district/ region for seeking treatment facilities.
- Most of the cancer patients visited the private centres due to various reasons, posing difficulty in data collection.
- Non-co-operation - some Govt. & Private centers were reluctant to provide case details.
- Most TCIs are in the NCR, Tricity & Neighboring States, hence active data collection was required.

Chief Coordinator and Co-Chief Coordinator along with HCA team made sincere efforts towards maximum coverage of cases inspite of above cited limitations. Centres were requested repeatedly through phone calls, emails, DO letters etc. for corporation. Regular review by authorities along with awareness about risk factors, preventive measures & common symptoms (WCD, NCAD etc.) under NPCDCS have helped in early detection and improving case coverage. Beneficiaries under Free Travel Facility (FTF) for treatment and follow up of cancer cases contributed towards improving coverage.

Project concluded on 28.02.2019 and final report to be released by NCDIR will provide state specific data about the disease burden for better planning.

1. Dr. Rekha Singh (DD-NCD cum Chief Co-ordinator-HCA), O/o DGHS, Haryana
2. Dr. Kajal (MO-NCD cum Co-Chief Co-ordinator), O/o DGHS, Haryana
3. Ms. Pratima Agnihotri (Medical Social Worker)
4. Ms. Meena Joshi (Statistician)
5. Mr. Deepak Sharma (Data Entry Operator)
6. Mr. Salil Dogra (Medical Social Worker)

8.2. Pt. B.D. Sharma PGIMS, Rohtak

Department Of Pathology, Dr. Rajeev Sen, Principal Investigator
Dr. Vivek Kaushal, Dr. Sant Prakash and Dr. Rajeev Atri
Co-Principal Investigators, Dept. Of Pathology and Radiotherapy,

Development of Atlas of Cancer in Haryana was started for a period of four years (From 1st December 2015 to 30th November, 2018). Department of Pathology, PGIMS Rohtak contributed all the cases of malignancy diagnosed and confirmed on microscopic examination of histopathology, cytology and haematology preparation in PGIMS, Rohtak. Pt. B.D. Sharma, PGIMS Rohtak is constituent college of the Pt. B.D. Sharma University of Health Sciences Rohtak – State Health University of Haryana.

Samples and specimens to pathology department were contributed mostly from surgical units comprising General Surgery, Surgical Oncology, Otolaryngology, Ophthalmology, Gynaecology, Urology, Neurosurgery, Paediatric surgery, Plastic & Burn, Cardiothoracic Surgery and Dept. of Radiation Oncology. Remaining cases were contributed by department of Medicine, Pediatric, Pulmonary Medicine & Critical Care, Chest & Tuberculosis and Haematology. The department of Pathology is performing Immunophenotyping by flowcytometry and Immunohistochemistry (more than 100 markers) to augment confirmation and typing of various malignancies. The department is providing all these facilities as free of cost.

The demographic data and diagnosis of all cases as per proforma for Development of an Atlas Cancer in Haryana was entered online on the site of project. Physical forms sent by NCRP, Bengaluru for development of an Atlas of Cancer in Haryana were also filled. Services of a Data Entry Operator was engaged from out of the grant sanctioned for our center, Pt. B.D. Sharma, PGIMS Rohtak by NCRP Bengaluru.

The institution is continuing with a policy of providing definitive treatment even after completion of the project of Development of an Atlas of Cancer in Haryana, only to those patients who have been allotted a Central Cancer Registry number.

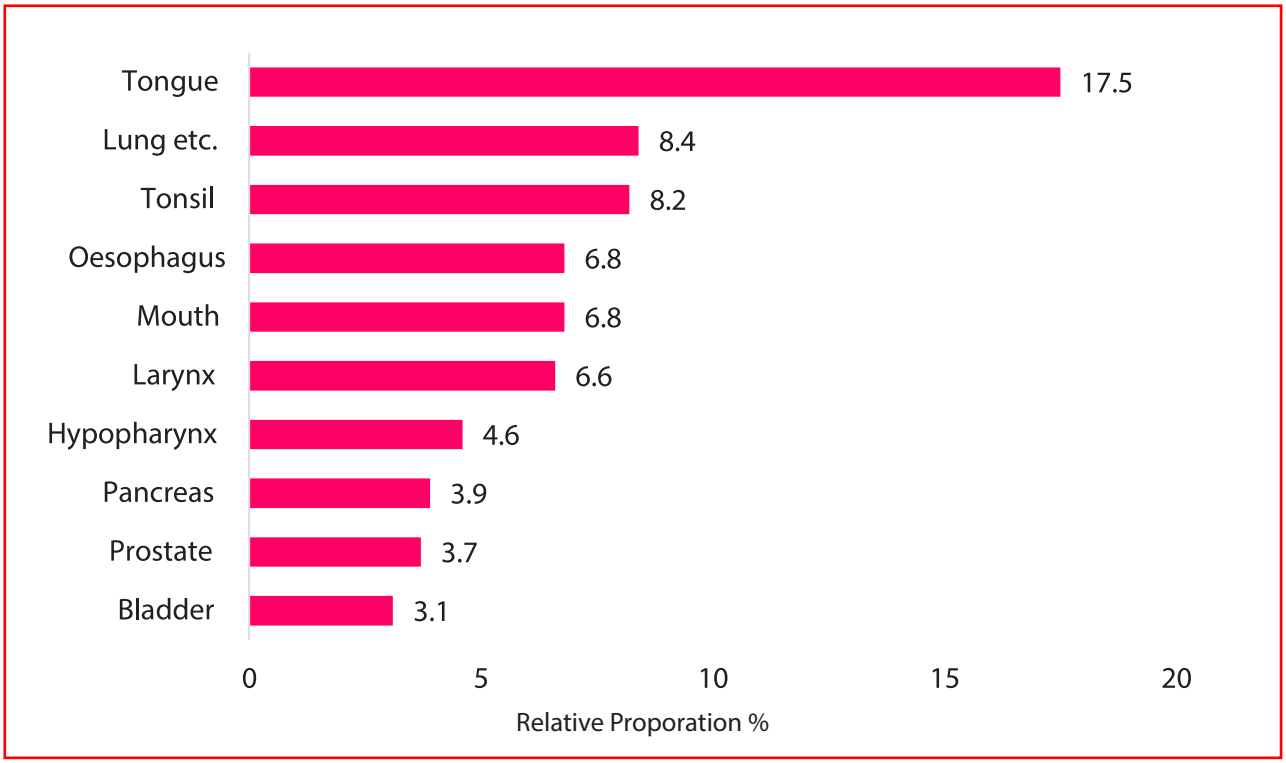
Being a tertiary care hospital cases were also received having being diagnosed primarily in private Laboratories/ Hospitals and hospitals of government health services. Majority of the patient are from poor socioeconomic stata / low middle class and rural background.

Table 8.2(a): Summary of Number of Cancers

Year of Diagnosis	Males	Females	Total
2016	2284	1329	3613
2017	2522	1395	3917
2016-2017	4806	2724	7530

Figure 8.2: Ten Leading Sites of Cancers (2016 - 2017)

Males



Females

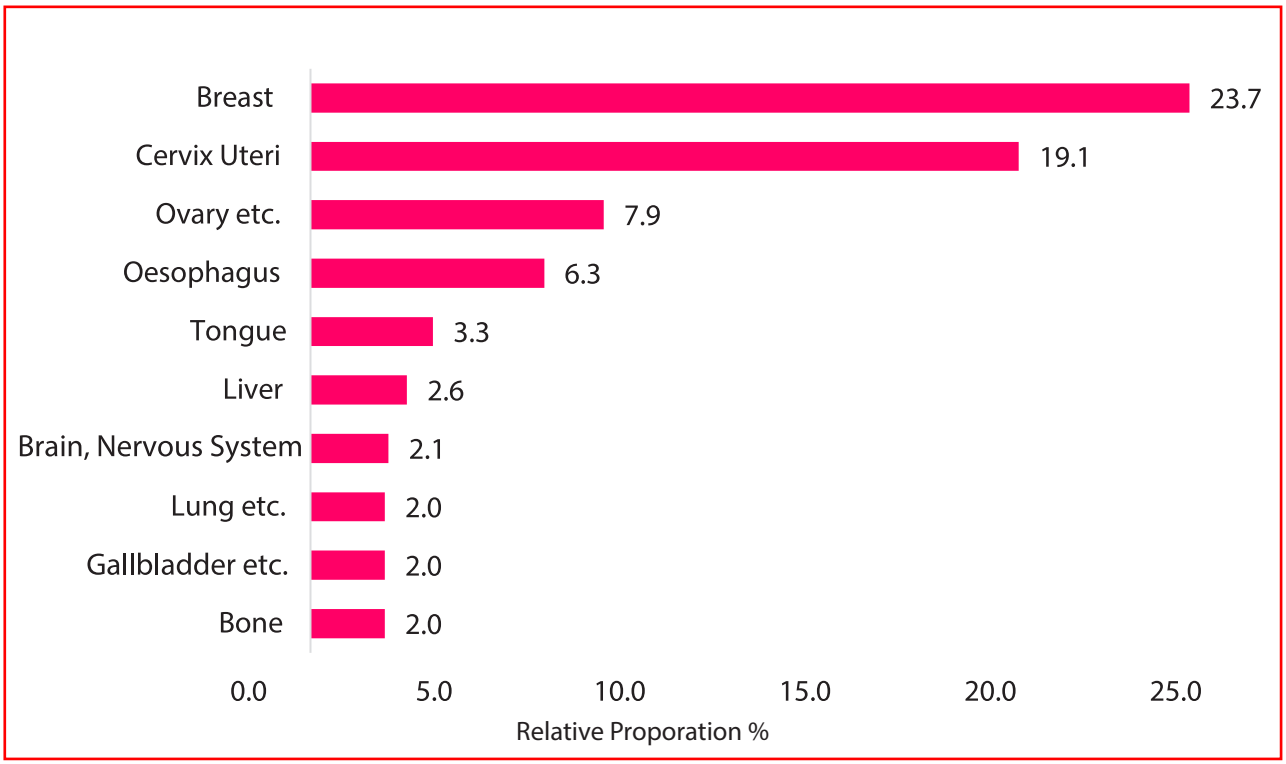


Table 8.1 (b): District-wise Distribution of Cancers (2016 - 2017)

Number (#) and Relative Proportion (%)

District	Males		Females		Grand Total	
	#	%	#	%	#	%
Rohtak	1159	24.1	680	25.0	1839	24.4
Sonipat	575	12.0	343	12.6	918	12.2
Jhajjar	560	11.7	326	12.0	886	11.8
Jind	587	12.2	276	10.1	863	11.5
Bhiwani	461	9.6	291	10.7	752	10.0
Panipat	310	6.5	209	7.7	519	6.9
Hisar	267	5.6	126	4.6	393	5.2
Rewari	179	3.7	98	3.6	277	3.7
Karnal	171	3.6	96	3.5	267	3.5
Kaithal	173	3.6	72	2.6	245	3.3
Mahendragarh	85	1.8	52	1.9	137	1.8
Fatehabad	81	1.7	44	1.6	125	1.7
Gurugram	78	1.6	40	1.5	118	1.6
Sirsa	44	0.9	35	1.3	79	1.0
Mewat	25	0.5	16	0.6	41	0.5
Faridabad	20	0.4	6	0.2	26	0.3
Kurukshetra	13	0.3	7	0.3	20	0.3
Palwal	6	0.1	4	0.1	10	0.1
Yamunanagar	7	0.1	1	0.0	8	0.1
Ambala	3	0.1	1	0.0	4	0.1
Panchkula	2	0.0	1	0.0	3	0.0
Total	**4806**	**100.0**	**2724**	**100.0**	**7530**	**100.0**

**The above mentioned registered cases have duplicates from other center's which have been removed later while analysing district wise data*

8.3. Post Graduate Institute of Medical Education Research, Chandigarh

Dr. Sushmita Ghoshal, Principal Investigator

Dr. R. Kapur, Co-Investigator

It is indeed heartening to know that the data for cancer is being compiled in an atlas for the state of Haryana. Chandigarh, the capital of Punjab and Haryana, caters to a large number of patients from Haryana. At our HBCR, 21.5% patients registered between 2011 and 2015 are from this state.

Tobacco related cancers are very common at our hospital. The commonest cancers seen in males arise from the Head and Neck region and Lungs. Our publication of 5-year consolidated report (2011-15) clearly documents that the incidence of breast cancers in females is steadily increasing while that of cancer cervix is decreasing. It is also interesting to note that among the paediatric population, male patients account for 2/3rd of the total number of patients. Whether this hints at a gender bias needs to be explored.

In addition to routine work, the staff of our HBCR are actively involved in patient interactions and cancer awareness campaigns. The consolidated report published is a source of data required for several research questions and while forming planning strategies. Recently, a small research project was conducted by the staff where they tried to analyse social factors affecting stage of disease at presentation. The findings were presented at ESMO Asia 2018 Congress in the poster session on “Cancer care delivery in low resource environments”.

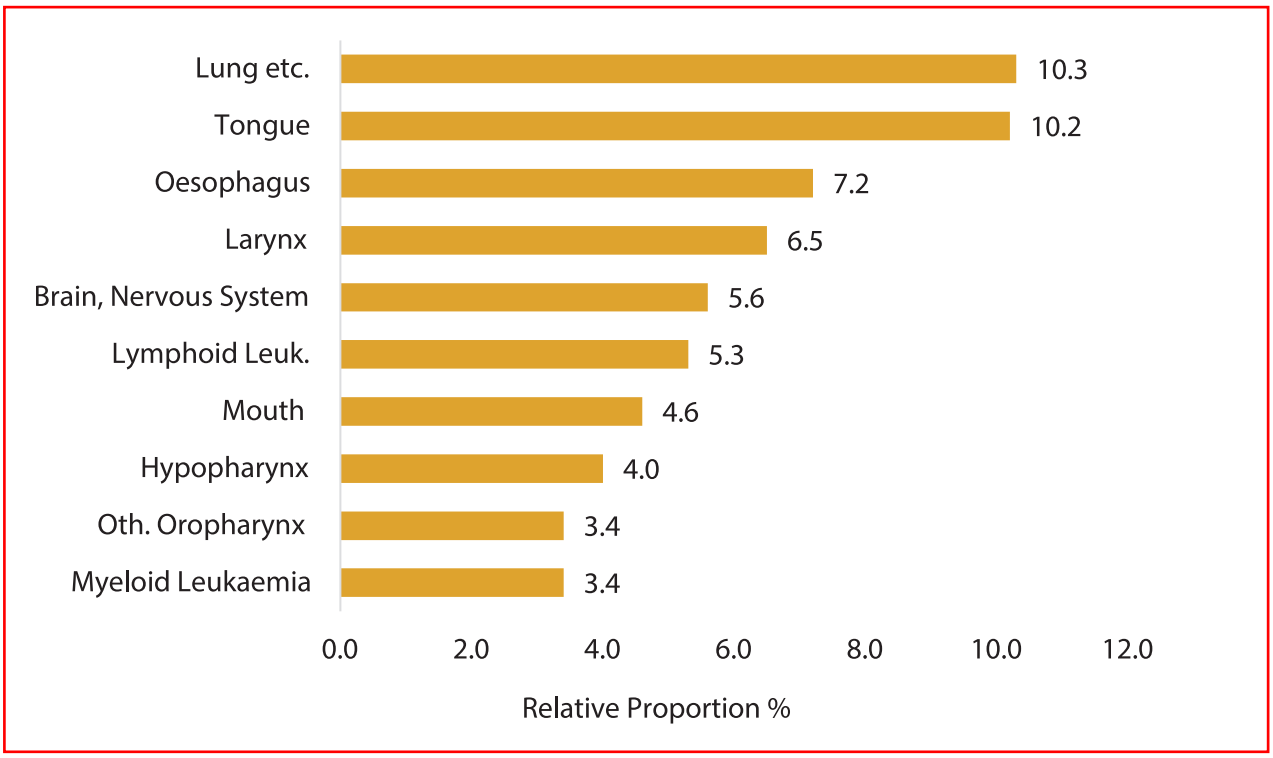
We do face many hurdles in our daily routine, much of which is related to limited resources and massive rush of patients. However, the team, with its positive attitude and will to work hard for benefit of patients, strive undaunted to make the best of the given situation. We sincerely hope to keep up the good work and elevate our standards in the future.

Table 8.3 (a): Summary of Number of Cancers

Year of Diagnosis	Males	Females	Total
2016	864	676	1540
2017	954	723	1677
2016-2017	1818	1399	3217

Figure 8.3: Ten Leading Sites of Cancers (2016 - 2017)

Males



Females

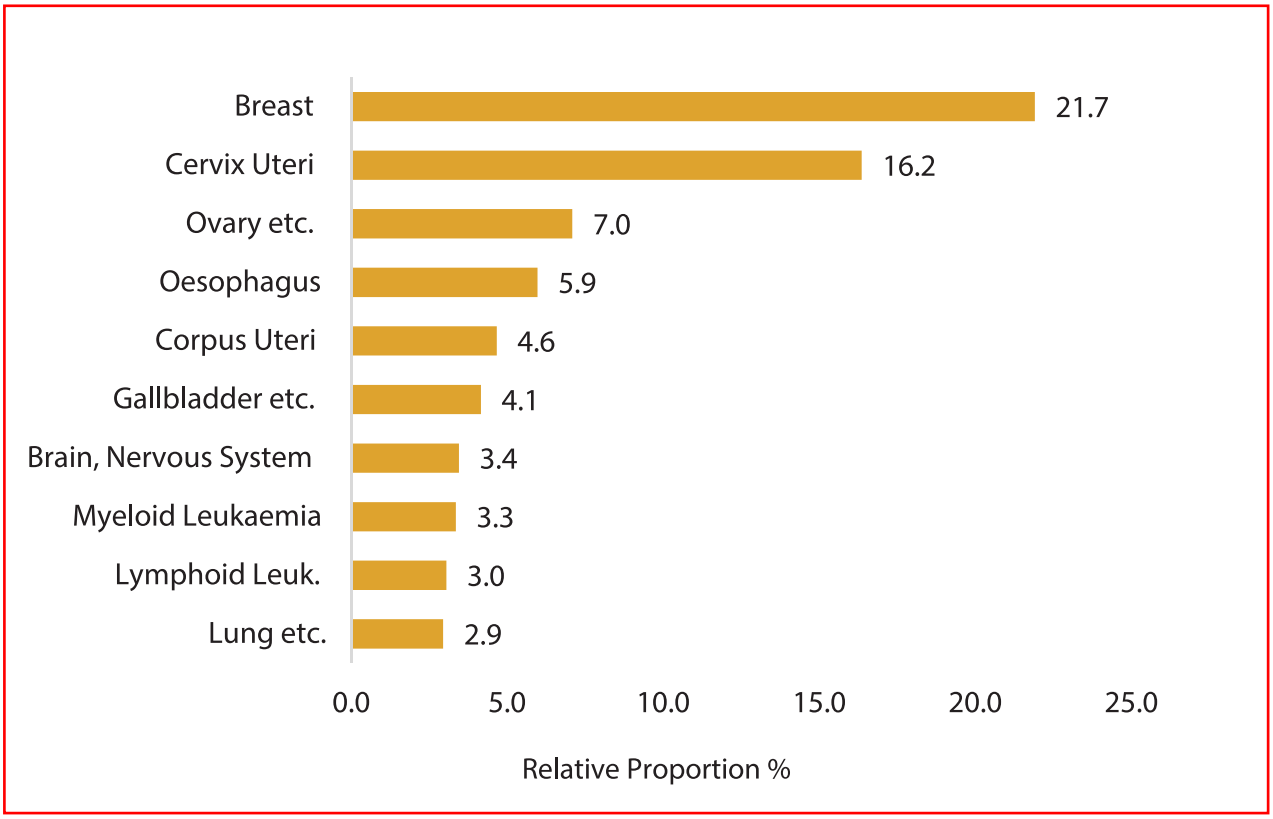


Table 8.3 (b): District-wise Distribution of Cancers (2016 - 2017)

Number (#) and Relative Proportion (%)

District Name	Males		Females		Total	
	#	%	#	%	#	%
Ambala	338	18.6	285	20.4	623	19.4
Yamunanagar	322	17.7	243	17.4	565	17.6
Panchkula	282	15.5	223	15.9	505	15.7
Karnal	226	12.4	197	14.1	423	13.1
Kurukshetra	225	12.4	182	13	407	12.7
Kaithal	177	9.7	112	8	289	9.0
Jind	66	3.6	34	2.4	100	3.1
Panipat	44	2.4	33	2.4	77	2.4
Fatehabad	39	2.1	19	1.4	58	1.8
Sirsa	33	1.8	19	1.4	52	1.6
Hisar	25	1.4	16	1.1	41	1.3
Bhiwani	9	0.5	17	1.2	26	0.8
Sonipat	9	0.5	5	0.4	14	0.4
Rohtak	7	0.4	5	0.4	12	0.4
Faridabad	5	0.3	1	0.1	6	0.2
Mahendragarh	4	0.2	1	0.1	5	0.2
Rewari	2	0.1	3	0.2	5	0.2
Gurugram	1	0.1	3	0.2	4	0.1
Jhajjar	3	0.2	1	0.1	4	0.1
Mewat	1	0.1	-	-	1	0.0
Total	**1818**	**100**	**1399**	**100**	**3217**	**100**

**The above mentioned registered cases have duplicates from other center's which have been removed later while analysing district wise data*

8.4. Rajiv Gandhi Cancer Institute and Research Center, New Delhi

Dr. Sudhir Rawal, Principal Investigator,
Ms. Swarnima jaitley, Project Coordinator
Department of Research, RGCI & RC

Rajiv Gandhi Cancer Institute and Research Center is a visionary project of Indraprastha care society aimed at providing best oncological care to those who need it. The institute is governed by not for profit society, and came into being as a legal, independent entity under the societies registration act 1860. Rajiv Gandhi Cancer Institute has its own Hospital Based Cancer Registry (HBCR) since its inception in 1996.

The establishment of HBCR is historically rooted in the belief the individual patients are better served through registry since its serves to ensure that patients return for follow-up examination on a regular basis. It gives an insight into the magnitude and pattern of cancer cases register in a hospital and helps hospital administrators in planning required facilities for their respective hospitals. The main purpose of such registries is to contribute to patients care by providing readily accessible information on the subjects with cancer, the treatment they received and its result.

In RGCIRC, Medical Record Department (MRD) services are available to medical professionals and patients around the clock. It has been developed for exchange of data on the pattern of population based cancer registry. It has more than 2.5 lakh medical records of last 22 years, stored and maintained in MRD, which are available for patient care, academics and research. It reduces the likelihood of information loss and occurrence of errors. A unique Patient id is created for all the patients who register with RGCIRC. Data of all patients stays in the hospital and are stored in a file in hardcopy as well as in softcopy. At each visit, the reports and other documents of the patient is scanned and saved in folder which can be directly accessed by hospital staff. This is done through Computerized Patient Record System (CPRS) is a Veterans Health Information Systems and Technology Architecture (Vista) computer application. CPRS enables to enter, review, and continuously update information connected with a patient.

In addition to maintaining its own HBCR, RGCIRC is also contributing to ICMR's National Cancer Registry Program which got implemented here in 2012 by the Department of Research. The department is collating data on each patient through CPRS and filling up the forms provided by NCRP Bangalore and finally online on NCRP website. To sustain a registry of this magnitude and providing a data of quality involves a dedicated team and support from various departments. Cancer registries possess the potential for developing and supporting important research program by making use of the information they collect. The hospital cancer registry work at RGCI & RC has progressed very well and we hope that this report will be useful to all clinicians, administrators and researches for treatment planning, policy making and a source of authentic data for clinical research.

Staff of registry

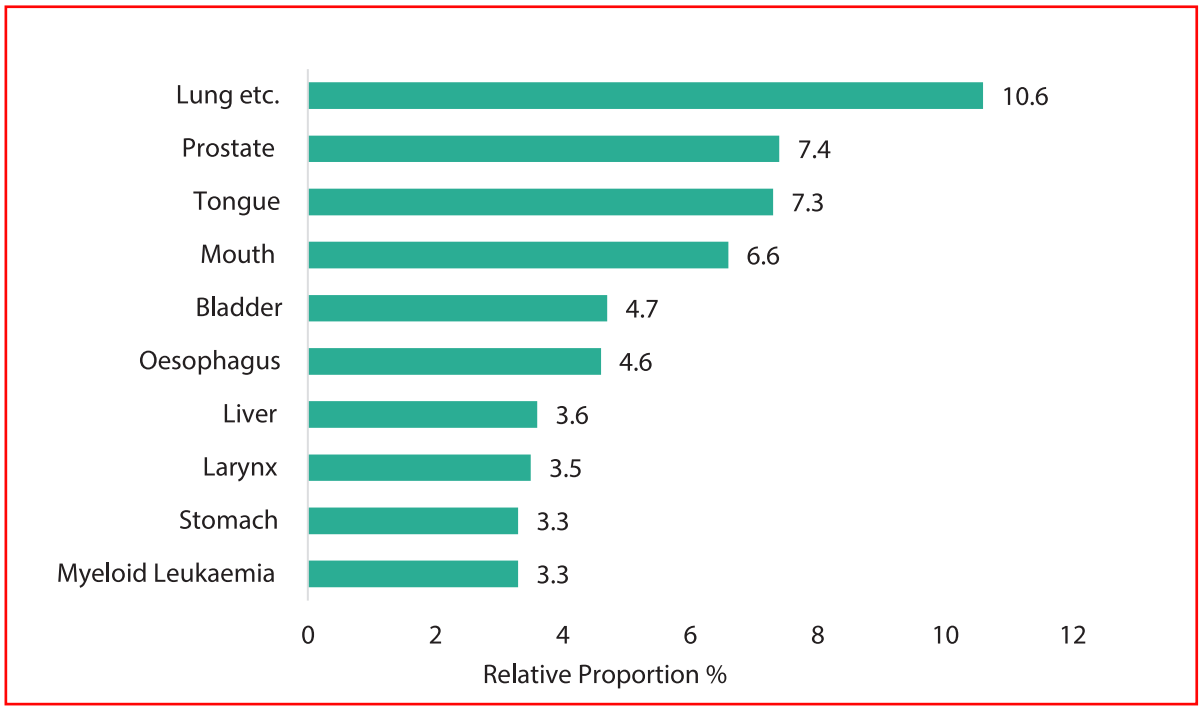
Project executive:	Deepak Negi
	Suman Kothari
	Deepika Paliwal
Data entry operator:	Janit Giri

Table 8.4 (a): Summary of Number of Cancers

Year of Diagnosis	Males	Females	Total
2016	796	528	1324
2017	704	508	1212
2016-2017	1500	1036	2536

Figure 8.4.Ten Leading Sites of Cancers (2016-2017)

Males



Females

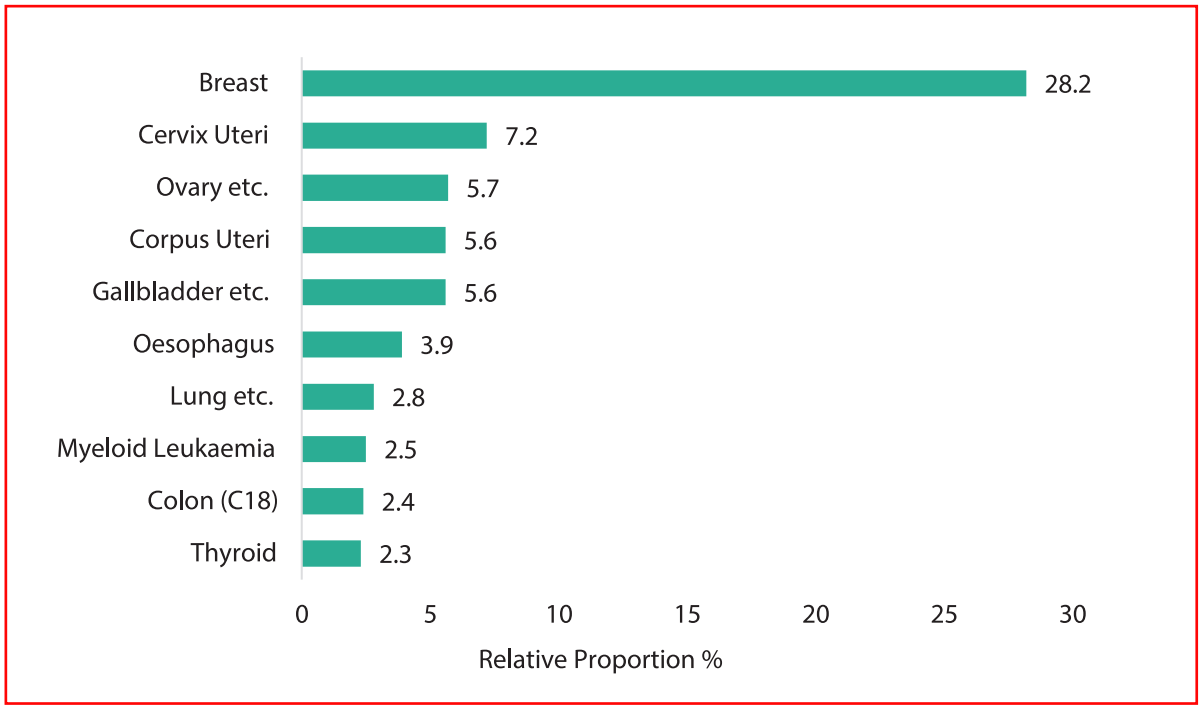


Table 8.4 (b): District-wise Distribution of Cancers (2016 - 2017)

Number (#) and Relative Proportion (%)

District Name	Males		Females		Total	
	#	%	#	%	#	%
Ambala	37	2.5	22	2.1	59	2.3
Bhiwani	51	3.4	41	4.0	92	3.6
Faridabad	141	9.4	124	12.0	265	10.4
Fatehabad	20	1.3	10	1.0	30	1.2
Gurugram	202	13.5	159	15.3	361	14.2
Hisar	73	4.9	36	3.5	109	4.3
Jhajjar	86	5.7	50	4.8	136	5.4
Jind	55	3.7	46	4.4	101	4.0
Kaithal	45	3.0	15	1.4	60	2.4
Karnal	74	4.9	72	6.9	146	5.8
Kurukshetra	48	3.2	29	2.8	77	3.0
Mahendragarh	28	1.9	14	1.4	42	1.7
Mewat	13	0.9	5	0.5	18	0.7
Palwal	40	2.7	13	1.3	53	2.1
Panchkula	12	0.8	12	1.2	24	0.9
Panipat	135	9.0	102	9.8	237	9.3
Rewari	60	4.0	37	3.6	97	3.8
Rohtak	138	9.2	76	7.3	214	8.4
Sirsa	35	2.3	27	2.6	62	2.4
Sonipat	176	11.7	124	12.0	300	11.8
Yamunanagar	31	2.1	22	2.1	53	2.1
Total	**1500**	**100.0**	**1036**	**100.0**	**2536**	**100.0**

**The above mentioned registered cases have duplicates from other center's which have been removed later while analysing district wise data*

8.5. Dr. B. R. Ambedkar Institute Rotary Cancer Hospital, AIIMS, New Delhi

Dr. G.K. Rath
Department of Radiation Oncology
Dr. S.V.S. Deo MS, FACS, Principal Investigator
Department of Surgical Oncology
Mr. N. Manoharan, M.Sc. PGDCA, Co-Investigator
Delhi Cancer Registry

The Hospital Based Cancer Registry in Dr. B.R. Ambedkar Institute Rotary Cancer Hospital, AIIMS, New Delhi was established in 2014 with financial assistance from National Cancer Registry Programme, NCDIR, Bangalore.

Dr. B.R. Ambedkar Institute Rotary Cancer Hospital at AIIMS founded in 1975. It initially started functioning in 1983-84 on 2 floors with 35 bed and now it is nearly 35 years old and expanded to 7 floors with the bed strength of 182. It has four major departments viz. Radiation Oncology, Medical Oncology, Surgical Oncology and Anaesthesia, Pain and Palliative Care and five supporting units namely Radio-diagnosis, Oncopathology, Medical Physics, Delhi Cancer Registry and Medical Records. All the major departments and units are engaged in teaching and research and have post graduate and doctoral programmes.

The major sources of data collection for the HBCR are from Medical Records files. All the microscopically confirmed and clinically/radiologically suspected cases of cancer seen/diagnosed in various other departments of AIIMS/other hospitals are referred to Dr. BRAIRCH for further consultation for surgery, radiotherapy, chemotherapy etc. All these new patients are first registered in the registration counter and assigned a unique medical records number and all the patients files are arranged and kept in chronological order in Medical Records Section. All investigation reports, treatment procedures and discharge summary etc. are also available in the patients records file. All these files are regularly screened for data collection.

The staffs working in Delhi Population Based Cancer Registry have provided the technical support to the Haryana Atlas staff in data collection methodology etc. time to time. The staffs of Hospital Based Cancer Registry were also involved in collection and transmitting of the cases pertaining to Haryana to NCDIR, Bangalore on regular basis.

Staff of registry

Medical Social Workers: : Ms. Ananya Bora
Mr. Ankit
Mr. Raman Jha
Ms. Anshikha Pandey

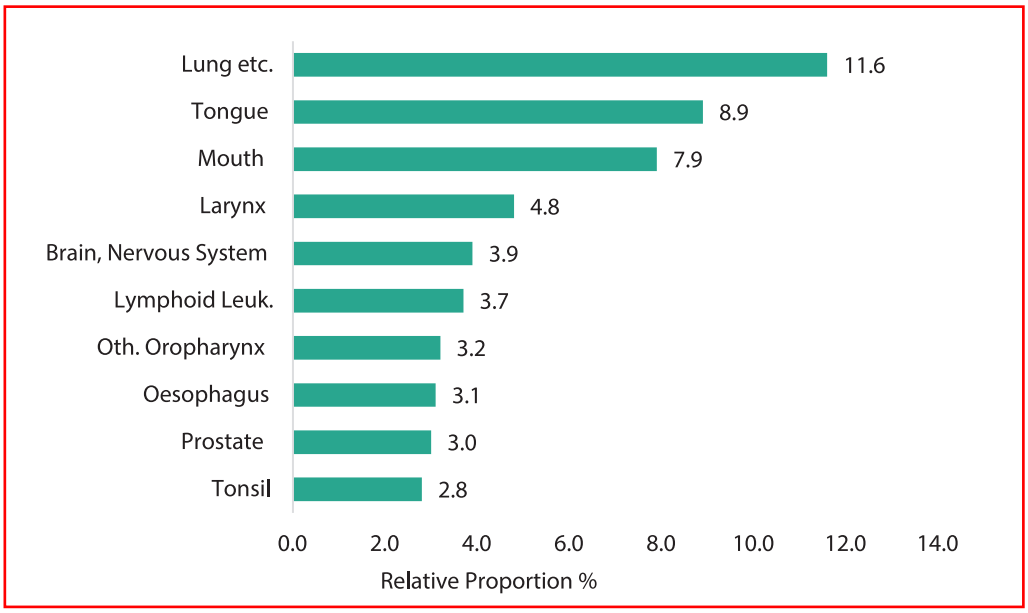
Data Entry Operators : Mr. Pradeep
Ms. Kanika Behl
Ms. Shikha Sharma

Table 8.5 (a): Summary of Number of Cancers

Year of Diagnosis	Males	Females	Total
2016	767	660	1427
2017	431	401	832
2016-2017	1198	1061	2259

Figure 8.5. Ten Leading Sites of Cancers (2016-2017)

Males



Females

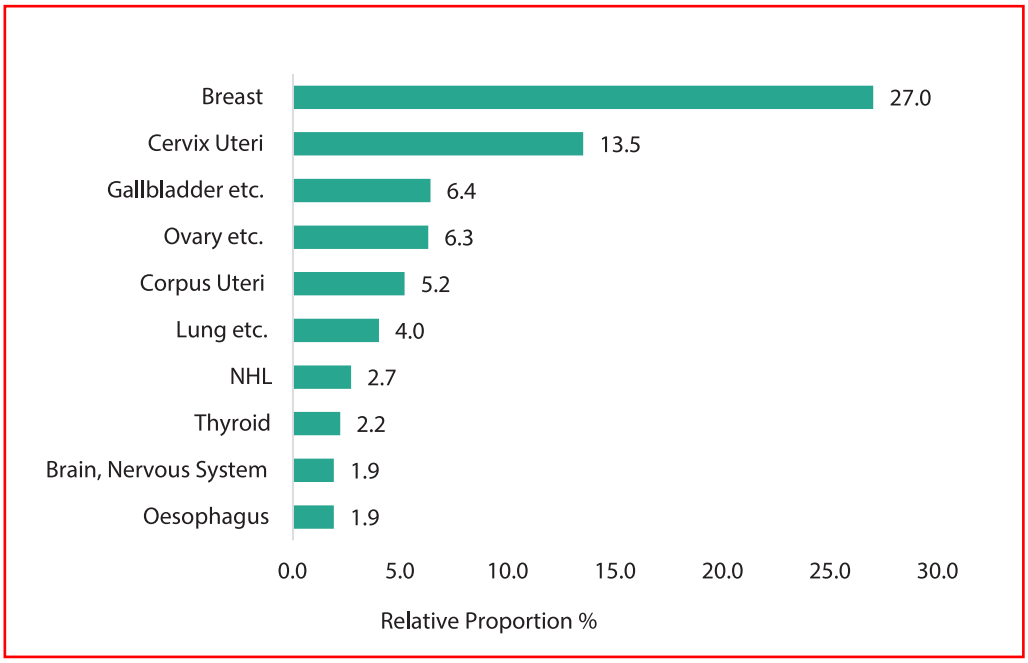


Table 8.5 (b): District-wise Distribution of Cancers (2016-2017)

Number (#) and Relative Proportion (%)

District Name	Males		Females		Total	
	#	%	#	%	#	%
Faridabad	339	28.3	339	32.0	678	30.0
Gurugram	194	16.2	182	17.2	376	16.6
Palwal	140	11.7	88	8.3	228	10.1
Sonipat	74	6.2	75	7.1	149	6.6
Jhajjar	54	4.5	48	4.5	102	4.5
Mahendragarh	53	4.4	46	4.3	99	4.4
Panipat	44	3.7	54	5.1	98	4.3
Rewari	42	3.5	51	4.8	93	4.1
Mewat	55	4.6	33	3.1	88	3.9
Bhiwani	48	4.0	19	1.8	67	3.0
Karnal	29	2.4	31	2.9	60	2.7
Others - Haryana	30	2.5	19	1.8	49	2.2
Rohtak	24	2.0	22	2.1	46	2.0
Hisar	20	1.7	12	1.1	32	1.4
Jind	13	1.1	12	1.1	25	1.1
Sirsa	12	1.0	5	0.5	17	0.8
Yamunanagar	10	0.8	6	0.6	16	0.7
Kurukshetra	4	0.3	6	0.6	10	0.4
Total	**1198**	**100.0**	**1061**	**100.0**	**2259**	**100.0**

**The above mentioned registered cases have duplicates from other center's which have been removed later while analysing district wise data*

8.6. Fortis Memorial Research Institute, Gurgaon

Dr. Vinod Raina, MD, MRCP, FRCP, Principal investigator

Dr. B. B. Tyagi, M.Sc. PhD, Co-investigator

Department of Medical Oncology & Hematology, FMRI

Fortis Memorial Research Institute, Gurgaon (FMRI) started clinical services on July 2012 and was officially inaugurated on 1st May 2013. With the goal to dispense modern tertiary health care to the community in a compassionate, professional and distinctive way, FMRI, Gurgaon is a premium hospital with 350 beds. Covering an area of 11 acres with a vision to develop1000 beds, the hospital brings together an outstanding pool of doctors, assistants and medical staff to treat patients. With its one-of-its-kind service, the medical institute integrates modern & traditional forms of medicine to dispense accessible and affordable health care. The hospital has various centers of excellence which include Oncology, Cardiac Sciences, Neurosciences, Emergency & Trauma, Bone & Joint, Renal Sciences, Gastro Sciences, Critical Care and Organ Transplants. Each of these is committed to providing world-class treatment. The other clinical specialties include Dental, ENT, General Surgery, Gynecology & Obstetrics, Internal Medicine, Nuclear Medicine, Pediatrics, Pulmonology, Robotic Surgery, Stem Cell Therapy and many more. FMRI has a complete gamut of therapeutic and diagnostic technologies that are a "first" in India, in Asia and in some cases the "first" in the world too. The hospital is the first institute in the world to have introduced radiation therapy in collaboration with the leading technology innovators like Brain Lab and Elekta. The hospital also introduced the world's first digital broadband MRI – the 3-Tesla Digital MRI. FMRI has incorporated Stem Cell Lab and SRL Lab in its services.

The Hospital Based Cancer Registry at FMRI has been functioning since November 2013. Data collection on the lines of ICMR started since inception of the registry. Financial assistance from Indian Council of Medical Research for a period of five years was started from 1st March 2017 to 28th February 2022.

During the period of five years, cancer registry has already published four annual reports on cancer data of our institution and fifth report published on "A Retrospective study amongst admitted cases in all wards of all departments from January 2014 to December 2014 at FMRI". Cancer Registry has also published six research manuscripts at national and international levels. All reports and research articles are available on FMRI website.

Staff of Registry

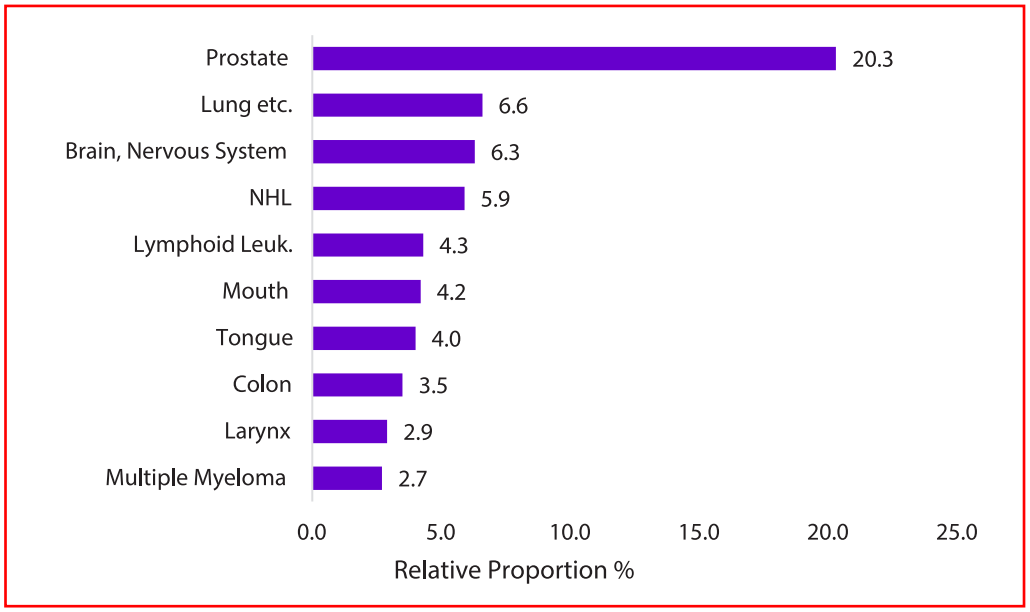
Social worker : Sujeet Kumar Singh
Data Entry Operator : Manisha

Table 8.5 (a): Summary of Number of Cancers

Year of Diagnosis	Males	Females	Total
2016	492	498	909
2017	475	411	886
2016-2017	967	909	1876

Figure 8.6. Ten Leading Sites of Cancers (2016-2017)

Males



Females

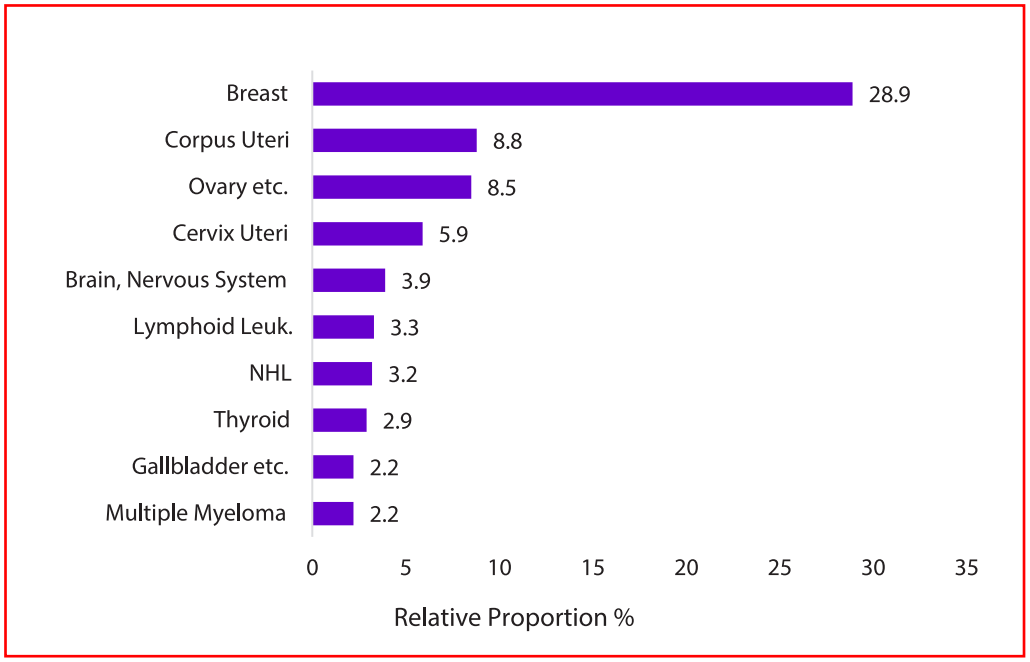


Table 8.6(b): District-wise Distribution of Cancers (2016-2017)

Number (#) and Relative Proportion (%)

District Name	Males		Females		Total	
	#	%	#	%	#	%
Gurugram	713	73.7	722	79.4	1435	76.5
Faridabad	70	7.2	57	6.3	127	6.8
Mahendragarh	27	2.8	18	2.0	45	2.4
Jhajjar	21	2.2	16	1.8	37	2.0
Rohtak	23	2.4	14	1.5	37	2.0
Rewari	14	1.4	16	1.8	30	1.6
Panipat	15	1.6	14	1.5	29	1.5
Bhiwani	15	1.6	8	0.9	23	1.2
Karnal	12	1.2	9	1.0	21	1.1
Sonipat	14	1.4	6	0.7	20	1.1
Hisar	8	0.8	5	0.6	13	0.7
Ambala	6	0.6	6	0.7	12	0.6
Sirsa	5	0.5	4	0.4	9	0.5
Jind	4	0.4	2	0.2	6	0.3
Kaithal	3	0.3	3	0.3	6	0.3
Mewat	5	0.5	1	0.1	6	0.3
Yamunanagar	2	0.2	3	0.3	5	0.3
Kurukshetra	3	0.3	1	0.1	4	0.2
Fatehabad	2	0.2	1	0.1	3	0.2
Palwal	1	0.1	2	0.2	3	0.2
Panchkula	3	0.3	-	-	3	0.2
Others - Haryana	1	0.1	1	0.1	2	0.1
Total	**967**	**100.0**	**909**	**100.0**	**1876**	**100.0**

**The above mentioned registered cases have duplicates from other center's which have been removed later while analysing district wise data*

8.7. ASIAN INSTITUTE OF MEDICAL SCIENCES, FARIDABAD

Radiation oncology Team Dr Neetu Singhal (PI), Dr Vikash Kumar,

Medical oncology Team Dr Praveen Bansal, Dr Prashant Mehta

Surgical oncology Team Dr Vinay Gaikwad, Dr Praveen Yadav

Dr Piyush Agarwal, Dr Than Singh Tomar,

Dr Mansi Chowhan, Dr Mukesh, Dr Jyoti

Asian institute is a 425 bedded premiere tertiary care institute of north India with complete comprehensive cancer care centre along with multispecialty facilities. Being located on the belt where cancer care facilities are limited, Asian caters to the populations of not only Haryana, adjoining part of Delhi but also Uttar Pradesh, Rajasthan, Punjab and Madhya Pradesh.

Comprehensive cancer care centre has complete range diagnostic and therapeutic facilities like PET-CT scan, dual head Gamma camera, CT and MRI facilities and NABL accredited labs and well equipped pathology department. Amongst the therapeutic departments have state of the art Radiation oncology department with teletherapy unit, Trilogy linear accelerator with IGRT, IMRT, Rapid arc facilities and a HDR brachytherapy unit Gamma med plus Ix. Other departments are Medical oncology and organ based surgical oncology department.

Hospital based cancer registry at Asian institute of medical sciences started from January 2016 wherein all the cancer patients enrolled in hospital were registered. All oncology patients are registered at a single registration counter and data was collected from tumor board file prepared for all the patients which were further discussed in tumor board prior to commencement of tumor specific treatment as per international guidelines. After multi-disciplinary tumor board discussion, concerned Oncologist proceeds with treatment and patients are regularly followed up after treatment.

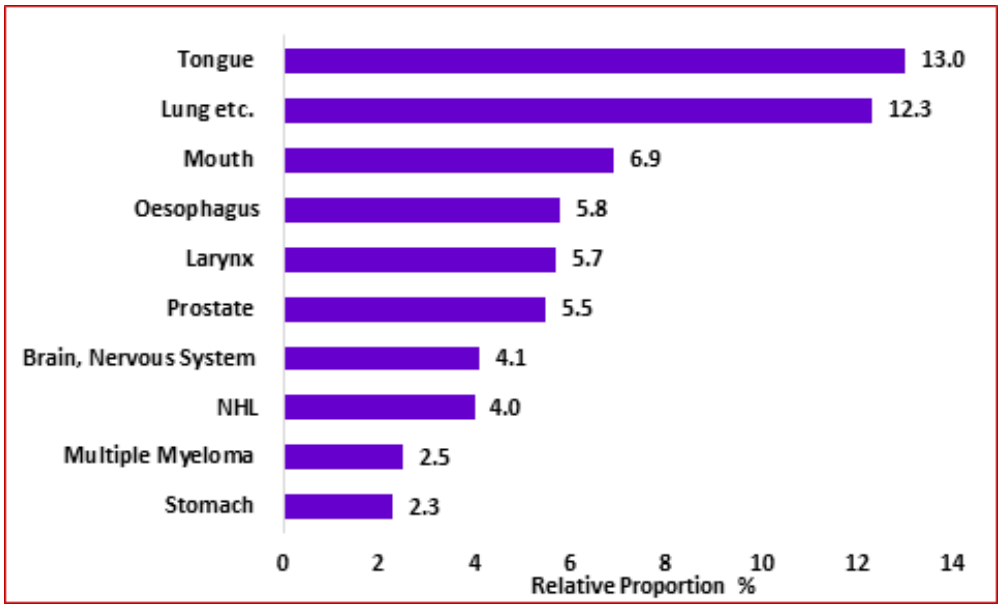
Participating in hospital based cancer registry programme, has been a phenomenal experience for us and it enlightened us about the magnitude of problems and ever increasing population of advanced stage cancer patients over two years. With this we could also understand the demographic pattern of disease within the region. Most common cancers we saw were head and neck cancers and lung cancers in male and females group combined and breast topped the list in only female group. As a lot of patients visiting our hospital belonged to remote rural areas of Haryana, most malignancies were reported in advanced stage. We felt the need of screening for cancer in such remote places as patients were very reluctant to visit the hospital without any debilitating symptoms, so Asian institute launched a Cancer detection bus, housing facilities of basic oncology screening with clinical breast examination and Mammography, Pap smear, Chest X –Ray and blood investigations. Thus portable detection facilities are now available for all remotely located villages and bus moves around on rotational basis to different regions for early detection and medical assistance.

Table 8.7 (a): Summary of Number of Cancers

Year of Diagnosis	Males	Females	Total
2016	419	402	821
2017	524	427	951
2016-2017	943	829	1772

Figure 8.7. Ten Leading Sites of Cancers (2016-2017)

Males



Females

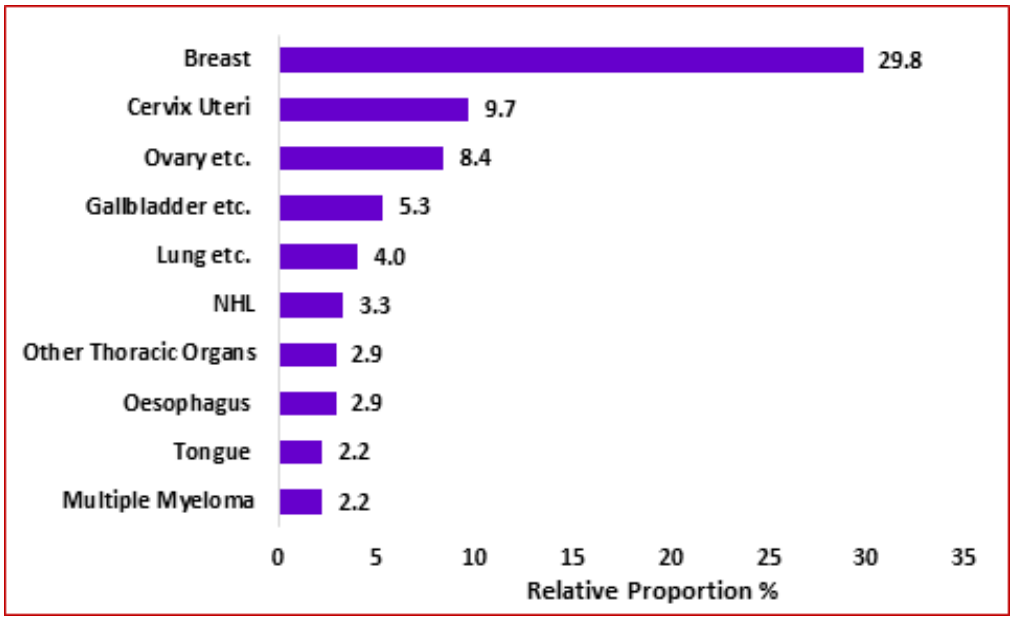


Table 8.7 (b): District-wise Distribution of Cancers (2016-2017)

Number (#) and Relative Proportion (%)

District Name	Males		Females		Total	
	#	%	#	%	#	%
Faridabad	600	63.6	554	66.8	1154	65.1
Gurugram	82	8.7	89	10.7	171	9.7
Palwal	102	10.8	61	7.4	163	9.2
Sonipat	37	3.9	41	4.9	78	4.4
Jhajjar	23	2.4	20	2.4	43	2.4
Panipat	16	1.7	18	2.2	34	1.9
Rewari	18	1.9	9	1.1	27	1.5
Yamunanagar	12	1.3	9	1.1	21	1.2
Mewat	13	1.4	6	0.7	19	1.1
Bhiwani	7	0.7	5	0.6	12	0.7
Rohtak	8	0.8	4	0.5	12	0.7
Jind	8	0.8	2	0.2	10	0.6
Ambala	5	0.5	2	0.2	7	0.4
Karnal	3	0.3	3	0.4	6	0.3
Mahendragarh	2	0.2	3	0.4	5	0.3
Kaithal	2	0.2	1	0.1	3	0.2
Hisar	1	0.1	1	0.1	2	0.1
Kurukshetra	2	0.2	-	-	2	0.1
Sirsa	1	0.1	1	0.1	2	0.1
Panchkula	1	0.1	-	-	1	0.1
Total	**943**	**100.0**	**829**	**100.0**	**1772**	**100.0**

**The above mentioned registered cases have duplicates from other center's which have been removed later while analysing district wise data*

8.8. AADHAR HEALTH INSTITUTE

(A Unit of VLCOM Healthcare Pvt. Ltd.)

Dr. Lovenish Goyal, M.D, D.M. (Medical Oncology), Principal Investigator

Dr. Arun Kumar Aggarwal, M.D.(Radiation Oncology), Co-Investigators

Department of Medical Oncology, Aadhar Health Institute, Hisar

The Hospital Based Cancer Registry was started in the Institute from 1st January, 2016 with grant from National Cancer Registry Programme of ICMR. The prominent source of data collection is the departments of Medical Oncology. Data are also collected from Radiation Oncology & Surgical Oncology. Demographic and treatment data are collected and entered into the forms, which are transmitted online to the National Cancer Registration Program coordinating unit in Bengaluru. The follow-up of cancer cases is performed by the respective departments and the information is updated accordingly.

According to passage of time, HBCR has been observing a slow but steady increase in the number of cancer patients attending the hospital. Among the patients, most of them are found to be residents of the neighbouring districts and states. Carcinoma breast and Ovary is the commonest in females and head and neck cancers is the commonest among the male patients. Also high incidence of carcinoma of Esophagus is seen in our area. Unfortunately, most of the patients come to the hospital at an advanced stage, hence the chances of cure are compromised.

Keeping a record of this scale and providing quality data requires a dedicated team. Our team is engaged in this work and, with the support of various departments of this institute, collects as much information as possible. Preliminary research was started based on the data acquired here.

Staff of registry

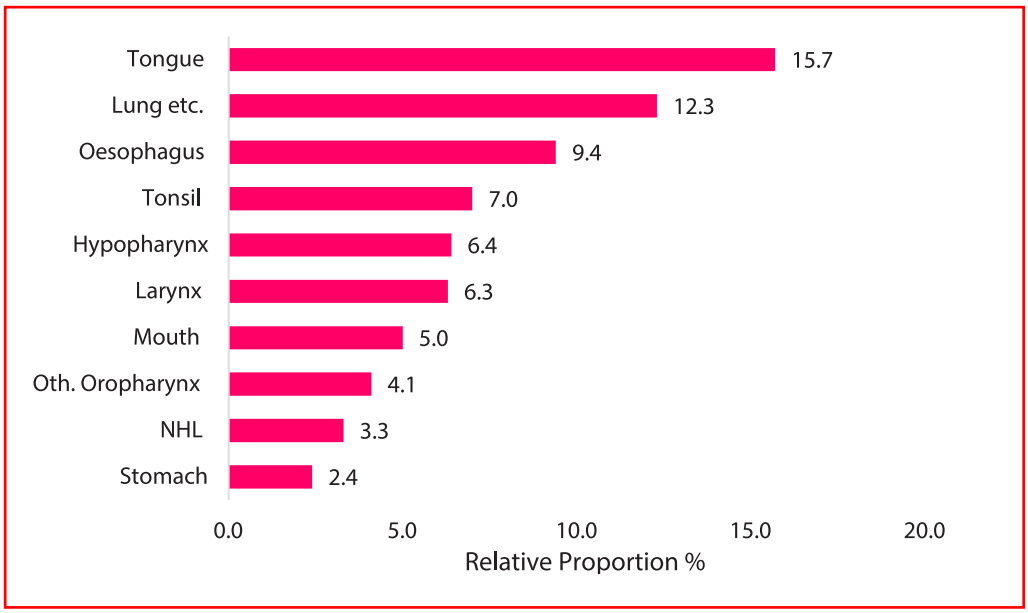
Medical	**Dr. Lovenish Goyal &**
Research Scientist	**Dr Arun Kumar Aggarwal**
	Data Entry Operator: Mr. Sandeep Saini

Table 8.8 (a): Summary of Number of Cancers

Year of Diagnosis	Males	Females	Total
2016	239	370	609
2017	283	453	736
2016-2017	522	823	1345

Figure 8.8. Ten Leading Sites of Cancers (2016-2017)

Males



Females

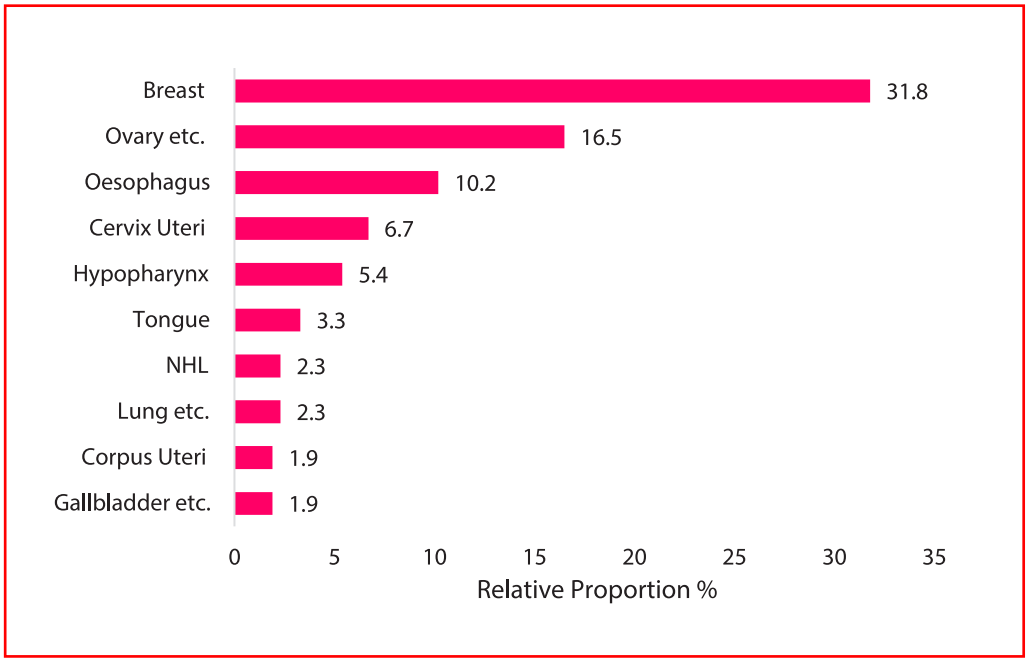


Table 8.8 (b): District-wise Distribution of Cancers (2016-2017)

Number (#) and Relative Proportion (%)

District Name	Males		Females		Total	
	#	%	#	%	#	%
Hisar	316	38.4	194	37.2	510	37.9
Bhiwani	146	17.7	86	16.5	232	17.2
Fatehabad	99	12.0	90	17.2	189	14.1
Jind	100	12.2	48	9.2	148	11.0
Sirsa	52	6.3	36	6.9	88	6.5
Kaithal	44	5.3	19	3.6	63	4.7
Rohtak	20	2.4	11	2.1	31	2.3
Karnal	10	1.2	8	1.5	18	1.3
Panipat	8	1.0	7	1.3	15	1.1
Kurukshetra	5	0.6	8	1.5	13	1.0
Sonipat	9	1.1	4	0.8	13	1.0
Jhajjar	6	0.7	4	0.8	10	0.7
Mahendragarh	3	0.4	4	0.8	7	0.5
Ambala	2	0.2	2	0.4	4	0.3
Faridabad	1	0.1	-	-	1	0.1
Panchkula	1	0.1	-	-	1	0.1
Rewari	-	-	1	0.2	1	0.1
Yamunanagar	1	0.1	-	-	1	0.1
Total	**823**	**100.0**	**522**	**100.0**	**1345**	**100.0**

**The above mentioned registered cases have duplicates from other center's which have been removed later while analysing district wise data*

Future of the Project and Recommendations

BRIEF NARRATIVE OF THE PROJECT

NCDIR -NCRP along with Office of DGHS has spear-headed the project and the following facts about the same are brought out:-

(a) The project has collated two years of data from all districts of Haryana. The consolidated data 2016-17 gives a complete picture of patterns of Cancer and incidence rate in the districts of Haryana.

(b) Besides creating awareness and strengthening cancer registration till CHC/PHC level, the data obtained through the project is both from urban as well as rural pockets of Haryana state. This gives an overview of cancer incidence rates in rural areas. It is noteworthy that very few Population Based Registries (PBCRs) covering rural areas exist in the country.

(c) The primary objective of the project has been achieved as the patterns of the cancers in each of the districts of Haryana state have emerged. The incidence rates for two completed years of data have also been calculated.

(d) The cost-effectiveness of the project is evident from per cancer case expenditure incurred on data collection in comparison to establishment of a PBCR which involves high cost, logistic problems and resources which are usually unaffordable in a developing country like ours.

(e) The project has acted as a boost to the existing cancer registry network within and outside state of Haryana. New HBCRs have joined the network and have started contributing data to NCRP. The project has acted as a catalyst for some HBCRs which had registered with NCRP but were idle and have now started active data transmission.

(f) Though collection of data of cancer is almost never real time (Globocan; CI V Vol. 10), in the Cancer Atlas Haryana, the data of 2016-17 has been received by December 2018. The analysis of this data is going on presently i.e., October 2018. The same pattern has been seen internationally, (refer international and national reports on cancer registration i.e., Globocan; CI V Vol. 10 and NCRP India).

(g) The project has given a snapshot of cancer registration in a state where earlier no functional registries existed. This Geographic area of India which was hitherto uncovered by the cancer registry network has been covered in the short duration of the project.

(h) The project has given an avenue of Human Resource Development in cancer registration as various workshops training staff have been conducted. Job opportunities for social workers, statisticians and programmers have also emerged.

FUTURE OF THE PROJECT/ WAY FORWARD

The project is coming to an end on as the funding was only there for three years. The possible directions that the future of the project can take are as follows:-

(a) **Continuation as a State wide Registry** Since the project is of National as well as state wide importance, and the qualitative and quantitative aspects of cancer date of Haryana data being collected are good, the project could continue for two more years. The funding aspects can be discussed in detail later. However, the aspect of timely release of funding for works and salaries needs to be ensured.

(b) **Establishment of Population Based Cancer Registry in suitable districts** It is recommended that a population Based Cancer Registry in districts of Rohtak and /or Ambala should be established. These districts have suitable institutions where the PBCR host institute may be set-up.

(c) All cancer centers, medical colleges and hospitals, diagnostic labs within and outside Haryana state to **continue transmitting data to NCDIR-NCRP using HBCRDM software.** New HBCRs who have joined the network and have started contributing data should continue doing so to NCRP. The project has acted as a catalyst for some HBCRs which had registered with NCRP but were idle and have now started active data transmission.

Appendix I

Development of an Atlas of Cancer in Haryana State

NATIONAL CANCER REGISTRY PROGRAMME

Indian Council of Medical Research

Core Form - Basic

I IDENTIFYING INFORMATION

1. Registration Number
(First 2 digits are for year of registration and the next 5 digits for actual registration number) ☐☐☐☐☐☐☐ Year Reg. No

2.1 Name of Participating Centre..... Centre Code ☐☐☐

2.2 Hospital Registration Number ☐☐☐☐☐☐☐☐☐☐

2.3 Date of Registration at Source of Registration /
Date of Reporting at this Hospital - Reporting Institution (RI) ☐☐☐☐☐☐ dd mm yy

2.4 (a) Name of Department / Unit .....

(b) Name of Physician..... Mobile No.....

3. Name of Source of Original Referral.....

4. Date of First Diagnosis
(Date of first attendance to any hospital for this disease - generally the earliest of dates) ☐☐☐☐☐☐ dd mm yy

5. Full Name of Patient ....
(At least one name is mandatory) First Second Last

6. Age (In years) ☐☐ Date of Birth ☐☐☐☐☐☐ dd mm yy

7. Sex: ◯ Male ◯ Female ◯ Others

8. Place of Residence: Place of usual residence (where the person has been residing for the past one year (at least))

Urban Areas (Town / Cities)

House No. .....

Road / Street Name .....

Area / Locality .....

Ward / Corporation / Division ☐☐☐

Name of City / Town.....

Non-urban / Rural Areas

House No. and Ward .....

Name of Gram Panchayat / Village, etc.

.....

Name of Sub-Unit of District (Taluk / Tehsil / Other)

.....

Name of PHC / Sub Centre .....

Name of District (in capitals) ..... Postal Pin Code ☐☐☐☐☐☐

Telephone No(s).: Off. ..... Res. .....

Mobile ..... Email ID .....

Unique Identification Number.....

9. Duration of Stay (At the place of usual residence (in years)) ☐☐

II DIAGNOSTIC DETAILS

10.1 Broad Method of Diagnosis

◯ Clinical Only ◯ Microscopic ◯ X-Ray / Imaging Techniques ◯ DCO ◯ Others ◯ Unknown

■ - Mandatory; ■ - Recommended. 1 ◯ - Single Selection; ☐ - Multiple Selection.

10.2 DETAILED METHOD OF DIAGNOSIS

Microscopic

- ◯ Histology of Primary
- ◯ Histology of Metastasis
- ◯ Autopsy with Histology
- ◯ Bone Marrow
- ◯ Blood Film
- ◯ Cytology of Primary
- ◯ Cytology of Metastasis

X-Ray / Imaging Techniques

- ◯ X-Ray
- ◯ Isotopes
- ◯ Angiography
- ◯ Ultrasonogram
- ◯ All Others *(Specify)*.....

Others

- ◯ Endoscopy
- ◯ Surgery or Autopsy without Histology
- ◯ Specific Biochemical and / or Immunological Tests
- ◯ Others *(Specify)*.....

11. ANATOMICAL SITE OF SPECIMEN / BIOPSY / SMEAR.....

12.1 PATHOLOGY SLIDE NO. ☐

DATE *(Date of First Report)* ☐☐ *dd* ☐☐ *mm* ☐☐ *yy*

12.2 COMPLETE PATHOLOGICAL DIAGNOSIS: *(with complete description of Primary Site of Tumour and Morphological Diagnosis)*

(a) PRIMARY SITE OF TUMOUR - TOPOGRAPHY .....

(b) HISTOLOGY - MORPHOLOGY .....

13. SITE OF TUMOUR (ICD-10) .....

14. LATERALITY

- ◯ Not a paired site
- ◯ Right
- ◯ Left
- ◯ Only one site involved, right or left, unknown
- ◯ Bilateral involvement, lateral origin unknown
- ◯ Paired site, but no information concerning laterality

15. SEQUENCE

- ◯ One Primary Only
- ◯ First of two or more primaries
- ◯ Second of two or more primaries
- ◯ Third of three or more primaries
- ◯ Unspecified sequence number *(Unknown)*

III DETAILS OF STAGE AND TREATMENT

16. CLINICAL EXTENT OF DISEASE BEFORE TREATMENT

- ◯ Localised
- ◯ Direct Extension
- ◯ Regional Nodes
- ◯ Direct Extension with Regional Nodes
- ◯ Distant Metastasis
- ◯ Not Palpable
- ◯ Too Advanced
- ◯ Not Applicable / Unknown Primary
- ◯ Treated Elsewhere
- ◯ Recurrent
- ◯ Others *(Specify)*.....
- ◯ Unknown

17.1 STAGING SYSTEM FOLLOWED

- ◯ TNM
- ◯ FIGO
- ◯ Ann Arbor
- ◯ Others (Specify).....
- ◯ Not Applicable
- ◯ Unknown

17.2 TNM (TUMOUR, NODE, METASTASIS) T ☐ N ☐ M ☐

17.3 COMPOSITE STAGE ☐☐☐
(888 if not applicable)

18.1 CANCER DIRECTED TREATMENT GIVEN AT RI

- ◯ Yes
- ◯ No
- ◯ Treatment advised but not accepted
- ◯ Incomplete treatment
- ◯ Unknown

18.2 IF YES,

(a) TYPE OF TREATMENT GIVEN

- ☐ Surgery
- ☐ Radiotherapy
- ☐ Chemotherapy
- ☐ Hormone Therapy
- ☐ Others*(Specify)*.....
- ☐ Unknown

(b) DATE OF COMMENCEMENT OF TREATMENT AT RI ☐☐ *dd* ☐☐ *mm* ☐☐ *yy*

19. DATE OF DEATH ☐☐ *dd* ☐☐ *mm* ☐☐ *yy*

20. NAME OF PERSON COMPLETING FORM *(In capitals)* .....

Signature ..... Date ☐☐ *dd* ☐☐ *mm* ☐☐ *yy*

Appendix II

Definitions, Statistical terms and Methods used in Calculations

Cancer Case

All neoplasms with a morphology behaviour code of '3' / '6' as defined by the International Classification of Diseases – Oncology, (Third edition) are considered reportable and therefore registered. A person having diagnosed with a malignancy is considered as cancer case.

Age-Group

As per WHO guidelines for estimating population and grouping of cancers using five year age group i.e, 0-4, 5-9, 10-14,…, 75+. Age has been grouped 5 year wise. A child below one year age is considered as 0.

Incidence Cases

Cancer incidence refers to new cases diagnosed in a given population in a specified period of time. For example all new cancers diagnosed from 1 January 2016 to 31 December 2017 in defined geographic area will be registered.

Rates: Rates for cancer are always expressed per 100,000 population.

Crude Incidence Rate (CR)

This rate is expressed per 100,000, obtained by dividing the number of new cases by the corresponding estimated population (mid-year) and multiplying by 100,000.

$$CR = \frac{\text{New cases of cancer of a particular year}}{\text{Estimated population of the same year}} \times 100{,}000$$

This is the number of new cases per 1, 00, 000 population in a defined geographic area in a specified time period.

Age Specific Rate (ASpR):

For a specified five-year age group and sex the age specific rates are the annual number of cases per 100,000 people in the population of that age and sex.

$$ASpR = \frac{\text{New cases of cancer of a particular year in the given age group}}{\text{Estimated population of the same year for the given age group}} \times 100{,}000$$

This is the number of new cases of a particular age group per 1,00,000 Population of the same age group.

Age Adjusted or Age Standardised Rate (AAR):

The age-adjusted rates are rates that would have existed if the population under study had the same age distribution as the "standard " population. Age adjusting rates is a way to make fairer comparisons between groups with different age distributions. The world standard population approximates the proportional age distribution of the world and is given below:

Age Group	World Standard Population
0-4	12000
5-9	10000
10-14	9000
15-19	9000
20-24	8000
25-29	8000
30-34	6000
35-39	6000
40-44	6000
45-49	6000
50-54	5000
55-59	4000
60-64	4000
65-69	3000
70-74	2000
75+	2000
All ages	100000

Where: ai is the age specific rate (ASpR) in age class i; wi is the world standard population in age class i; A represents the number of age intervals.

(or) expressed in more simpler terms thus:

$$AAR = \frac{\text{(ASpR) × (No. of persons in Std. world population in that 5 yr. age group)}}{100{,}000}$$

Age standardized rate expresses the number of new case per 100,000 population of world standard population so that the rate can the compared among different population on whose age structure are different such as India and USA.

Truncated Age Adjusted Rate (TR):

Similar to age adjusted rate except that it is calculated for the truncated age group of 35-64 years of age. The truncated rate is actually express the incidence in the most vulnerable age group (35 - 64) for cancer.

Cumulative Risk (Cum.Risk):

This is the probability that an individual will be diagnosed with or die from cancer during a certain age period in the absence of any competing cause of death and assuming current trends prevail over the age period. The cumulative rate is an approximation of the cumulative risk. It is obtained by adding the age specific incidence rates for each five year age interval (up to 64 or 74 years of age) multiplied by 5 (representing the five year age interval) times 100 per 100,000.

$$\text{Rate} = \frac{\text{5 X (ASpR) X 100 Cumulative}}{100{,}000}$$

and Cumulative Risk is expressed as,

Cumulative Risk = 100 X (1– exp(– Cumulative Rate / 100))

This is the risk of an individual to develop cancer in their lifetime 0-74 years.

Population Estimation:

The growth rate of the population between the census years 2001 and 2011 has been used (through the Difference Distribution Method of Takiar and Shobana, 2009) to estimate the mid-year populations (five year age group and total) for the years, 2016 to 2017. The Census Population for the year 2001 and 2011 were obtained from the website http://www.censusindia.gov.in.

Appendix III

Site Code (ICD-10)	Topography Site Name	Grouped Name	Acronym
C00	Malignant neoplasm of lip	Lip	Lip
C01	Malignant neoplasm of base of tongue	Tongue	Tongue
C02	Malignant neoplasm of Other and unspecified parts of tongue		
C03	Malignant neoplasm of gum	Mouth	Mouth
C04	Malignant neoplasm of floor of mouth		
C05	Malignant neoplasm of palate		
C06	Malignant neoplasm of other and unspecified parts of mouth		
C07	Malignant neoplasm of parotid gland	Salivary glands	Salivary Gl.
C08	Malignant neoplasm of other and unspecified major salivary glands		
C09	Malignant neoplasm of tonsils	Tonsils	Tonsil
C10	Malignant neoplasm of oropharynx	Other Oropharynx	Oth. Oroph.
C11	Malignant neoplasm of nasopharynx	Nasopharynx	Nasopharynx
C12	Malignant neoplasm of pyriform sinus	Hypopharynx	Hypopharynx
C13	Malignant neoplasm of hypopharynx		
C14	Malignant neoplasm of other and ill-defined sites in the lip, oral cavity and pharynx	Pharynx unspecified	Pharynx Uns.
C15	Malignant neoplasm of oesophagus	Oesophagus	Oesophagus
C16	Malignant neoplasm of stomach	Stomach	Stomach
C17	Malignant neoplasm of small intestine	Small Intestine	Small Intestine
C18	Malignant neoplasm of colon	Colon	Colon
C19	Malignant neoplasm of rectosigmoid junction	Rectum	Rectum
C20	Malignant neoplasm of rectum		
C21	Malignant neoplasm of anus and anal canal	Anus etc	Anus
C22	Malignant neoplasm of liver and intrahepatic bile ducts	Liver	Liver
C23	Malignant neoplasm of gallbladder	Gallbladder etc	Gallbladder
C24	Malignant neoplasm of other and unspecified parts of biliary tract		
C25	Malignant neoplasm of pancreas	Pancreas	Pancreas
C26	Malignant neoplasm of other and ill-defined digestive organs	Others & Unspecified	O&U
C30	Malignant neoplasm of nasal cavity and middle ear	Nose, Sinuses etc	Nose
C31	Malignant neoplasm of accessory sinusesmn		
C32	Malignant neoplasm of larynx	Larynx	Larynx
C33	Malignant neoplasm of trachea	Lung etc	Lung
C34	Malignant neoplasm of bronchus and lung		
C37	Malignant neoplasm of thymus	Other thoracic organs	Oth. Tho. Org
C38	Malignant neoplasm of heart, mediastinum and pleura		

C39	Malignant neoplasm of other and ill-defined sites in the respiratory system and introthrocic organs	Others & Unspecified	O&U
C40	Malignant neoplasm of bone and articular cartilages of limbs	Bone	Bone
C41	Malignant neoplasm of bone and articular cartilages of other and unspecified sites		
C43	Malignant melanoma of skin	Melanoma of skin	Melanoma of skin
C44	Other malignant neoplasms of skin	Other skin	Other skin
C45	Mesothelioma	Mesothelioma	Mesothelioma
C46	Kaposi sarcoma	Kaposi sarcoma	Kaposi sarcoma
C47	Malignant neoplasm of of peripheral nerves and autonomic nervous system	Connective and soft tissue	Conn. Tissue
C49	Malignant neoplasm of other connective and soft tissue		
C48	Malignant neoplasm of retro peritoneum and peritoneum	Others & Unspecified	O&U
C50	Malignant neoplasm of breast	Breast	Breast
C51	Malignant neoplasm of vulva	Vulva	Vulva
C52	Malignant neoplasm of vagina	Vagina	Vagina
C53	Malignant neoplasm of cervix uteri	Cervix Uteri	Cervix Uteri
C54	Malignant neoplasm of corpus uteri	Corpus Uteri	Corpus Uteri
C55	Malignant neoplasm of uterus, part unspecified	Uterus unspecifed	Uterus Uns.
C56	Malignant neoplasm of ovary	Ovary	Ovary
C57	Malignant neoplasm of other and unspecified female genital organs	Other female genital organs	Oth. Fem. Gen.
C58	Malignant neoplasm of placenta	Placenta	Placenta
C60	Malignant neoplasm of penis	Penis	Penis
C61	Malignant neoplasm of prostate	Prostate	Prostate
C62	Malignant neoplasm of testis	Testis	Testis
C63	Malignant neoplasm of other and unspecified male genital organs	Other male genital organs	Oth. Male Org.
C64	Malignant neoplasm of kidney, expect renal pelvis	Kidney	Kidney
C65	Malignant neoplasm of renal pelvis	Renal pelvis	Renal pelvis
C66	Malignant neoplasm of ureter	Ureter	Ureter
C67	Malignant neoplasm of bladder	Bladder	Bladder
C68	Malignant neoplasm of other and unspecified urinary organs	Other urinary organs	Oth. Uri. Org.
C69	Malignant neoplasm of eye and adnexa	Eye	Eye
C70	Malignant neoplasm of meninges	Brain, Nervous system etc	Brain, NS.
C71	Malignant neoplasm of brain		
C72	Malignant neoplasm of spinal cord, cranial nerves and other parts		
C73	Malignant neoplasm of thyroid gland	Thyroid	Thyroid
C74	Malignant neoplasm of adrenal gland	Adrenal gland	Adrenal gland
C75	Malignant neoplasm of other endocrine glands and related structures	Other endocrine	Oth. Endocrine
C76	Malignant neoplasm of other and ill -defined sites	Other & Unspcified	O&U

C81	Hodgkin's disease	Hodgkin's disease	Hodgkins Dis.
C82	Follicular (nodular) non-Hodgkin's lymphoma	Non-Hodgkin's lymphoma	NHL
C83	Diffuse non-Hodgkin's lymphoma		
C84	Peripheral and cutaneous T-cell lymphomas		
C85	Other and unspecified types of non-Hodgkin's lymphoma		
C96	Other and unspecified Malignant neoplasms of lymphoid, haematopoietic and related issue		
C88	Malignant immune proliferative diseases	Immuno proliferative diseases	Imm. Dis.
C90	Multiple myeloma and malignant plasma cell neoplasms	Multiple myeloma	Multi. Myeloma
C91	Lymphoid leukemia	Lymphoid leukemia	Lymph. Leuk.
C92	Myeloid leukemia	Myeloid leukemia	Myel. Leuk.
C93	Monocytic leukemia		
C94	Other leukaemias of specified cell type		
C95	Leukemia of unspecified cell type	Leukemia unspecified	Leuk. Uns.

List of Topography sites with ICD-10 code with mode of grouping for determining leading sites of cancers and acronyms used in figures of bar charts.

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