

PRELIMINARY PAGES

Title Page..... i

Contents v

Acknowledgements vi

Foreword vii

Preface viii

Executive Summary ix

NATIONAL CANCER REGISTRY PROGRAMME

Indian Council of Medical Research

Time Trends in Cancer Incidence Rates 1982-2005

Bangalore, India

April 2009

© National Cancer Registry Programme
(Indian Council of Medical Research)
No. 557, 'Srinivasa Nilaya'
7th Main, New BEL Road, Dollars Colony
Bangalore - 560 094, INDIA.
Email: ncrp@ncrpindia.org, ncrpblr@canceratlasindia.org

April 2009

Population based cancer registries provided individual core data. Quality Control checks, tabulations and statistical analysis were done at the Coordinating Unit of NCRP, Bangalore.

The publications of NCRP are intended to contribute to the dissemination of authentic information on cancer incidence by age (Five-year age groups), sex and site (ICD-10).

PRINTED IN INDIA

Published by the Coordinating Unit, National Cancer Registry Programme (ICMR), Bangalore 560094

This printed report can be viewed on the website www.pbcindia.org

NATIONAL CANCER REGISTRY PROGRAMME

Indian Council of Medical Research

Dr V.M. Katoch

Secretary, Department of Health Research & Director General

Dr S.K. Bhattacharya
Additional Director General

Dr N.K. Ganguly
Former Director General (till Nov. 2007)

Division of Non-Communicable Diseases

Dr Bela Shah
Head & Sr Deputy Director General

Dr A. Nandakumar
Dy Director General (Sr Gr) &
Officer-in-Charge, NCRP

Dr Kishor Chaudhry
Dy Director General (Sr Gr)

Dr T. Ramnath
Dy Director General (Sr Gr)

Steering/Monitoring Committee

Dr G.K. Rath, New Delhi

Dr Usha K. Luthra, New Delhi

Dr P.C. Gupta, Mumbai

Dr Radhakrishna, Hyderabad

Dr Padam Singh, Gurgaon

Dr R.N. Visweswara, Bangalore

Dr J.P. Muliylil, Vellore

Mr P. Gangadharan, Ernakulam

Dr Kusum Verma, New Delhi

Dr Kusum Joshi, Chandigarh

Dr A.C. Katak, Guwahati

Dr P.S.S. Sundar Rao, Bangalore (till Sept. 2007)

Dr B.D. Gupta, Chandigarh (till Sept. 2007)

Dr N.C. Misra, Lucknow (till Sept. 2007)

Population Based Cancer Registries at the following places (with names of respective Principal and Co-Principal Investigators/Senior Staff)

Ahmedabad District : **Dr Pankaj M. Shah**

Dr Shilin Shukla
Dr Parimal J. Jivarajani

Bangalore : **Dr Ashok M. Shenoy (from Sept. 2008)**
Dr Bapsy Padmanabhan (till Sept. 2007)

Dr K. Ramachandra Reddy

Barshi : **Dr R.A. Badwe**
Dr K.A. Dinshaw (till Nov. 2008)

Dr B.M. Nene

Bhopal : **Dr Neelkamal Kapoor**
Dr V.K. Bharadwaj (till March 2006)

Mr Atul Shrivastava

Chennai : **Dr V. Shanta**

Dr R. Swaminathan

Delhi : **Dr Vinod Raina**
Dr Kusum Verma (till Sept. 2004)

Dr B.B. Tyagi

Kolkata : **Dr Jaydip Biswas**

Dr M.N. Bandyopadhyay
Dr Karabi Datta

Mumbai : **Dr Arun P. Kurkure**

Dr B.B. Yeole

North Eastern Regional Cancer Registry

Monitoring Unit: Dr J. Mahanta, Director, Regional Medical Research Centre (N.E.) (ICMR), Dibrugarh.

Chairman, Projects in North East Region : Prof. R.C. Mahajan, Chandigarh.

Coordinator of Special Cell : Dr M.N. Bandyopadhyay, Kolkata.

North East Population Based Cancer Registries with Names of Principal Investigators

Dibrugarh District : **Dr M.S. Ali**

Manipur State : **Dr Y. Mohen Singh**

Kamrup Urban District : **Dr Jagannath D. Sharma**

Mizoram State : **Dr Eric Zomawia**

Cachar District : **Dr Sekhar Chakravarty**

Sikkim State : **Dr Yogesh Verma**

Staff at Co-ordinating Unit of NCRP, Bangalore given overleaf.

Other Cancer Registries Under NCRP Network (with Names of Principal Investigators)

Population Based

Ahmedabad Urban : **Dr Pankaj M. Shah**
Pune, Nagpur &
Aurangabad : **Dr B.B. Yeole**
Kollam : **Dr K. Ramachandran**
Thi'puram* : **Dr Aleyamma Mathew**

Hospital Based

Bangalore : **Dr Ashok M. Shenoy** (from Sept. 2008)
Dr Bapsy Padmanabhan (till Sept. 2007)
Chennai : **Dr V. Shanta**
Dibrugarh : **Dr T.R. Borbora**
Dr D. Hazarika (till June 2007)
Mumbai : **Dr K.A. Dinshaw** (till Nov. 2008)
Thi'puram* : **Dr K. Ramachandran** (from Nov. 2008)
Dr B. Rajan (till Oct. 2008)

(*Thiruvananthapuram)

Staff at Co-ordinating Unit of NCRP, Bangalore (including project staff)

Dr A. Nandakumar, Deputy Director General (Sr Gr) & Officer-in-Charge

Dr T. Ramnath, Deputy Director General (Sr Gr)

Dr N.S. Murthy, Emeritus Medical Scientist

Dr Meesha Chaturvedi, Research Scientist - II (Med.)

F.S. Roselind, Research Scientist - III

Priyanka Das, Research Scientist - I

K.S. Vinay Urs, Research Scientist - I

K.L. Sudarshan, Programmer

Anish John, Programmer

Akanksha Tiwari, Programmer

G.C. Shivayogi, Accounts Officer

G. Jayaram, Administrative Officer

N.M. Ramesha, Personal Assistant

K.R. Chandrika, Sr. Technical Assistant

Deenu Nadayil, Statistician

Melbin John, Statistician

C. Somasekhar, Data Entry Operator

V. Manjusha Bai, Data Entry Operator

IT Consultant :

B.S. Girish, Akshara Technologies, Bangalore.

Other Staff :

M. Rajendra, D.N. Narayana Swamy, Chandramma

CONTENTS

<i>Acknowledgements</i>	<i>vi</i>
<i>Foreword</i>	<i>vii</i>
<i>Preface</i>	<i>viii</i>
<i>Executive Summary</i>	<i>ix</i>
Chapters:	
1. Introduction	1
2. Materials and Methods	2
3. Individual Registry - Leading Site Graphs	4
4. Trends Over Time for all Sites and on Selected Leading Sites of Cancer	18
5. Projection of Burden of Cancer	80
References	82
Addresses	83

ACKNOWLEDGEMENTS

*Dr V. M. Katoch, Secretary, Department of Health Research &
Director General, ICMR;*

Dr Bela Shah, Head, Division of NCD, ICMR;

Principal Investigators and Staff of Population Based Cancer Registries;

Cooperating hospitals, nursing homes and other medical institutions;

All other Population and Hospital Based Cancer Registries;

Members of Steering Committee;

Members of Monitoring Committee;

Staff of Division of NCD, ICMR, New Delhi;

Staff of Coordinating Unit, NCRP, Bangalore.

FOREWORD

I am pleased to write this foreword for the report on “Time Trends in Cancer Incidence Rates from 1982-2005”. ICMR registries have been a major source on type of cancers prevalent in different parts of India. This report covers data for the twenty four year period for the population based cancer registries at Bangalore, Chennai and Mumbai and for an eighteen year period for the registries at Barshi, Bhopal and Delhi.

This is the first report from our country depicting changes in the incidence rates of cancer and is the first for any chronic disease in India. Over the years, the Indian population has seen considerable changes in habits, lifestyle as also variation in the socio-cultural milieu. Advances in cancer diagnostic techniques and treatment facilities have added to the changes. There is an increase in awareness about cancer by the average public.

Against the above background, this scientific information on changing trends in incidence rates of cancer is timely. This data can be useful for planning systemic studies based on specific populations and cohorts. Certain anatomical sites of cancer have shown significant steady increase across all registries, whereas a few other sites have shown a rise in only some registries. Overall there appears a need to redraw priorities towards cancer control, cancer research and patient care.

This report is the culmination of systematic effort by the staff of the population based cancer registries and its principal investigators including those at the Coordinating Unit of the NCRP. All of them deserve special appreciation for the dedicated work of gathering, compiling, analyzing data and preparing this scientific report.



Dr V.M. Katoch
Secretary, Department of Health Research &
Director General, ICMR

PREFACE

The National Cancer Registry Programme (NCRP) was established under the Indian Council of Medical Research in 1981 with the aim of looking at the incidence and distribution of cancer in the country. Three hospital-based and three population-based cancer registries (PBCRs) commenced data collection from 1 January 1982. Three more PBCRs started functioning from 1988. Following the report of the Development of an Atlas of Cancer in India, seventeen other PBCRs have started functioning in more recent years.

The present report depicts Trends in Incidence Rates of Cancer from 1982 for the three older PBCRs and from 1988 for the three PBCRs commenced subsequently. Data collected by the PBCRs are thoroughly checked for quality and completeness before the reports of the respective years are finalized. Despite growing number of cancer centres within the city, every effort is made by the PBCRs to collect information from all sources where cancer is diagnosed and / or treated. The advent and optimal use of Information Technology in capturing and transmitting data is facilitating in improving the data coverage and data quality.

This report has undergone considerable discussions at the Annual Review Meetings of the NCRP and also amongst the various experts in the field. One of the objectives with which the NCRP was commenced was to aid cancer control programmes including the National Cancer Control Programme of India. Though the population covered by the six registries, that go into this publication is small, it does give a fair picture of the direction in which the different anatomical sites of cancer are changing, rising in some instances and declining or stabilising in others.

The results reported are likely to serve as an important resource for multi-institutional research in cancer and its control.



Dr Bela Shah
Head, Division of Non-Communicable Diseases, ICMR

Time Trends in Cancer Incidence Rates : 1982-2005

Executive Summary

Since the commencement of the National Cancer Registry Programme in 1982, annual, bi-annual and consolidated reports have been regularly published. A brief picture on time trends in incidence rates was depicted in the consolidated report for the years 1990-96 (*NCRP, 2001*). This publication is the first systematic report on trends in incidence rates over a period of about two decades.

The registry data on which the time trends in cancer incidence rates have been depicted, essentially cover urban populations that display rapid life style changes. Diagnostic and detection technologies have increasingly improved since commencement of cancer registration and are now disbursed in several centres in these registry areas. These factors have to be kept in mind while interpreting the results.

There has been a steady and consistent increase in the age adjusted incidence rates of certain cancers across all major urban registries. Such an increase in these specific anatomical sites of cancer, in the light of known risk factors, population dynamics and changing life styles therein is not unexpected. They are also consistent with that observed in the developed world. The anatomical sites that fall into this category are outlined below. Among males, cancers of the prostate, colon, rectum and liver, have shown statistically significant increase in incidence. Cancer of the prostate is the leading site of cancer among males in most of the western countries as is cancer of the colon. Among females, cancers of the breast, corpus uteri and lung have shown a rise. While the first two of these cancers could be accounted for because of cohorts, with later age at marriage, decreasing multi-parity and so on, the increase in lung cancer could directly be attributed to increased use of tobacco smoking by women. Lung cancer in women may also be increasing because of environment exposure to smoking (passive smoking).

Three other sites of cancer that have shown an increase in incidence rates in women are ovary, thyroid and gallbladder. The last is seen in registries that have recorded a comparatively lower incidence than Delhi, which showed an increasing trend only during the earlier years, with a decline in more recent years. Both males and females have recorded rising incidence rates for cancers of the brain as well as in tumours of the lymphoid and haemopoetic system, especially non-Hodgkin's Lymphoma.

While increase in the incidence of cancer over time is along the patterns of that observed for chronic diseases, a decline in incidence rates (with few exceptions) needs explanation and further study.

The decline in the incidence of cancer cervix is seen across all registries including the rural registry at Barshi. This decline is observed in the absence of any organized screening or early detection programmes in the registry areas. The same factors like later age at marriage, fewer children that could be contributing

to increased breast cancer could possibly be responsible for the decline in the incidence of cancer cervix. Another possible reason for the decline could be due to the increased number of child births at institutions (as opposed to home deliveries) culminating in improved maternal and maternity care including genital hygiene. This could be the consequence of the family planning drive initiated by the government about four decades back and which is continuing. Better genital hygiene, barrier contraceptive use, superior nourishment could have all contributed to the reducing incidence of cancer of the cervix.

The decrease in incidence rates of cancer of oesophagus, in both males and females and cancer stomach in males could possibly be due to changes or improved nutrition, better methods of preserving of food etc. Aside from the above, this report does give certain figures that cannot be easily rationalized. The decline in the incidence of lung cancer among males in Mumbai and also in Bhopal especially in more recent years are points to be noted. Similarly, the downward trend in incidence rates during recent years for all anatomical sites combined in males and females in Mumbai and males in Bhopal also requires further study. Such studies would have to include assessment of coverage of cases by sources of registration particularly, because most cities and towns in India have had a spurt in oncology centres including radiotherapy facilities.

The last chapter of this report attempts to project the number of cancer cases by selected leading sites. This is based on the more recent trends in the incidence rates published in this report and the latest two-year (2005-2006) report of the six population based cancer registries in the North East of the country (NCRP, 2008). Since the older registries are predominantly urban and the majority of the Indian population is rural, there were complexities in arriving at logical estimates. Nonetheless, this has been worked out and the chapter provides a reasonably accurate burden of cancer.

Priorities for Cancer Control

The cancer registry is central to any rational programme on cancer control (Muir, 1985). With information on trends over time, there appears to be a need for reassessing priorities for cancer control. The overall thrust of the cancer control programme towards anti tobacco education / legislation and control of cancer cervix is largely unchanged. However, certain specific pointers emerge from this report.

The rate of increase in the incidence of cancer of the lung among women is glaring calling for systematic evidence based and focused anti-tobacco campaigns targeting the urban woman. Two other cancers in women that are increasing and for which, promotion of awareness for early detection is required are cancers of the breast and corpus uteri.

Among males, nationwide screening programmes for cancer of the prostate, colon and rectum are essential.

While control of tobacco use has to be constantly emphasised, the importance of obesity control and genital hygiene could be propagated. The necessity for early detection should be increasingly highlighted along with public education and self examination methods. The role of registries would ultimately be made applicable with overall trend studies as well as trends of stage at disease presentation.

Priorities for anatomical site specific Cancer Research

In the present background, cancer research could comprise epidemiological research, basic laboratory research or cancer control research or a combination of these. Risk factors, such as tobacco and its association with specific anatomical sites of cancer are well known. However, in the Indian context some of the tobacco habits (like types of tobacco chewed, beedi smoking) vary in different parts of the country and India specific tobacco related cancer research is required. Besides, this report has shown several specific sites of cancer that are rising in incidence rates. These are cancers of the prostate, colon, rectum and liver in men and thyroid & gallbladder in women. In both sexes, tumours of the brain and nervous system and the lymphoid and haemopoietic malignancies have shown a rise. This calls for systematic epidemiological research preferably taking into account laboratory parameters for each of these sites of cancer. One of the outstanding features noted relate to the contrasting incidence of certain cancers in relation to geographic locations. Cancers of the gall bladder and thyroid are prominent examples. These provide unique opportunities for multi-centric case control studies which have to be systematized now.

Similarly, there are no definitive directly replicable models for early detection / screening of cancers of the thyroid, gall bladder, rectum, liver, ovary and corpus uteri. The first four sites are country specific and research into various modules for cancer control need to be done.

Priorities for anatomical site specific Clinical Research

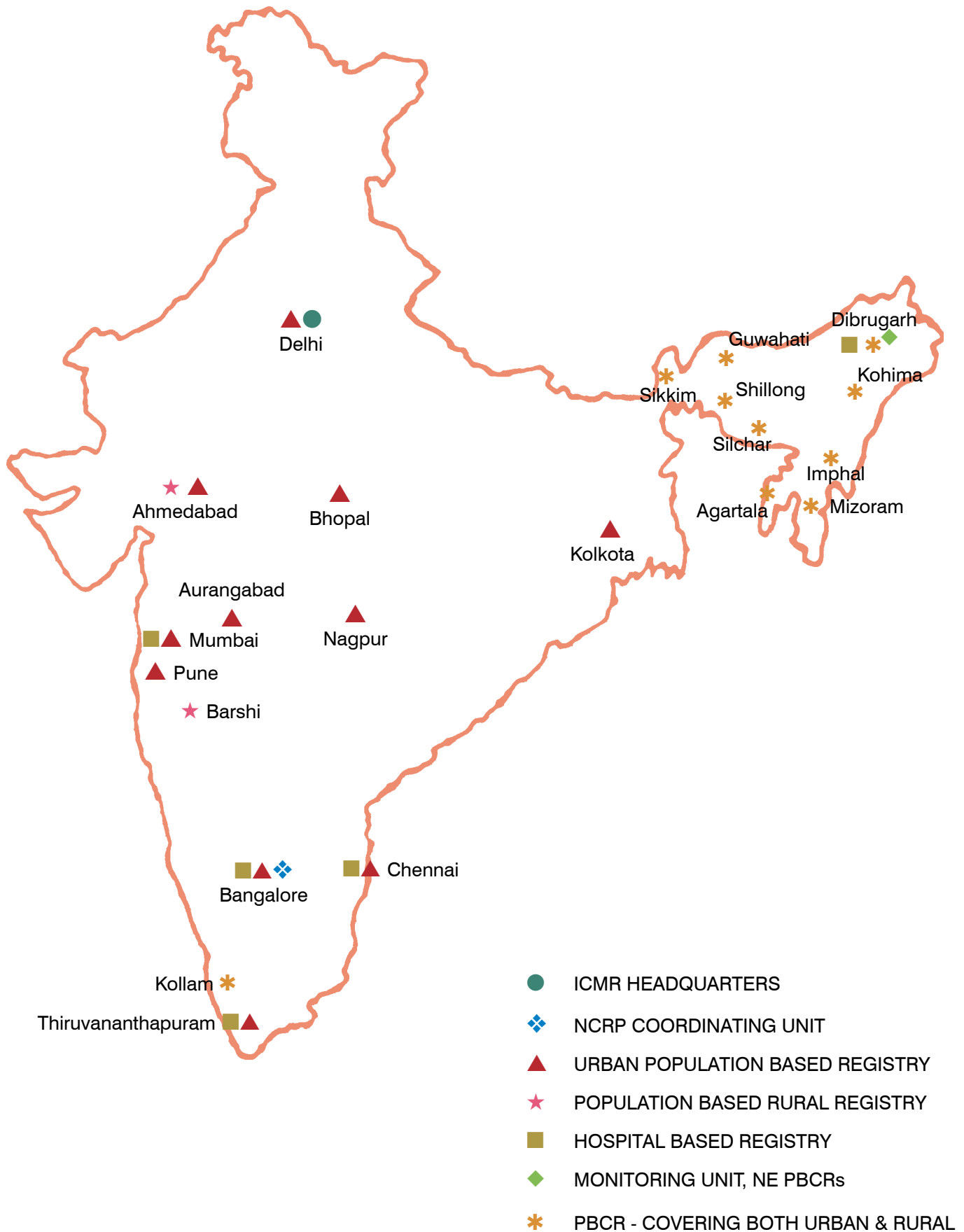
There are international and standard guidelines for clinical staging and protocols for treatment of most cancers, including the ones that are showing an increase in this report. Their applicability in our settings needs detailed studies and investigations. This seems particularly important for cancers of the prostate, colon and rectum in men and for cancers of the breast, ovary, corpus uteri and thyroid in women.



Dr A. Nandakumar
Officer-in-Charge, NCRP

NATIONAL CANCER REGISTRY PROGRAMME

(Indian Council of Medical Research)



Chapter 1

INTRODUCTION

A common question of interest is “Is Cancer on the Rise?”. Cancer is known to be a disease that increases in incidence with increasing age. Control of communicable diseases, has increased life expectancy and therefore exposed more of the population towards the development of cancer. The increase in population due to growth also contributes to the increase in the number of cancer cases. Improved literacy, greater consciousness about health in general and awareness about cancer in particular makes more and more people seek medical advice at an earlier stage. Availability of sophisticated and improved diagnostic techniques aid in detection of tumours that would have been missed at earlier times. The question is whether cancer is on the increase after accounting for these factors and whether that rise is statistically significant.

One measure of determining such an increase would be to examine the age adjusted incidence rates (AAR) over time. This may or may not take into account all of the factors mentioned above. Nonetheless, it would give some indication of the trends in the disease. Cancer being a chronic disease (and unlike infectious diseases) with generally a long latent period and a rather prolonged clinical phase, year to year variations are slight. Therefore, in assessing time trends in AAR, the normal practice in registries across the world is to look at five yearly rates over decades. This would give a more definitive indication of the course of the disease. Nonetheless, the data presented here gives a fair account of the direction in which the incidence rates of the leading sites of cancer are proceeding across the years. Based on this, the report also provides an estimate of the burden of specific sites of cancer for the next decade. Such estimates will greatly facilitate deciding on priorities and planning site specific cancer control activities.

Cancer of the Corpus Uteri showed an increase in incidence rates in the four metros. The Annual Percentage Change (APC) was 5.8 in Bangalore and 3.8 in Delhi.

The Annual percentage of increase in cancer prostate in Chennai was 4.7 and 3.1 in Delhi.

In Chennai and Bangalore both males and females showed an increase in brain tumours. The annual percentage change was highest in Chennai females with an APC of 4.6.

Chapter 2

MATERIALS AND METHODS

The numerator data of all registries has undergone a series of range and consistency checks each year and again before preparing this report. Clarifications were sought wherever required from the respective PBCRs and the data finalised thereafter.

The difference distribution method (*Takiar & Shobana, 2009*) for estimating the calendar year wise denominator population by five year age group has been used. This was based on the census data of 1981, 1991 and 2001.

In determining the significance of trends, the actual value of the AAR rate for each year has been used. The significance of time trend in each PBCR was assessed based on the methods and formula provided by Boyle and Parkin, 1991 in the chapter from the IARC publication on Cancer Registration. In addition, the Joinpoint Regression Program of the NCI of USA has been used (*Kim et al, 2001*).

About Joinpoint Regression Program:

Joinpoint Regression Program, Version 3.0, is statistical software for the analysis of trends using Joinpoint models, that is, where several different regression lines are connected together at the “Joinpoints”. Cancer trends reported in NCI publications are calculated using the Joinpoint Regression Program to analyze rates calculated by the SEER. The software takes trend data (e.g. cancer rates) and fits the simplest Joinpoint model that the data allow. The user supplies the minimum and maximum number of Joinpoints. The program starts with the minimum number of Joinpoint (e.g. 0 Joinpoint, which is a straight line) and tests whether more Joinpoints are statistically significant and must be added to the model (upto that maximum number). This enables the user to test that an apparent change in trend is statistically significant. The tests of significance use a Monte Carlo Permutation method. The models may incorporate estimated variation for each point (e.g. when the responses are age adjusted rates) or use a Poisson model of variation. In addition, the models may also be linear on the log of the response (e.g. for calculating annual percentage rate change). The software also allows viewing one graph for each Joinpoint model, from the model with the minimum number of Joinpoints to the model with the maximum number of Joinpoints (*Kim et al, 2001*). For the report purposes, one Joinpoint model wherever feasible has been fitted to the data. It may be pointed out that whenever a strong linear trend exists in the data the one Joinpoint model results will tally exactly with that of linear regression method.

This report is based on the data of six PBCRs – viz., Bangalore, Barshi, Bhopal, Chennai, Delhi and Mumbai. For the PBCRs at Bangalore, Mumbai and Chennai, the data available is from 1982. Accordingly, the trend in AAR over time is for the 24 year period from 1982 to 2005. The PBCRs at Barshi, Bhopal and Delhi commenced from 1988. Accordingly, the time trend is for the 18 year period from 1988 to 2005.

While depicting the results of specific anatomical sites of cancer in chapter 4, those sites with fewer than 10 cases for any given year have been excluded. This is mostly seen in the case of Barshi and Bhopal PBCRs and in sites of cancer other than the first five or six leading sites.

Among males, cancers of the prostate, colon, rectum and liver, have shown statistically significant increase in incidence. Cancer of the prostate is the leading site of cancer among males in most of the western countries as is cancer of the colon. Among females, cancers of the breast, corpus uteri and lung have shown a rise.

Both males and females have recorded rising incidence rates for cancers of the brain as well as in tumours of the lymphoid and haemopoetic system, especially non-Hodgkin's Lymphoma.

Three other sites of cancer that have shown an increase in incidence rates in women are ovary, thyroid and gallbladder.

Among males in Bangalore, during 1982–83, stomach was the leading site of cancer and it continues to be so twenty four years down the line. In females in Bangalore, cancer of the lung that did not appear among ten leading sites in 1982-83 is the tenth leading site during 2004-05.

In males in Bhopal, cancer of the lung and mouth were the first and third leading sites earlier and have become the first two leading sites in 2004-05.

In males in Chennai, stomach was the leading site of cancer during 1982-83 and this site has been replaced by lung in more recent years.

Chapter 3

INDIVIDUAL REGISTRY - LEADING SITE GRAPHS

The following bar graphs provide the comparison of the leading sites of cancer for the first two years of registry operation and the recent two years data. This will be 1982–83 and 2004–05 for the PBCRs at Bangalore, Mumbai and Chennai and 1988-89 and 2004-05 for the registries at Barshi, Bhopal and Delhi.

Bangalore (Figure 3.1(a) & 3.1(b)) :

Males: Among males, during 1982–83, stomach was the leading site of cancer and it continues to be so twenty four years down the line. Cancer of the prostate was the tenth leading site in the earlier years and is now the fourth leading site. Cancers of the brain and colon that were not, are now among ten leading sites in 2004–05.

Females: Among females, cancer of the breast has replaced cancer of the cervix as the leading site. Cancers of the corpus uteri and ovary have increased in their ranking. Cancer of the lung that did not appear among ten leading sites in 1982-83 is the tenth leading site during 2004-05.

Barshi (Figure 3.2(a) & 3.2(b)) :

Males: Cancers of the hypopharynx and oesophagus continue to be the first two leading sites among males in Barshi. Cancer of the brain has appeared among the leading sites of cancer as also non-Hodgkin's Lymphoma (NHL).

Females: Among females, cancer of the cervix uteri continues to be the leading site. Cancer of the lung has appeared as the fifth leading site during 2004-05.

The data from Barshi is in relatively small numbers because of the smaller geographic area covered. Therefore, caution needs to be observed in interpreting this data.

Bhopal (Figure 3.3(a) & 3.3(b)) :

Males: Cancer of the lung and mouth were the first and third leading sites earlier and have become the first two leading sites in 2004-05. Cancer of the prostate has increased in ranking. The new sites of cancer that have appeared among the ten leading sites during 2004-05 are non-Hodgkin's Lymphoma, liver and myeloid leukaemia.

Females: Among females, as in other urban registries, cancer of the breast has replaced cancer of the cervix as the leading site of cancer and cancer of the ovary has risen in rank as the third leading site.

Chennai (Figure 3.4(a) & 3.4(b)) :

Males: Stomach was the leading site of cancer during 1982-83 and this site has been replaced by lung in more recent years. Cancers of the prostate and rectum have appeared as the seventh and tenth leading site of cancer. These sites were not seen among ten leading sites during 1982-83.

Females: Among females, cancer of the breast has replaced cancer of the cervix as the first leading site of cancer. Cancer of the ovary which was the fifth leading site earlier has gone up in rank. Cancer of the lung with brain and corpus uteri have appeared as the eighth and ninth leading sites of cancer during 2004-05.

Delhi (Figure 3.5(a) & 3.5(b)) :

Males: Cancer of the lung was and is the leading site of cancer among males. Cancer of the prostate which was the eighth leading site during 1988-89 has become the second leading site during 2004-05.

Females: Cancer of the breast has replaced cancer of the cervix as the leading site. Cancer of the ovary and gall bladder continue to be the third and fourth leading sites. Cancer of the corpus-uteri which was the tenth leading site has become fifth leading site of cancer. Cancer of the lung was not among the ten leading sites during 1988-89 has become sixth leading site during 2004-05.

Mumbai (Figure 3.6(a) & 3.6(b)) :

Males: Cancer of the lung continues to be the leading site of cancer. Cancer of the prostate which was the eighth leading site has now become the third leading site of cancer. Cancer of the brain which was not among ten leading sites during 1982-83 has become the tenth leading site of cancer.

Females: Cancer of the breast continues to be the leading site of cancer for almost a quarter of a century. Cancers of the ovary, lung and corpus uteri have gone up in their ranking.

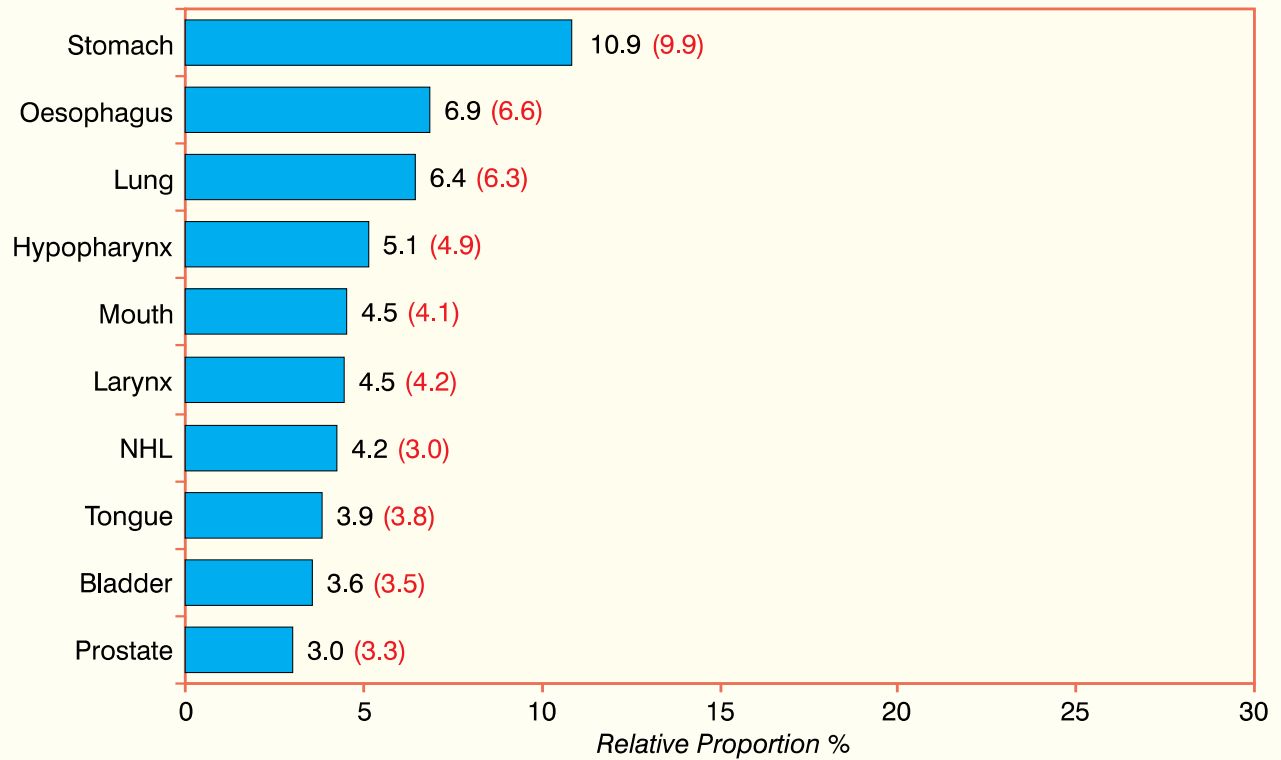
In males in Delhi, cancer of the prostate which was the eighth leading site during 1988-89 has become the second leading site during 2004-05. In females in Delhi, cancer of the breast has replaced cancer of the cervix as the leading site. Cancer of the ovary and gall bladder continue to be the third and fourth leading sites. Cancers of the corpus-uteri which was the tenth leading site has become fifth leading site of cancer. Cancer of the lung was not among the ten leading sites during 1988-89 has become sixth leading site during 2004-05.

In males in Mumbai, cancer of the prostate which was the eighth leading site has now become the third leading site of cancer.

Fig. 3.1(a): Ten Leading Sites of Cancer – Males : Bangalore

Age Adjusted Incidence Rates given in parentheses

1982-1983



2004-2005

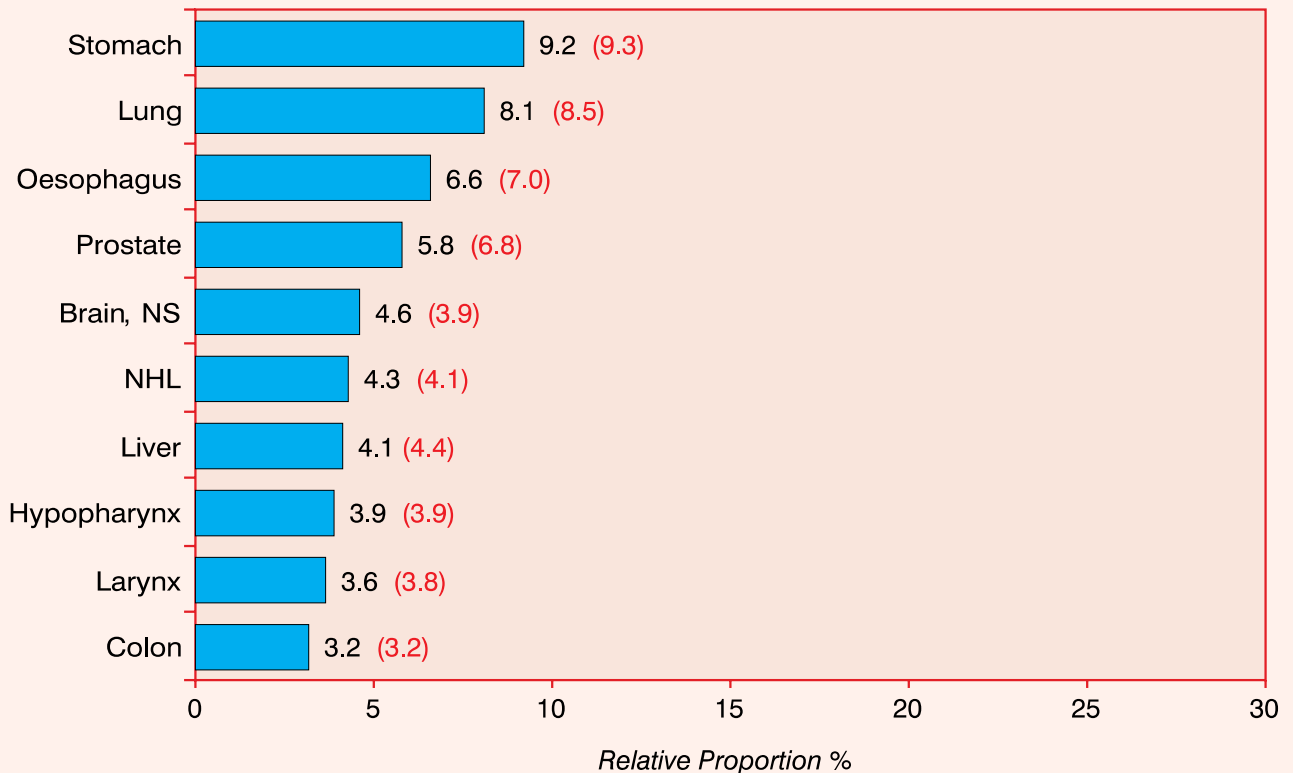
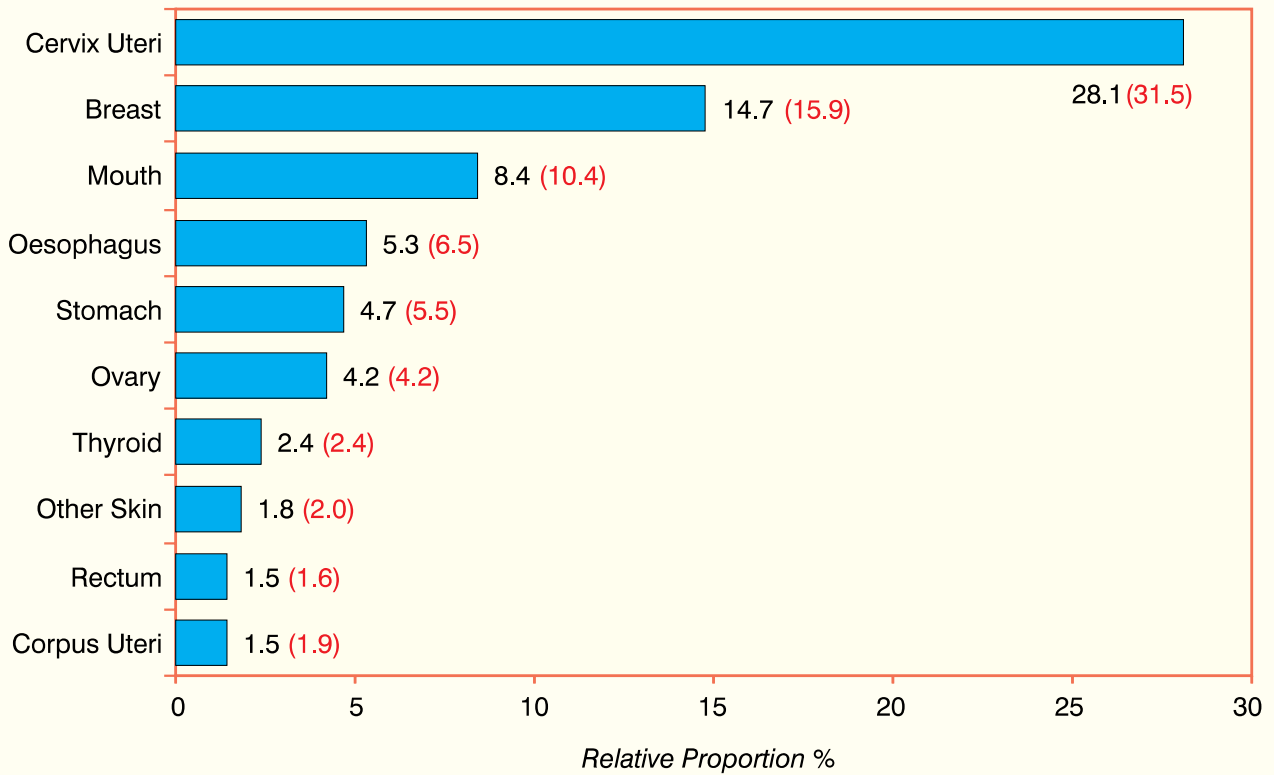


Fig. 3.1(b): Ten Leading Sites of Cancer – Females : Bangalore

Age Adjusted Incidence Rates given in parentheses

1982-1983



2004-2005

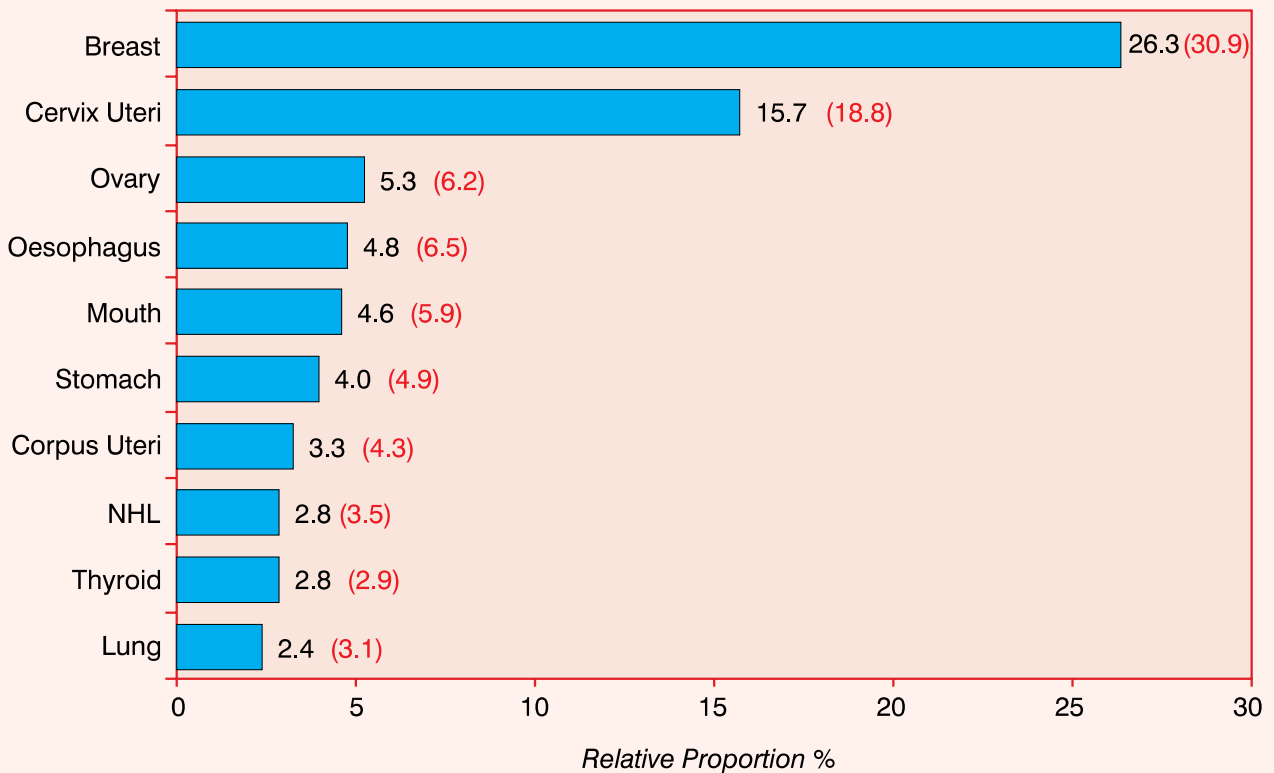
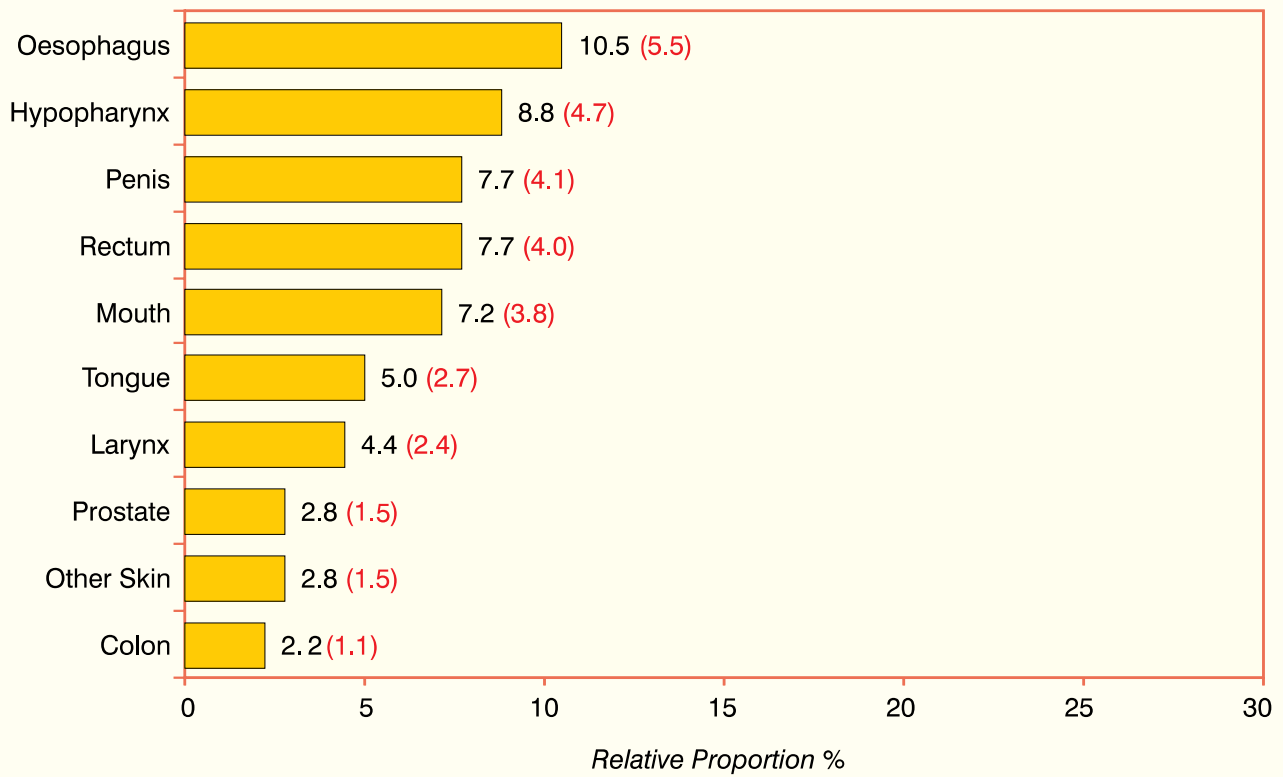


Fig. 3.2(a): Ten Leading Sites of Cancer – Males : Barshi

Age Adjusted Incidence Rates given in parentheses

1988-1989



2004-2005

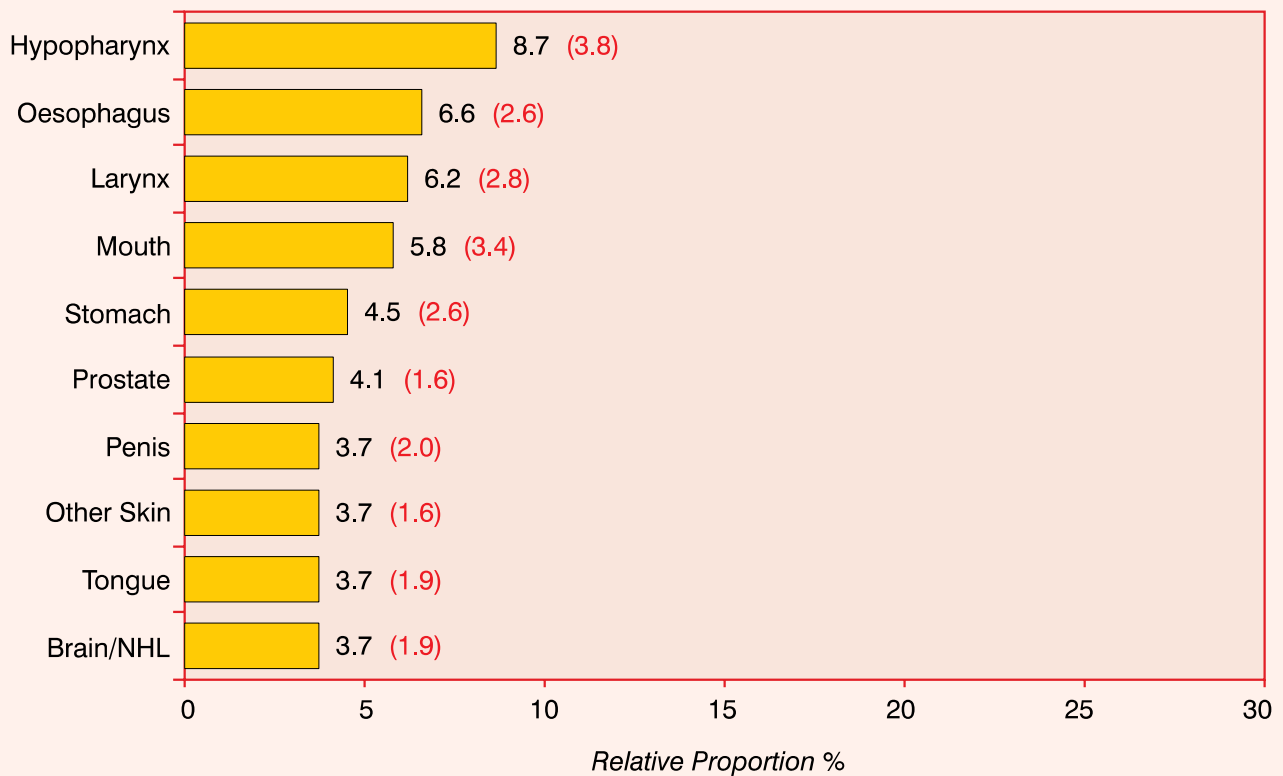
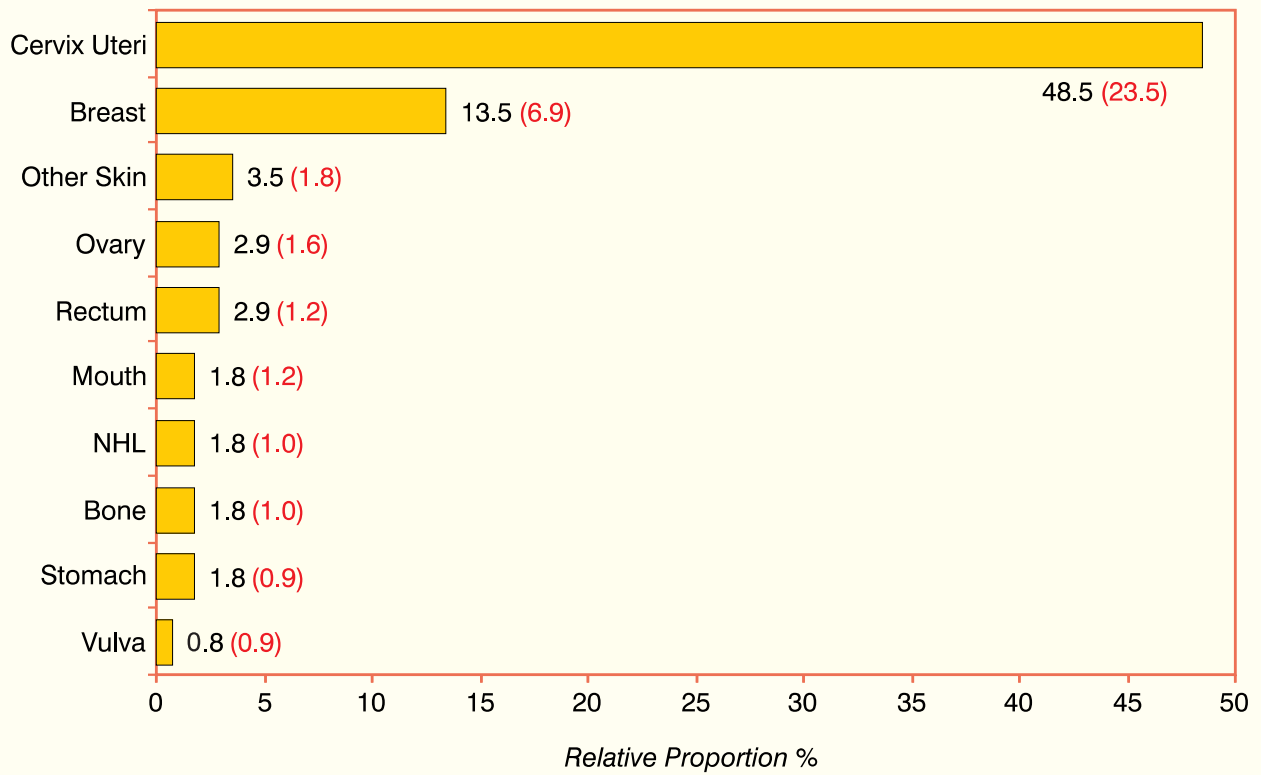


Fig. 3.2(b): Ten Leading Sites of Cancer – Females : Barshi

Age Adjusted Incidence Rates given in parentheses

1988-1989



2004-2005

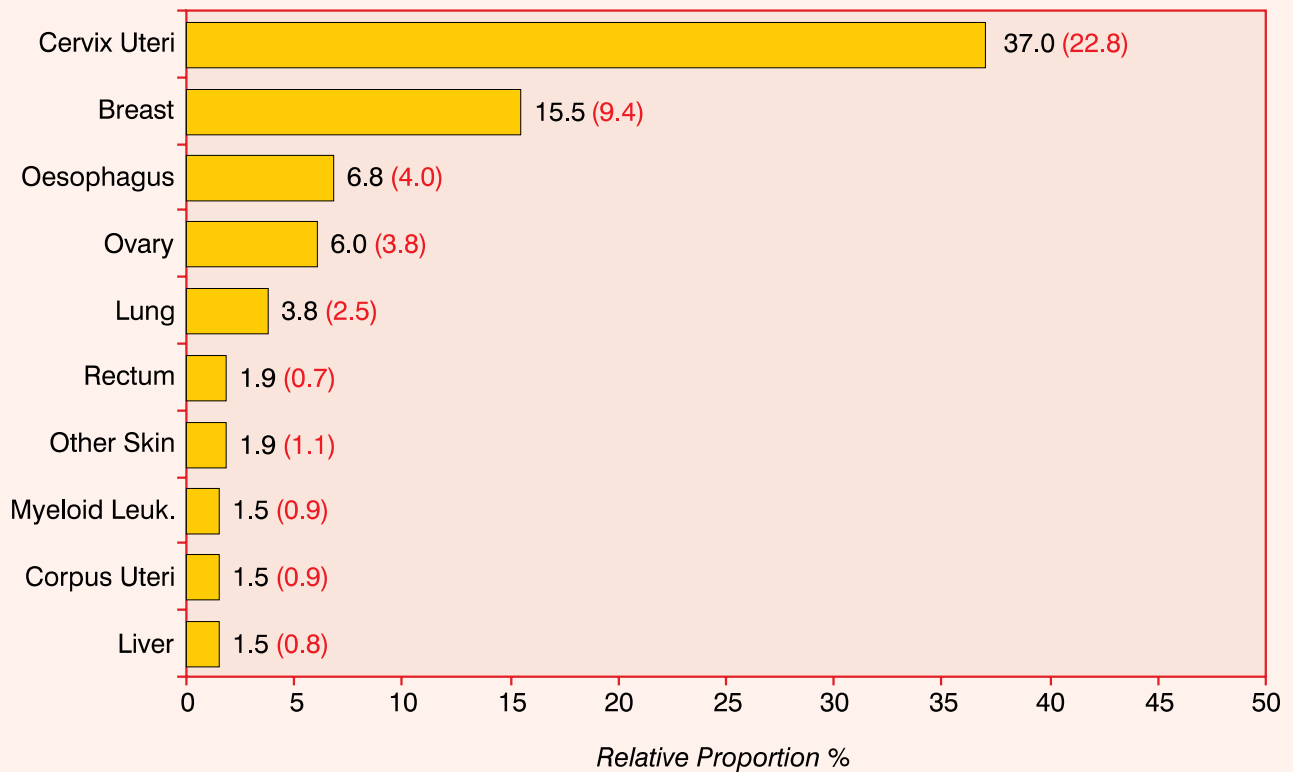
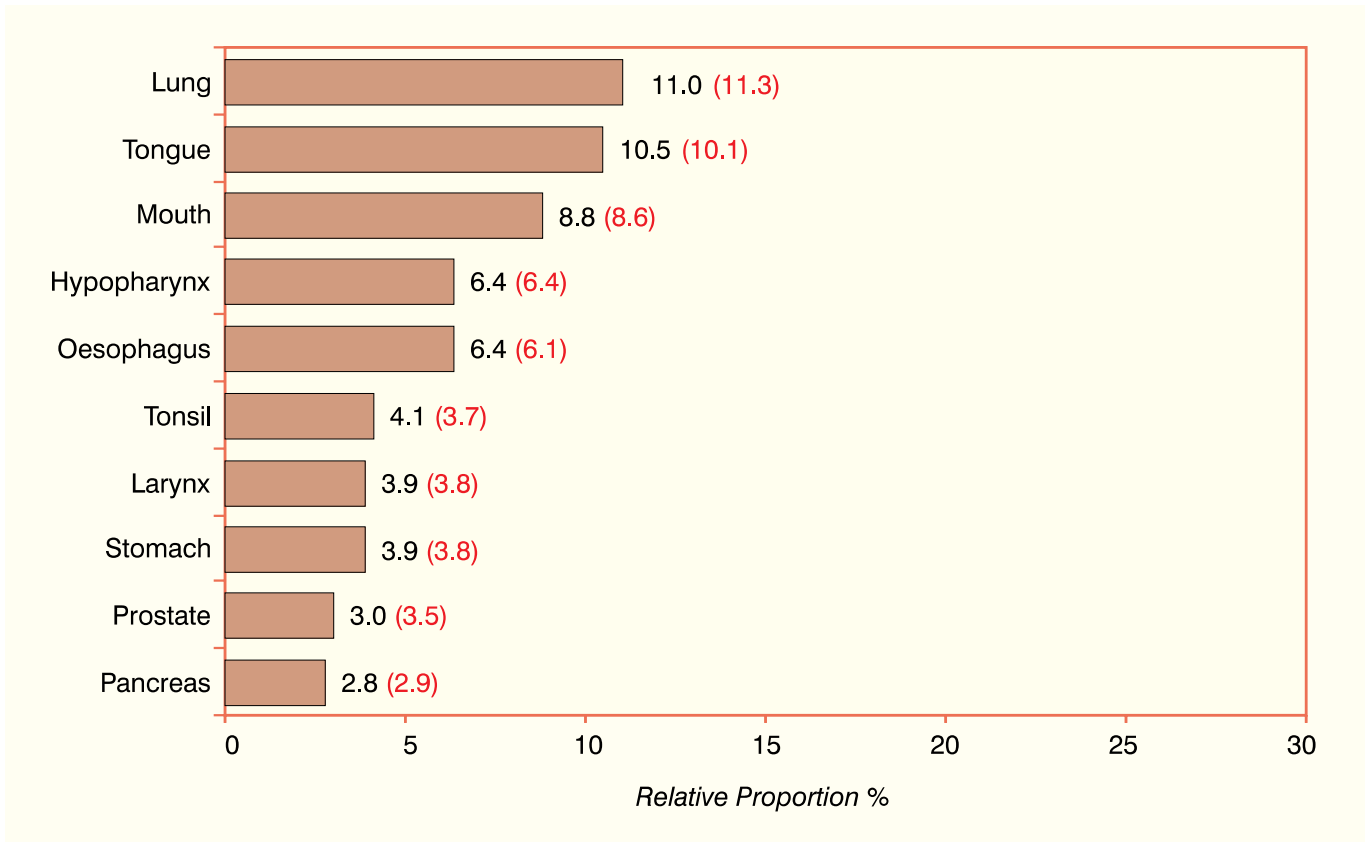


Fig. 3.3(a): Ten Leading Sites of Cancer – Males : Bhopal

Age Adjusted Incidence Rates given in parentheses

1988-1989



2004-2005

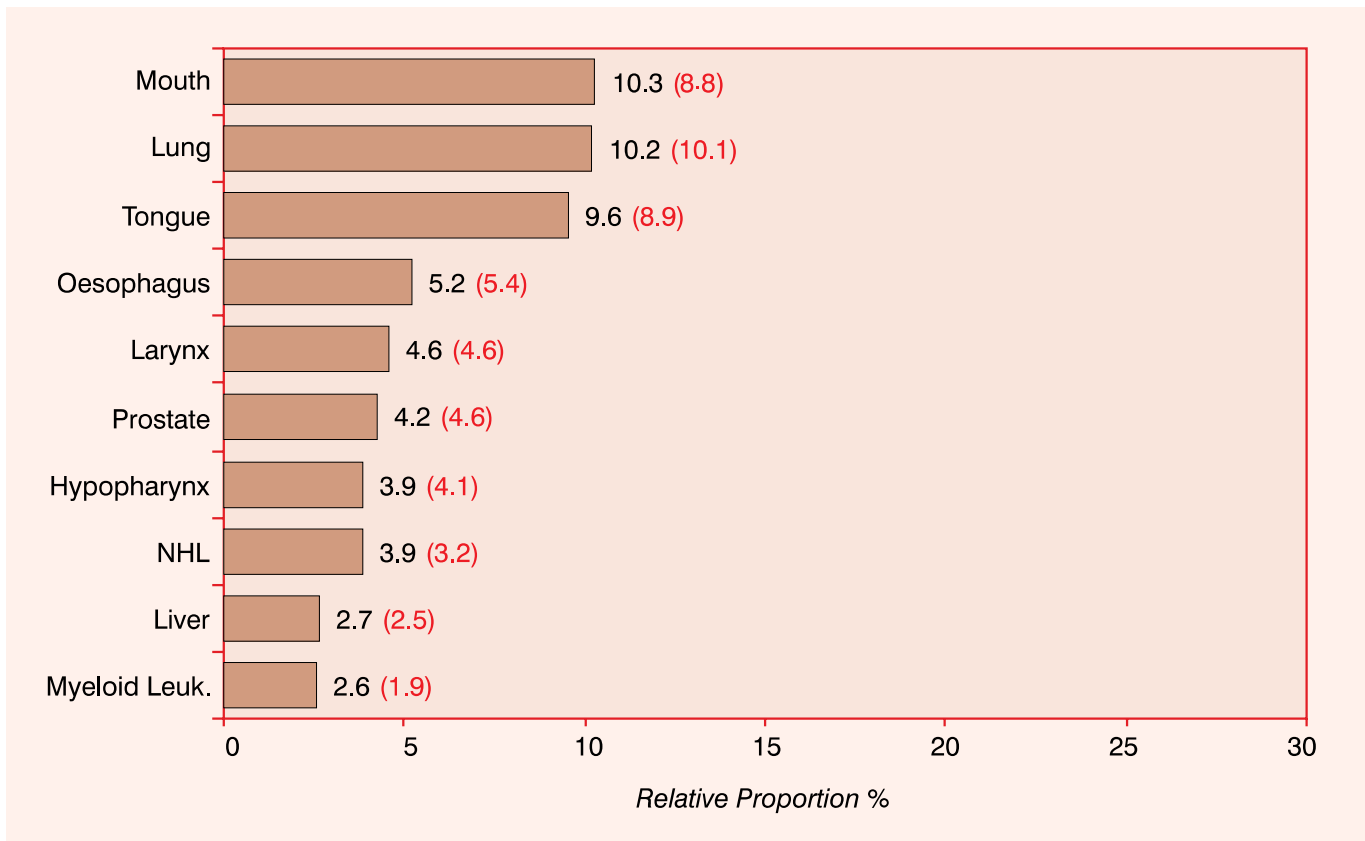
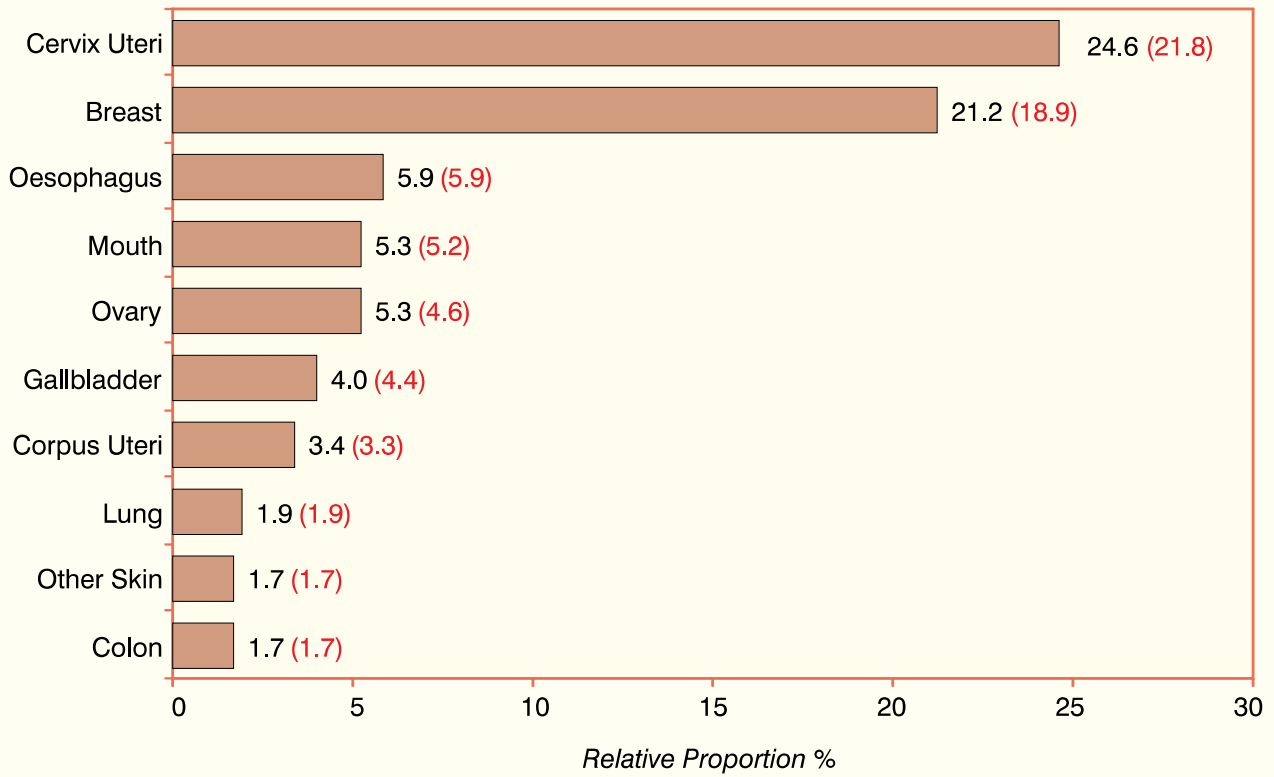


Fig. 3.3(b): Ten Leading Sites of Cancer – Females : Bhopal

Age Adjusted Incidence Rates given in parentheses

1988-1989



2004-2005

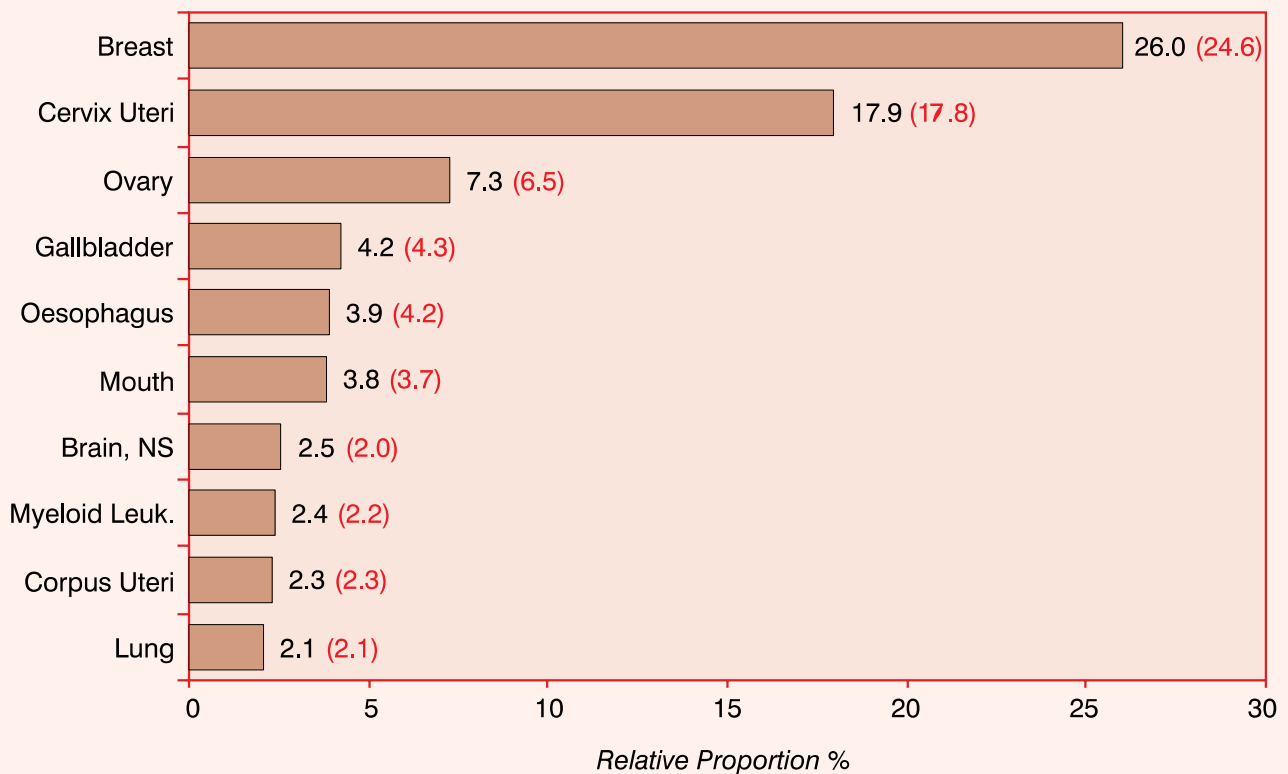
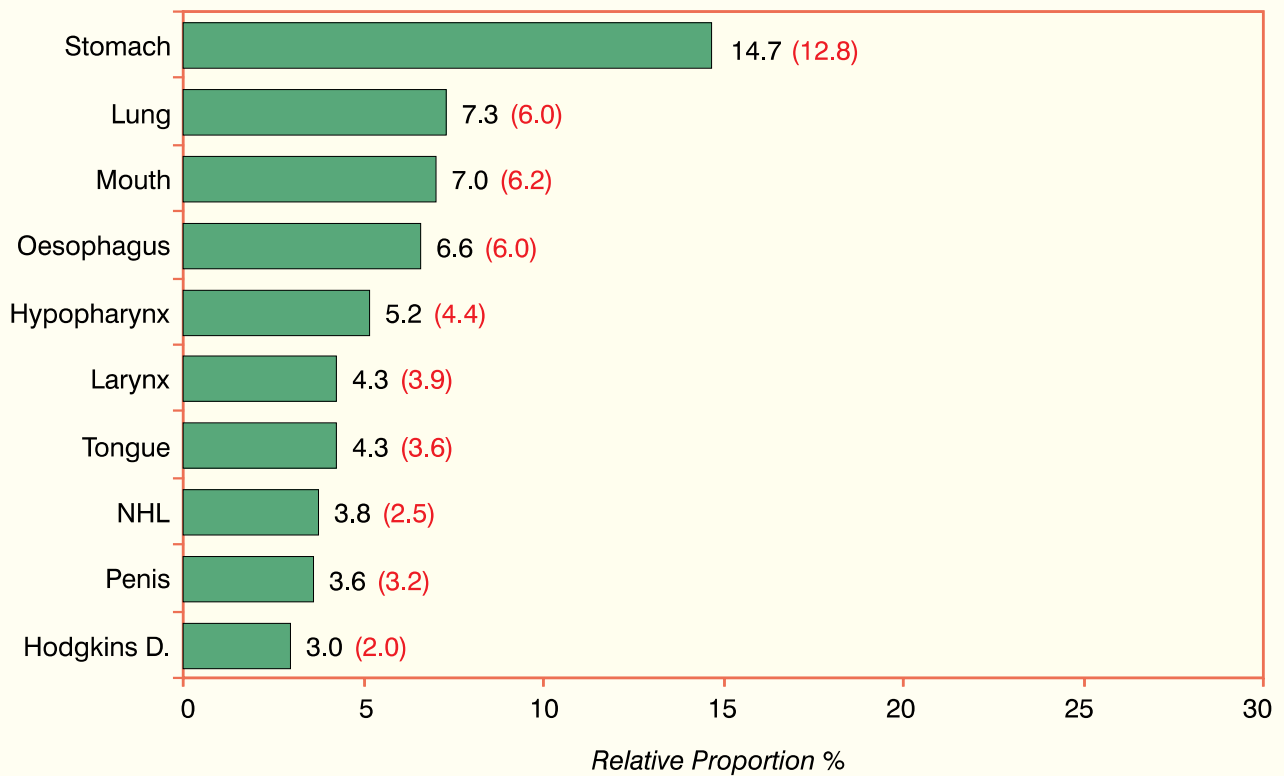


Fig. 3.4(a): Ten Leading Sites of Cancer – Males : Chennai

Age Adjusted Incidence Rates given in parentheses

1982-1983



2004-2005

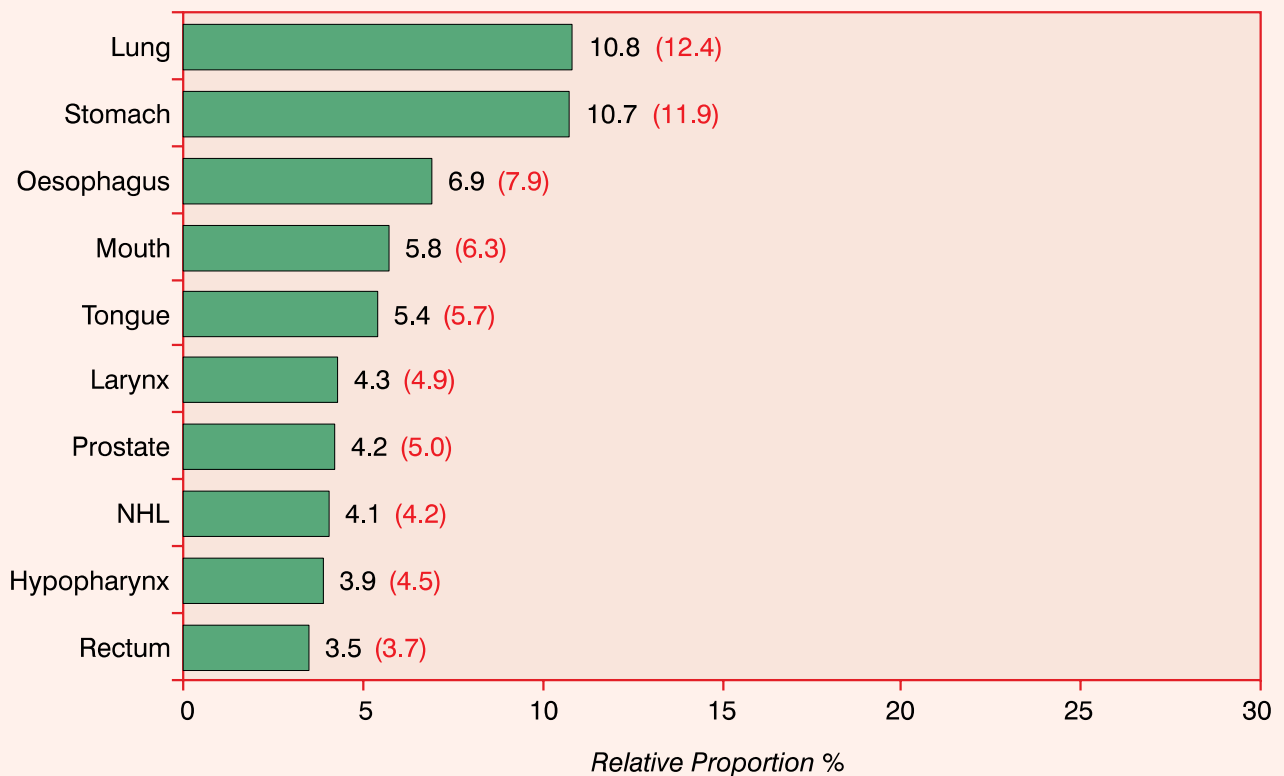
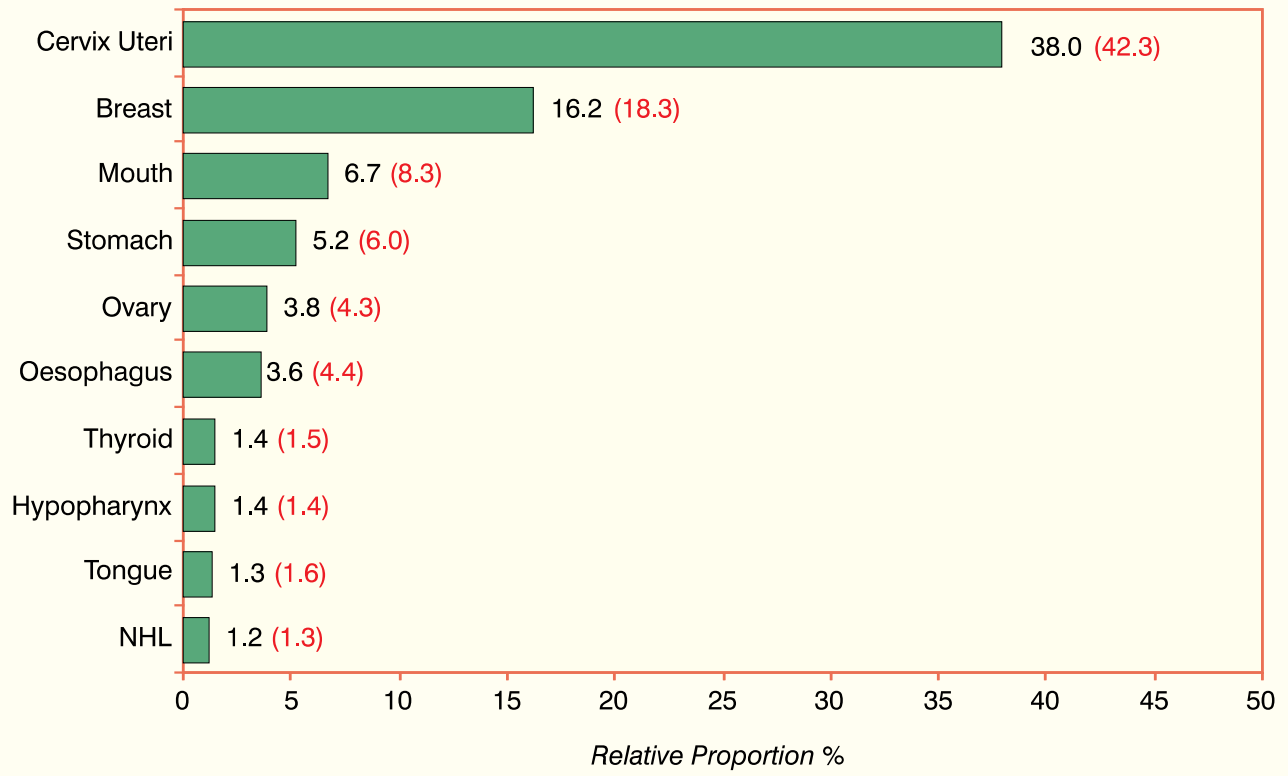


Fig. 3.4(b): Ten Leading Sites of Cancer – Females : Chennai

Age Adjusted Incidence Rates given in parentheses

1982-1983



2004-2005

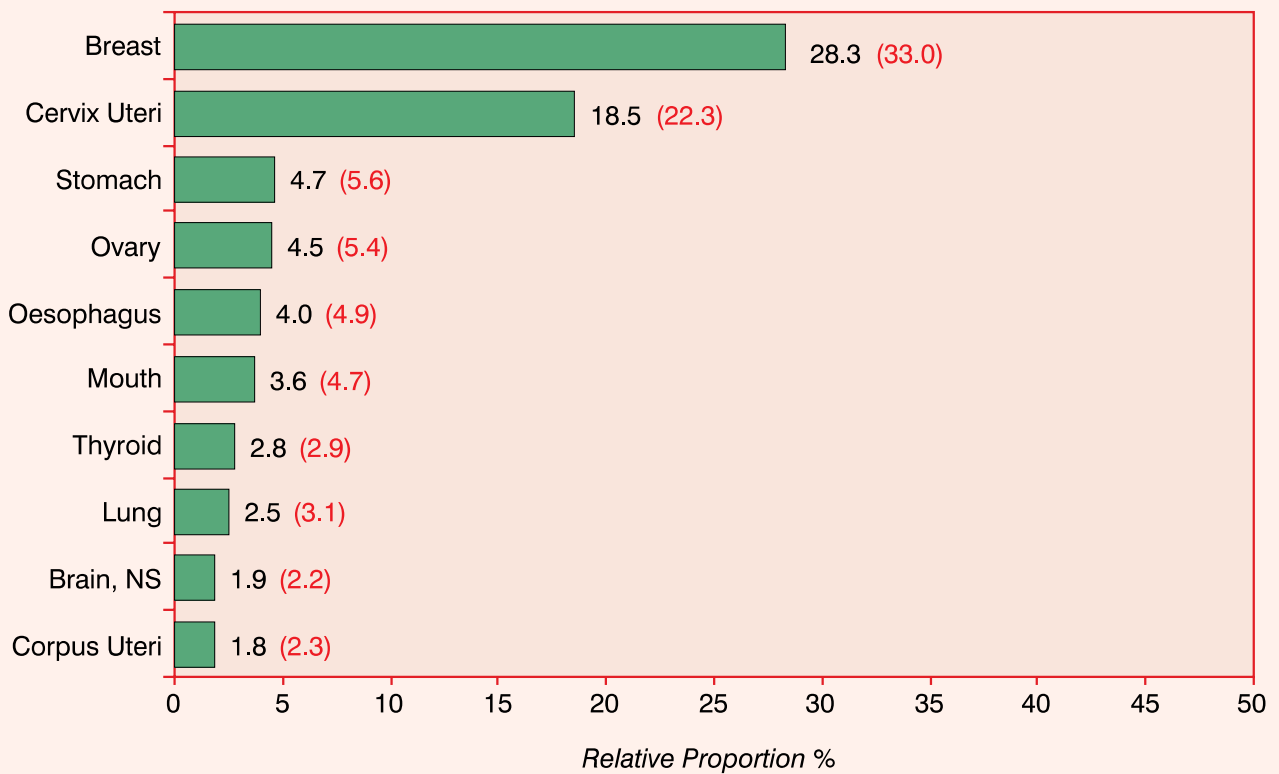
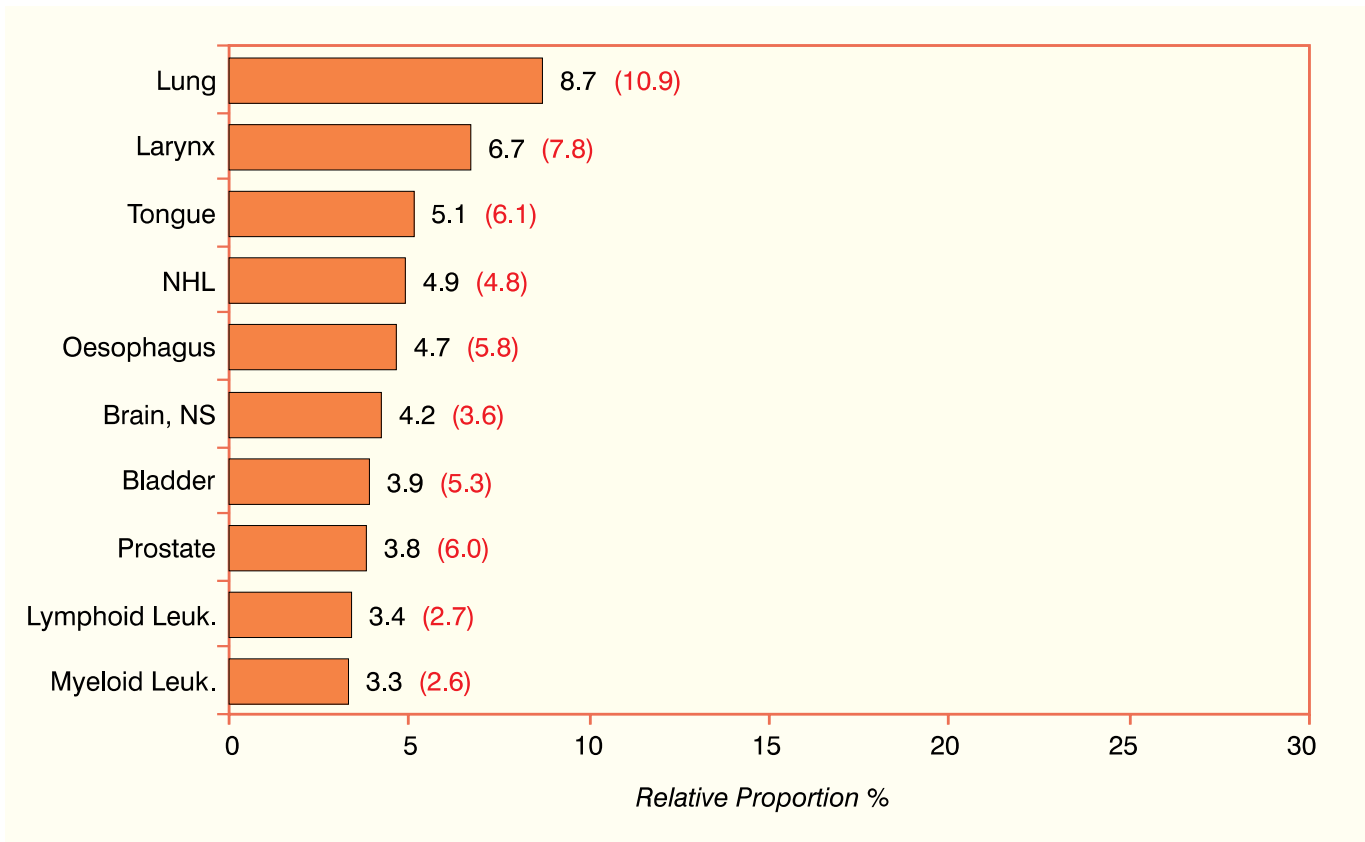


Fig. 3.5(a): Ten Leading Sites of Cancer – Males : Delhi

Age Adjusted Incidence Rates given in parentheses

1988-1989



2004-2005

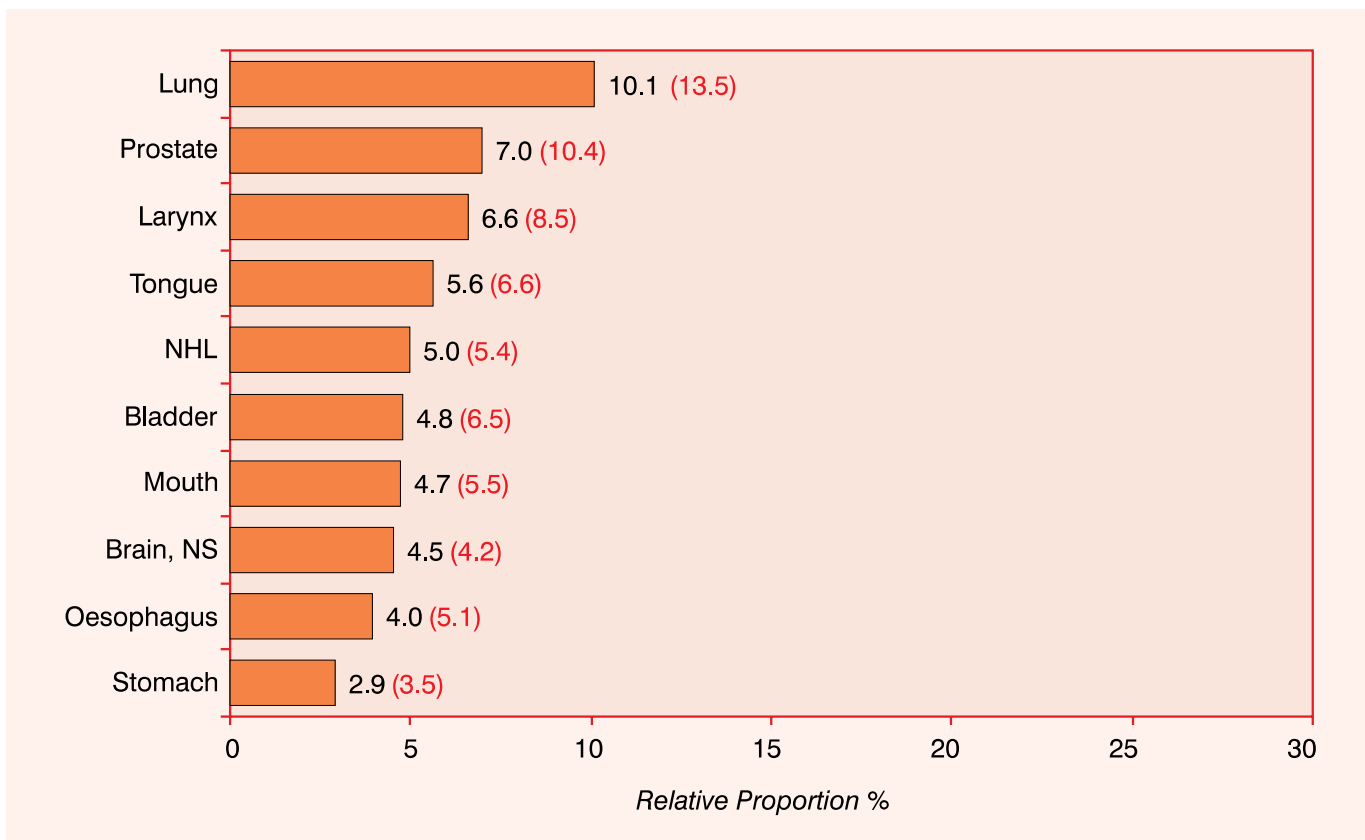
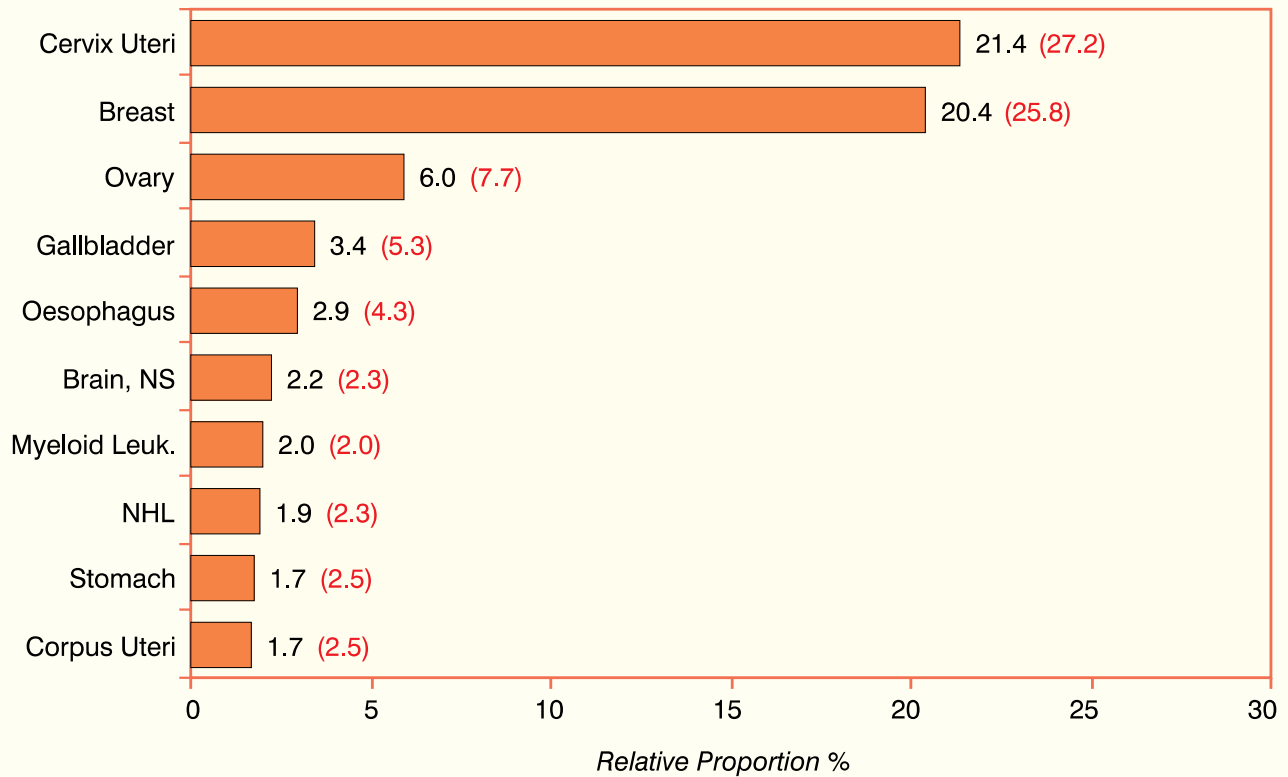


Fig. 3.5(b): Ten Leading Sites of Cancer – Females : Delhi

Age Adjusted Incidence Rates given in parentheses

1988-1989



2004-2005

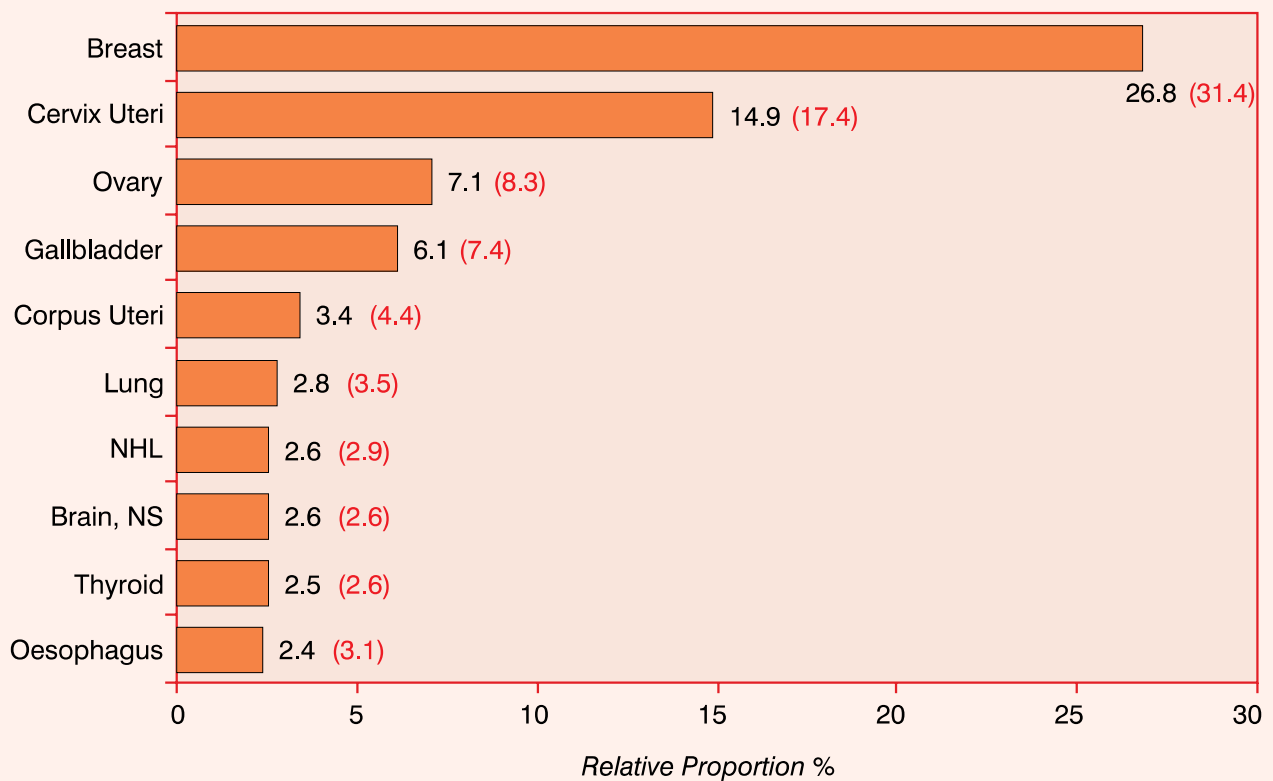
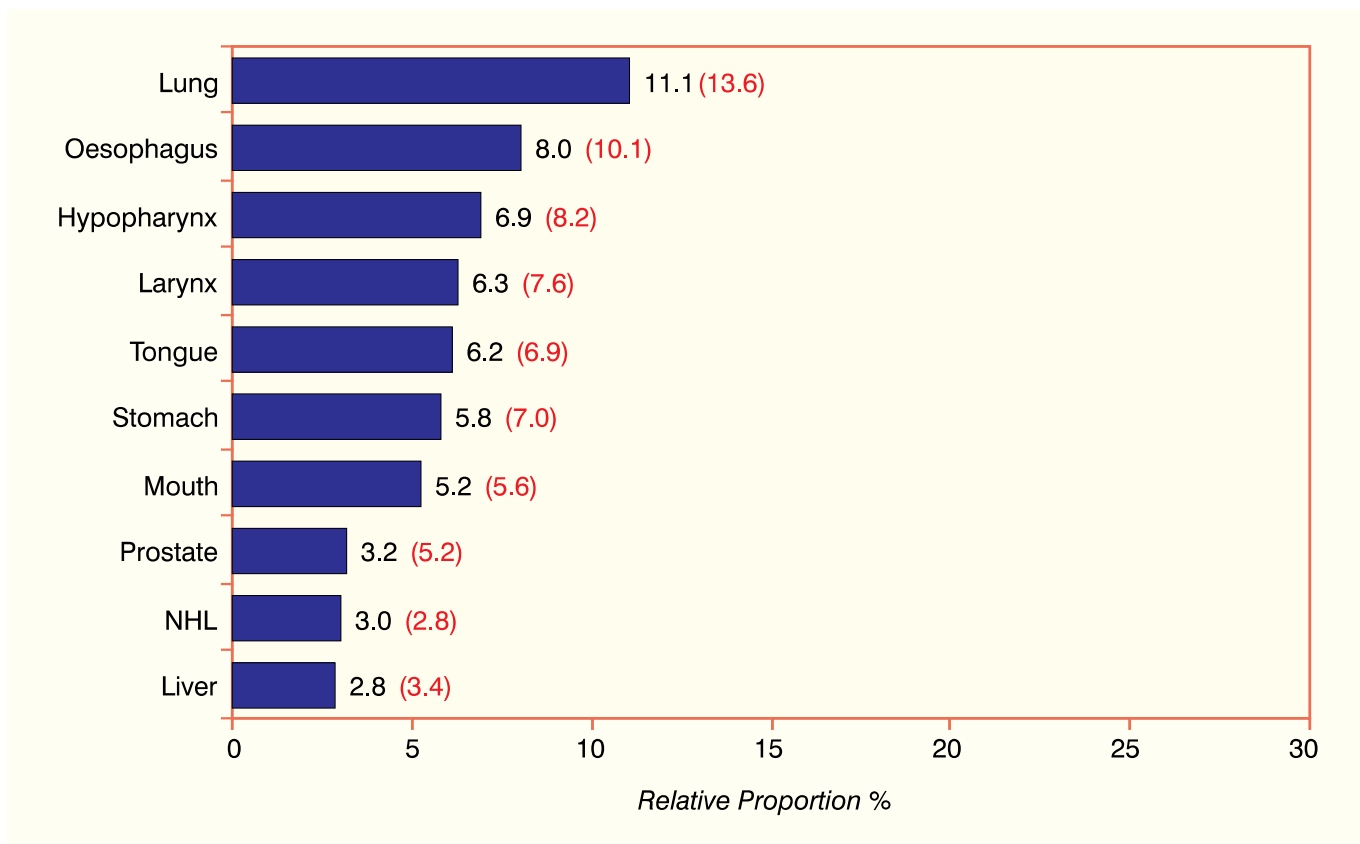


Fig. 3.6(a): Ten Leading Sites of Cancer – Males : Mumbai

Age Adjusted Incidence Rates given in parentheses

1982-1983



2004-2005

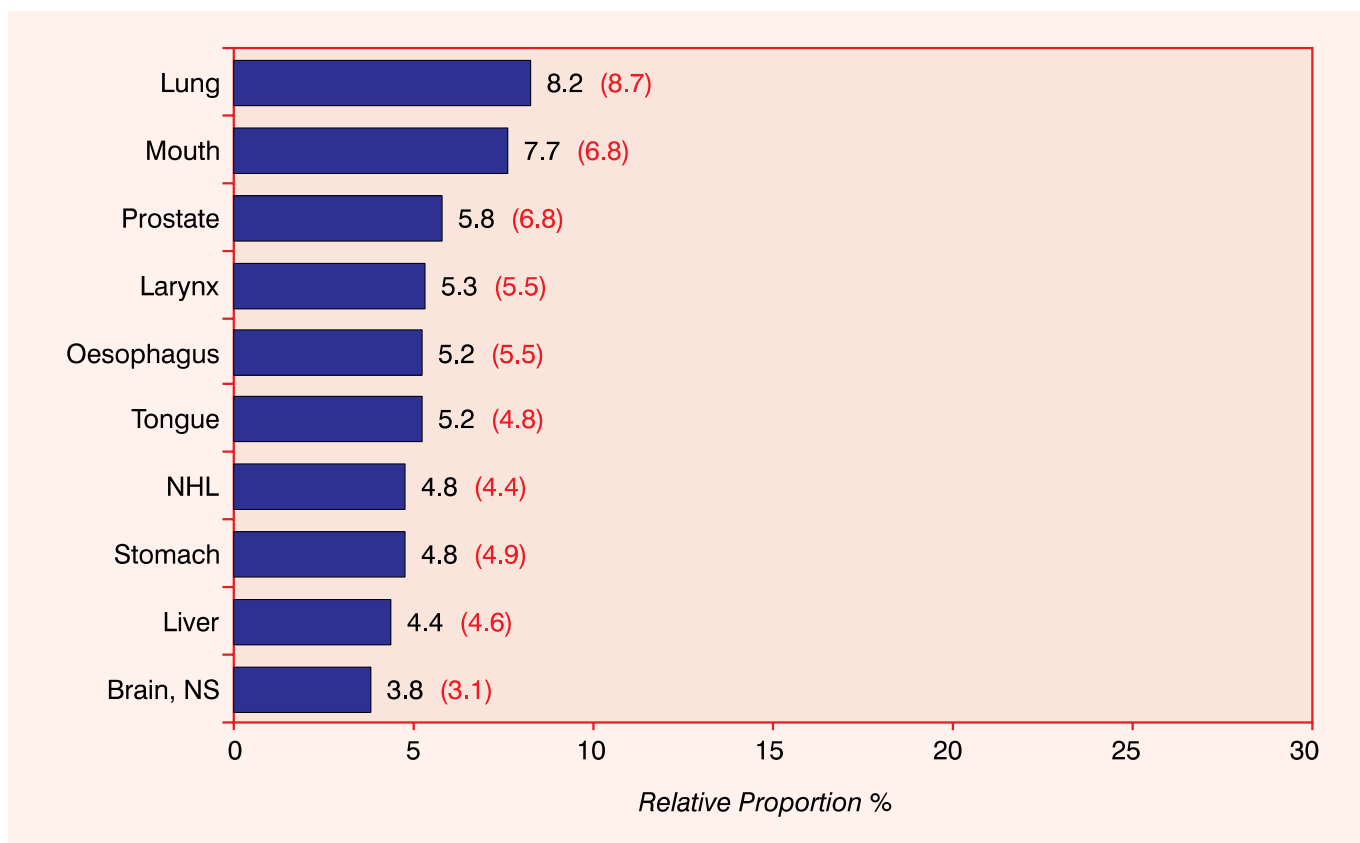
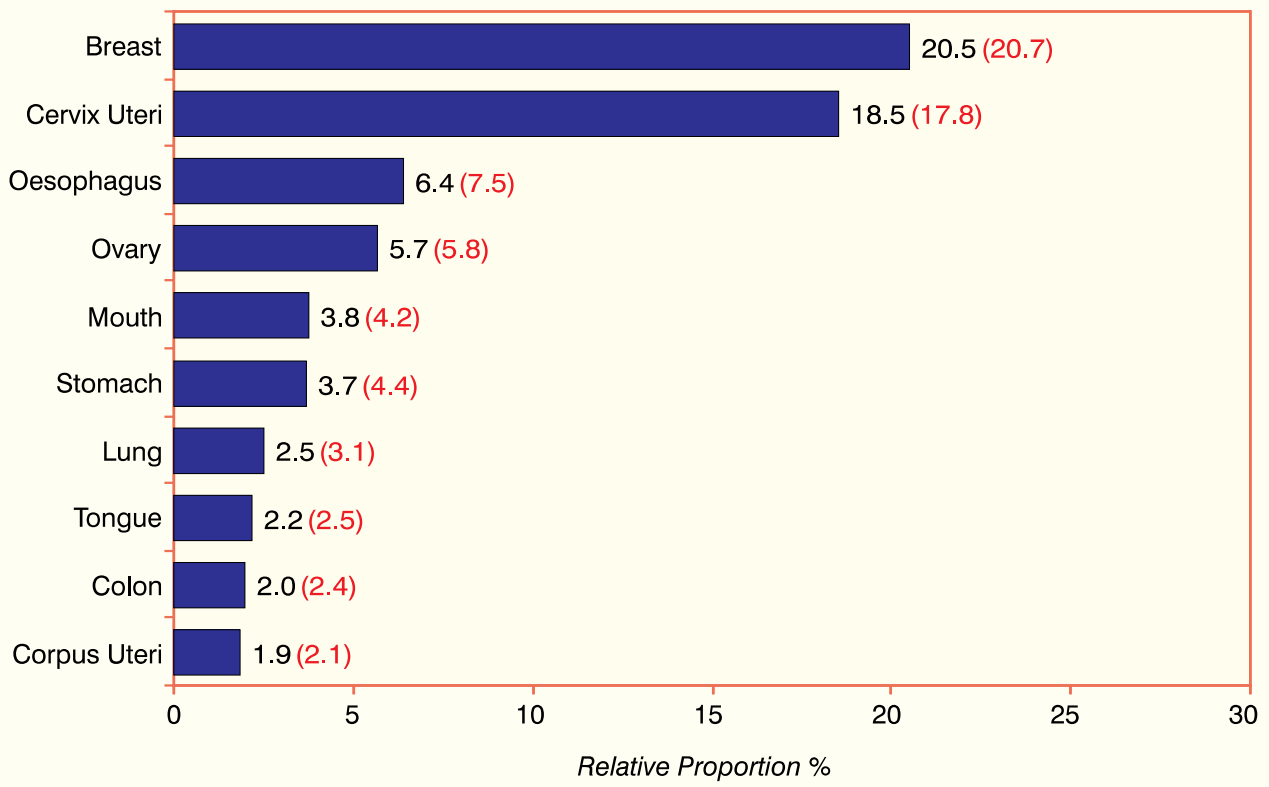


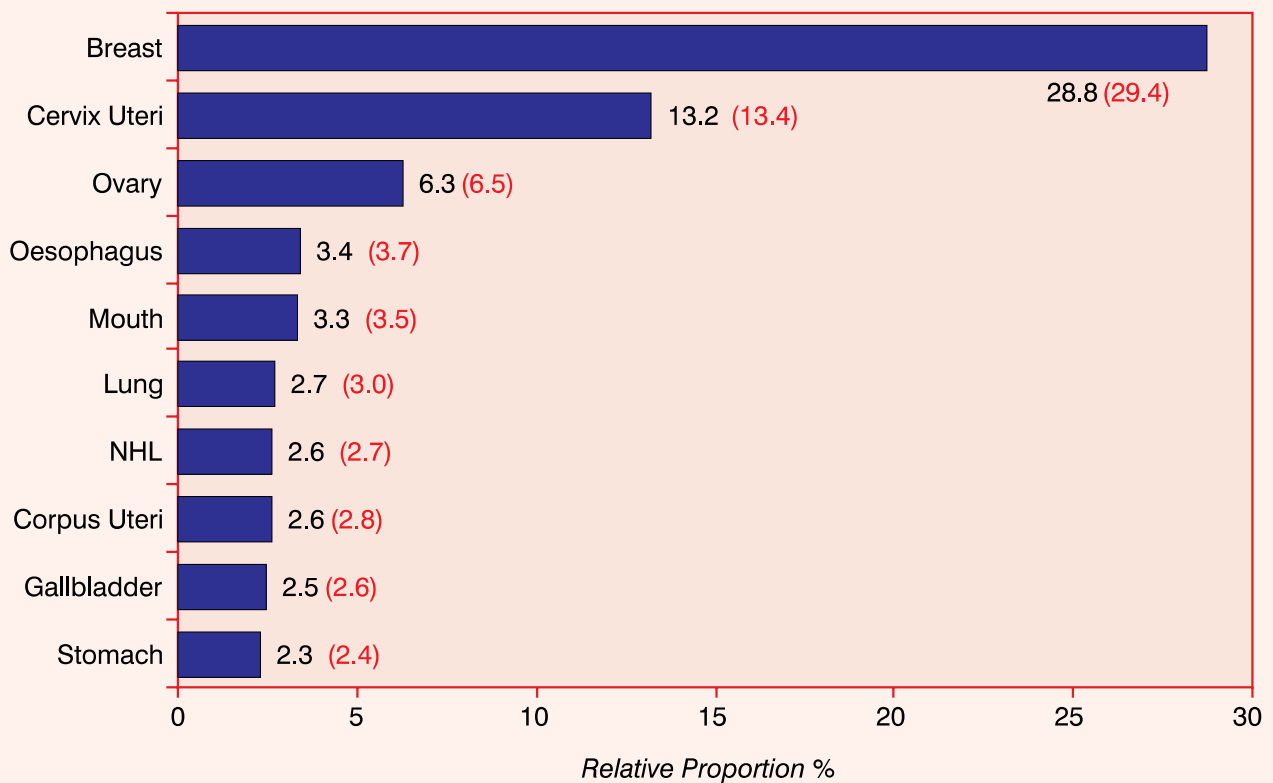
Fig. 3.6(b): Ten Leading Sites of Cancer – Females : Mumbai

Age Adjusted Incidence Rates given in parentheses

1982-1983



2004-2005



Chapter 4

TRENDS OVER TIME FOR ALL SITES AND ON SELECTED LEADING SITES OF CANCER

As mentioned in Chapter 2 the following sites have been included / excluded for the Barshi and Bhopal registries. In principle, anatomical sites with small numbers (less than ten cases per year) have been excluded.

For Barshi registry, only the following have been included:

- (a) All anatomical sites (combined) in both males and females.
- (b) Cancer of the breast and cervix in females.

All other sites have been excluded due to small numbers.

The following anatomical sites were excluded for Bhopal PBCR on account of small numbers. For males, the sites excluded were stomach, colon, rectum, liver, lymphoid and myeloid leukaemia. For females, the sites excluded were lung, corpus uteri, brain, NHL, thyroid gland and myeloid leukaemia. Certain other sites in Bhopal PBCR such as mouth in females, oesophagus in both males & females and Brain-NS in males have numbers in the teens and included. This needs to be kept in mind while interpreting the results.

Besides, in general, the ten leading sites of cancer across all registries have been chosen to depict trends over time.

Format of presentation for all sites and each of the selected anatomical sites :

The line graphs based on three year moving averages with the table below is shown on the left hand page. The facing page on the right shows Joinpoint Regression Model Trend lines with the corresponding table.

The table below the graph on three year Moving Average shows (i) the actual AAR values for each PBCR according to calendar year (ii) value of b (slope) and (iii) p-value with the values based on linear regression. In the facing page, the table below the Joinpoint Regression line gives the expected AAR values with respective Annual Percent Change (APC).

All Sites (Figure 4.1, 4.2 and Table 4.1, 4.2) :

Males: Both linear regression and joinpoint regression model did not show statistically significant increase or decrease in AAR over time in Bangalore, Barshi, Bhopal and Delhi PBCRs. Chennai PBCR showed a

significant rise in AAR over time. For the period 1982-1988, the APC was higher (4.5%) while from 1989–2005 this was 0.28%. Mumbai PBCR showed relative stable rates till 1990 with a decline thereafter.

Females: The PBCRs at Bangalore, Barshi, Bhopal and Chennai did not show a statistically significant change from 1982–2005. A statistically significant decline in AAR was observed for Delhi and Mumbai PBCR. For Mumbai PBCR, there was initial period of rise in AARs from 1982–1992, followed by a decline from 1993–2005.

Tongue (Figure 4.3 and Table 4.3) :

Males: There was no change in incidence rates trend over time for PBCRs of Bangalore, Bhopal and Delhi. Chennai showed an increasing trend whereas Mumbai showed a decline. The APC for Chennai was 1.3 and for Mumbai -2.0.

Mouth (Figure 4.4, 4.5 and Table 4.4, 4.5) :

Males: A rising trend was observed in both Delhi and Mumbai PBCR. The overall APC was 2.0 and 0.9 for Delhi and Mumbai respectively. The APC for Mumbai was higher (APC: 3.98) during later years (1998-2005).

Females: The registries at Bangalore, Delhi, Chennai and Mumbai showed a decline. The APC varied from -0.8 in Mumbai to -3.2 at Bangalore.

Hypopharynx (Figure 4.6 and Table 4.6) :

Males: The three PBCRs at Bangalore, Bhopal and Mumbai showed a decline in the AARs. The APC varied from -1.4 in Bangalore to -4.2 in Mumbai.

Oesophagus (Figure 4.7, 4.8 and Table 4.7, 4.8) :

Males: Only Delhi and Mumbai PBCRs showed a change in the AAR with a decline. The APC was -1.3 in Delhi and -3.1 in Mumbai.

Females: Bangalore, Bhopal, Delhi and Mumbai showed a decline with the APC ranging from -1.2 in Bangalore to -3.5 in Mumbai.

Stomach (Figure 4.9 and Table 4.9) :

Males: The AARs were unchanged over time for Bangalore and Delhi, whereas a decline was seen in Chennai and Mumbai PBCRs. The APC was -0.9 for Chennai and -2.2 for Mumbai. The decrease in Chennai was greater (APC: -1.5) for the later years (1987-2005).

Colon (Figure 4.10 and Table 4.10) :

Males: The PBCRs at Bangalore, Chennai and Delhi showed a statistically significant increase in the incidence of colon cancer. The APC was 1.7 in Delhi and 2.2 at both Bangalore and Chennai PBCRs.

Rectum (Figure 4.11 and Table 4.11) :

Males: Both Bangalore and Chennai showed a statistically significant increase in incidence rate trends over time. The APC was 1.6 for Bangalore and 2.5 for Chennai.

Liver (Figure 4.12 and Table 4.12) :

Males: The four PBCRs at Bangalore, Chennai, Delhi and Mumbai showed a statistically significant increase in the incidence of this cancer. The APC varied from 1.6 in Chennai to 2.0 in Bangalore. In Mumbai the change was higher (APC: 2.6) for later years (1997-2005).

Gallbladder (Figure 4.13 and Table 4.13) :

Females: The PBCRs at Bangalore, Bhopal, Chennai and Mumbai showed a statistically significant increase in the incidence of gallbladder cancer. The APC varied from 2.5 in Mumbai to 5.9 in Bangalore and Chennai. In Delhi PBCR a 15% increase was observed annually from 1988–1993, but thereafter a significant decline was observed. In Mumbai the change (APC: 9.1) was more during the earlier years (1982-1991).

Larynx (Figure 4.14 and Table 4.14) :

Males: Bhopal PBCR showed a significant increase whereas Mumbai PBCR showed a significant decrease in incidence rates over the years. The APC for Bhopal was 2.9 and -1.5 for Mumbai.

Lung (Figure 4.15, 4.16 and Table 4.15, 4.16) :

Males: Chennai and Delhi PBCRs showed a statistically significant increase in AARs of lung cancer with APC being 2.3 in Chennai and 1.0 in Delhi. In Chennai the change was higher (APC: 8.2) during the years 1982-1990.

Females: The three PBCRs at Bangalore, Chennai and Delhi showed an increase in the incidence of lung cancer over time with the APC varying from 2.0 in Delhi to 4.6 in Chennai.

Breast – Females (Figure 4.17 and Table 4.17) :

All the urban registries at Bangalore, Bhopal, Chennai, Delhi and Mumbai showed statistically significant increase in the incidence of breast cancer. The APC varied from 1.0 in Delhi to 2.7 in Bangalore. In Chennai the increase was more (APC: 4.0) during the later years (1995-2005) while in Mumbai the increase was more (APC: 3.1) during earlier years (1982-1991).

Cervix (Figure 4.18 and Table 4.18) :

All the six PBCRs have recorded a statistically significant decline in the incidence rates of cancer cervix. This includes the rural registry at Barshi. The APC varied from -1.4 in Bhopal to -3.4 in Delhi.

Corpus Uteri (Figure 4.19 and Table 4.19) :

The four registries at Bangalore, Chennai, Delhi and Mumbai showed a statistically significant increase in the incidence of cancer of corpus uteri. The APC varied from 1.7 in Mumbai to 5.8 in Bangalore.

Ovary – Females (Figure 4.20 and Table 4.20) :

Bangalore and Mumbai PBCRs showed an increase in the occurrence of incidence rates of this cancer. The APC was 0.8 in Mumbai and 1.7 in Bangalore. The increase in Mumbai was more (APC: 2.64) during earlier years.

Prostate (Figure 4.21 and Table 4.21) :

The four registries at Bangalore, Chennai, Delhi and Mumbai showed a statistically significant increase in the incidence of prostate cancer with the APC varying from 0.8 in Mumbai to 4.7 in Chennai.

Brain (Figure 4.22, 4.23 and Table 4.22, 4.23) :

Males: The PBCRs at Bangalore, Chennai and Mumbai showed an increase in the AARs. The APC was 2.7 in Mumbai PBCR, 3.0 in Chennai PBCR and 3.2 in Bangalore PBCR.

Females: As in males, Bangalore, Chennai and Mumbai showed a statistically significant increase in the occurrence of this cancer. The APC was 2.9 in Mumbai and 3.4 in Bangalore and 4.6 in Chennai.

Thyroid Gland (Figure 4.24 and Table 4.24) :

Females: Chennai and Delhi PBCR recorded an increase with the APC being 2.2 in Delhi and 2.6 in Chennai. The increase in Chennai was more (APC: 8.23) during the years 1996-2005.

NHL (Figure 4.25, 4.26 and Table 4.25, 4.26) :

Males: All the five urban PBCRs showed a statistically significant increase in the incidence of NHL. The APC varied from 1.0 in Delhi to 7.9 in Bhopal.

Females: Bangalore, Chennai, Delhi and Mumbai PBCRs showed as in males, a statistically significant increase in the incidence of this cancer. The APC varied from 1.2 in Delhi to 3.6 in Bangalore. The increase in both Chennai (APC: 5.1) and Mumbai (APC: 4.1) was more during the early years (1982-97).

Lymphoid Leukaemia (Figure 4.27 and Table 4.27) :

Males: Bangalore and Chennai PBCRs recorded an increase in the incidence of this cancer with the APC being 2.6 in Chennai and 2.7 in Bangalore.

Myeloid Leukaemia (Figure 4.28, 4.29 and Table 4.28, 4.29) :

Males: PBCRs at Bangalore, Chennai and Mumbai showed an increase in AARs with the APC being 0.8 in Mumbai to 2.2 in Bangalore and 2.5 in Chennai.

Females: As in males, both Bangalore and Chennai showed an increase in incidence rates with the APC being 1.9 in Bangalore and 3.4 in Chennai.

Lung cancer in Chennai women increased annually at the rate of 4.6%.

Both Chennai and Bangalore recorded an APC of 5.8% increase annually in the incidence of gallbladder cancer.

Cancer of the breast increased at the rate of 4% annually in Chennai females from 1995 to 2005. Likewise Chennai females also recorded an annual percentage increase of 8.2 for Thyroid cancers during 1995-2005.

Fig. 4.1(a): ALL SITES (ICD-10 : C00-C96) - Males
Trends over time (1982-2005) in AAR (Three Year Moving Average)

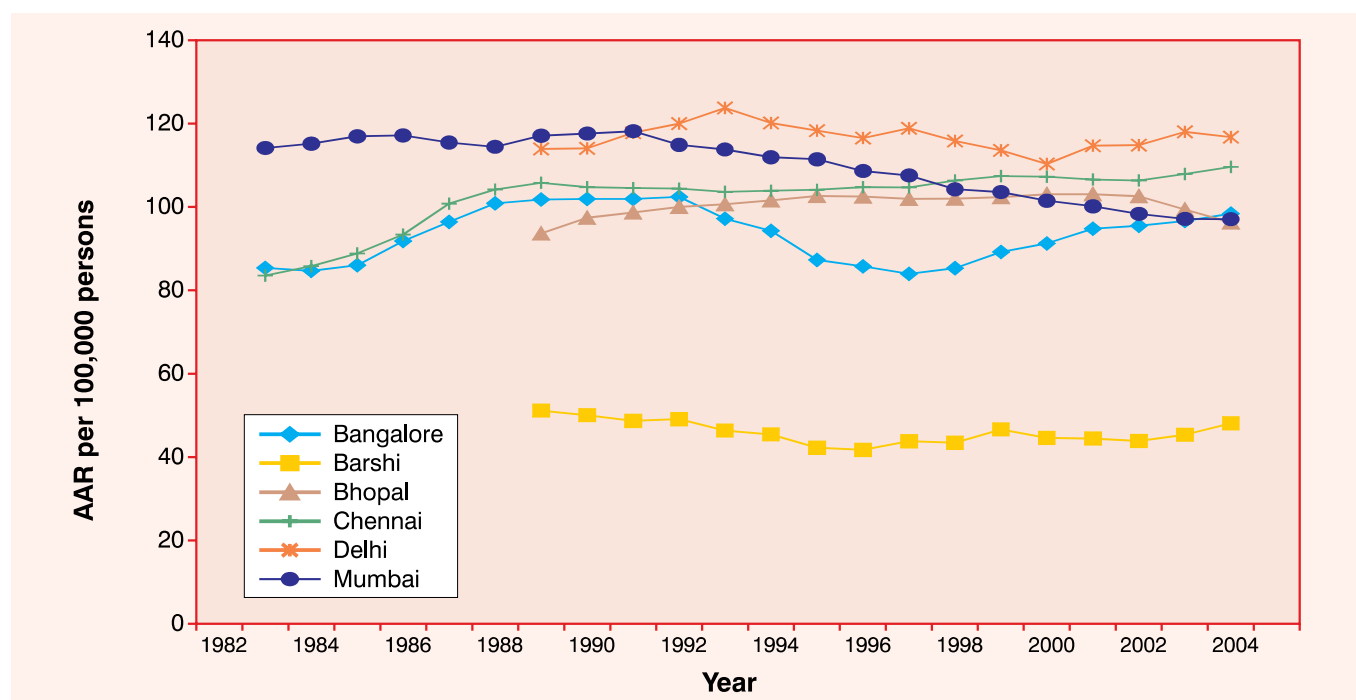


Table 4.1(a): Year wise AARs

Year	Bangalore	Barshi	Bhopal	Chennai	Delhi	Mumbai
1982	90.7			80.2		115.9
1983	83.5			85.9		110.9
1984	81.8			84.6		115.7
1985	88.7			87.0		119.0
1986	87.4			94.9		116.3
1987	99.3			98.3		116.2
1988	102.5	51.2	88.9	109.1	111.3	113.9
1989	100.8	51.4	95.9	105.2	112.5	113.1
1990	101.9	50.9	96.1	103.2	117.9	124.3
1991	103.0	47.8	100.3	105.9	111.8	115.2
1992	100.8	47.4	99.7	104.6	123.6	115.0
1993	103.4	52.1	100.0	102.6	124.5	114.5
1994	87.3	39.6	102.2	103.6	123.0	111.9
1995	92.2	44.7	102.4	105.5	112.9	109.4
1996	82.3	42.5	103.2	103.3	119.0	113.0
1997	82.7	38.2	101.8	105.4	117.8	103.6
1998	87.0	50.8	100.8	105.4	120.0	106.2
1999	86.1	41.4	103.4	108.3	109.8	103.0
2000	94.4	47.7	102.7	108.7	110.9	101.4
2001	93.3	44.7	103.0	104.8	110.3	100.1
2002	96.7	40.8	103.3	106.2	123.0	99.0
2003	96.5	46.0	101.4	108.2	111.3	95.8
2004	96.7	49.3	93.3	109.4	119.8	96.6
2005	102.0	49.1	94.1	111.3	119.2	98.6
Slope(b)	0.169	-0.247	0.208	0.986	0.019	-0.961
p-value	0.451	0.228	0.287	0.001	0.938	0.001

Fig. 4.1(b): ALL SITES (ICD-10 : C00-C96) - Males
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

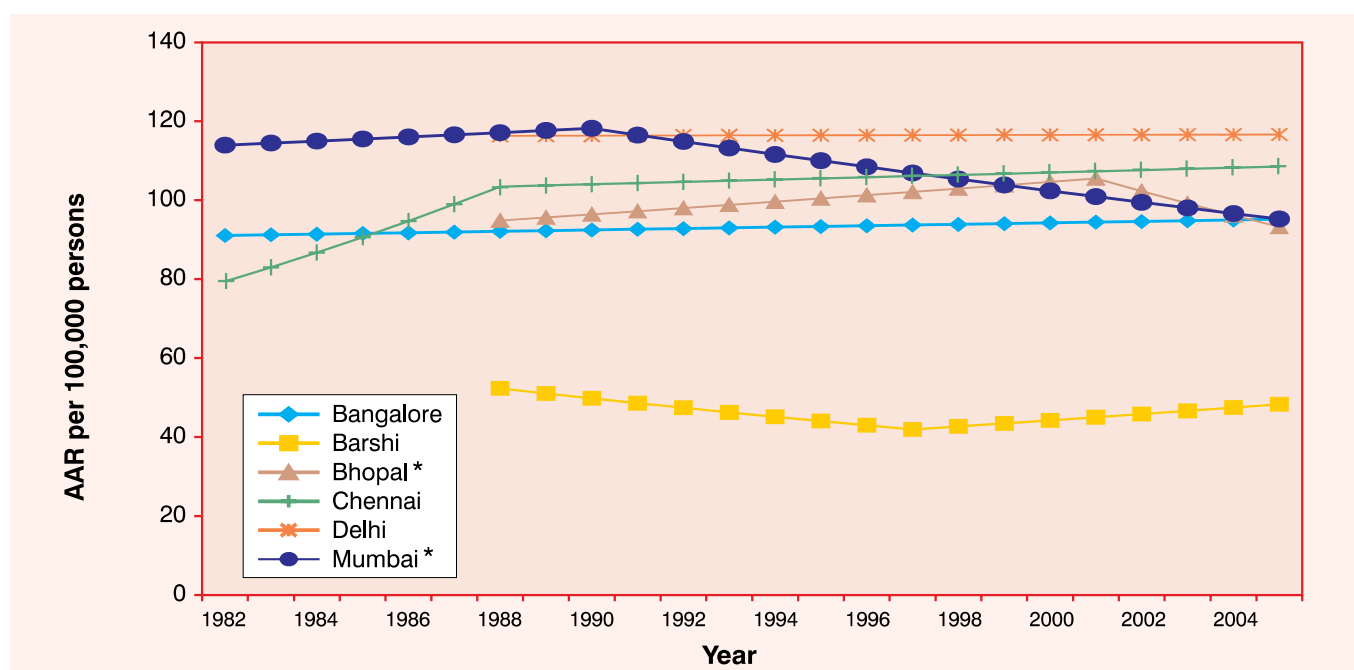


Table 4.1(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Barshi	Bhopal	Chennai	Delhi	Mumbai
	JP0*	JP1*	JP1*	JP1*	JP0*	JP1*
1982	91.1			79.4		113.9
1983	91.2			83.0		114.5
1984	91.4			86.7		115.0
1985	91.6			90.6		115.5
1986	91.8			94.7		116.1
1987	91.9			99.0		116.6
1988	92.1	52.3	94.9	103.4	116.3	117.1
1989	92.3	51.1	95.6	103.7	116.3	117.7
1990	92.5	49.8	96.4	104.0	116.4	118.2
1991	92.7	48.6	97.2	104.3	116.4	116.5
1992	92.8	47.4	98.0	104.6	116.4	114.9
1993	93.0	46.3	98.8	104.9	116.4	113.2
1994	93.2	45.2	99.6	105.2	116.4	111.6
1995	93.4	44.1	100.4	105.5	116.5	110.0
1996	93.5	43.0	101.3	105.8	116.5	108.4
1997	93.7	42.0	102.1	106.1	116.5	106.9
1998	93.9	42.7	102.9	106.4	116.5	105.4
1999	94.1	43.5	103.8	106.7	116.5	103.8
2000	94.3	44.3	104.6	107.0	116.6	102.4
2001	94.4	45.0	105.5	107.3	116.6	100.9
2002	94.6	45.8	102.3	107.6	116.6	99.5
2003	94.8	46.7	99.2	107.9	116.6	98.0
2004	95.0	47.5	96.2	108.2	116.6	96.6
2005	95.2	48.3	93.3	108.5	116.7	95.3
APC0	0.19	-0.52	0.21	1.03*	0.02	-0.89*
APC1	-	-2.42*	0.82*	4.50*	-	0.46
APC2	-	1.78	-3.04*	0.28*	-	-1.43*

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC ($p < 0.05$) values.

Fig. 4.2(a): ALL SITES (ICD-10 : C00-C96) - Females
Trends over time (1982-2005) in AAR (Three Year Moving Average)

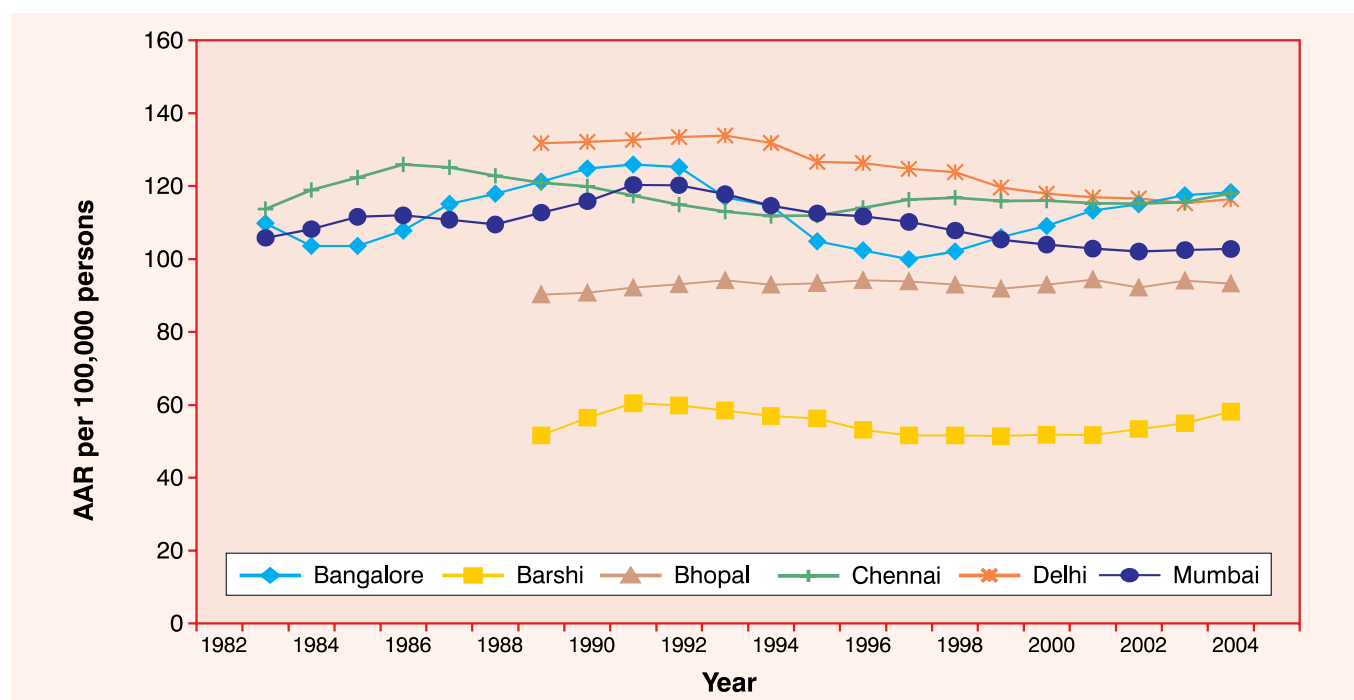


Table 4.2(a): Year wise AARs

Year	Bangalore	Barshi	Bhopal	Chennai	Delhi	Mumbai
1982	117.5			106.2		107.7
1983	105.8			118.6		101.8
1984	105.9			116.4		107.8
1985	98.9			121.9		115.0
1986	105.9			128.8		112.0
1987	118.4			127.1		109.0
1988	121.0	48.9	89.5	119.4	127.0	111.2
1989	114.2	49.7	90.1	121.8	133.1	108.4
1990	128.4	56.3	90.9	121.6	135.3	118.6
1991	131.9	63.3	91.3	116.4	128.0	120.6
1992	117.6	61.8	94.1	114.2	134.5	121.8
1993	126.3	54.4	93.6	114.0	137.7	118.1
1994	106.8	59.2	94.6	110.9	129.2	113.5
1995	110.8	57.4	90.6	110.6	128.7	112.0
1996	97.2	52.1	94.7	114.1	122.0	111.9
1997	99.3	50.0	97.2	117.3	128.4	111.2
1998	103.4	52.9	89.6	117.6	123.9	107.3
1999	103.5	51.9	92.0	115.5	119.1	104.7
2000	110.9	49.7	93.8	114.7	116.0	103.8
2001	112.9	54.0	93.1	117.9	118.7	103.3
2002	116.1	51.7	96.3	113.3	116.1	101.6
2003	116.1	54.5	87.2	114.5	114.9	101.2
2004	120.2	58.7	98.8	119.0	114.8	104.6
2005	118.6	61.2	93.7	120.4	119.4	102.4
Slope(b)	0.049	0.037	0.192	-0.134	-1.190	-0.358
p-value	0.865	0.861	0.161	0.378	0.001	0.046

Fig. 4.2(b): ALL SITES (ICD-10 : C00-C96) - Females
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

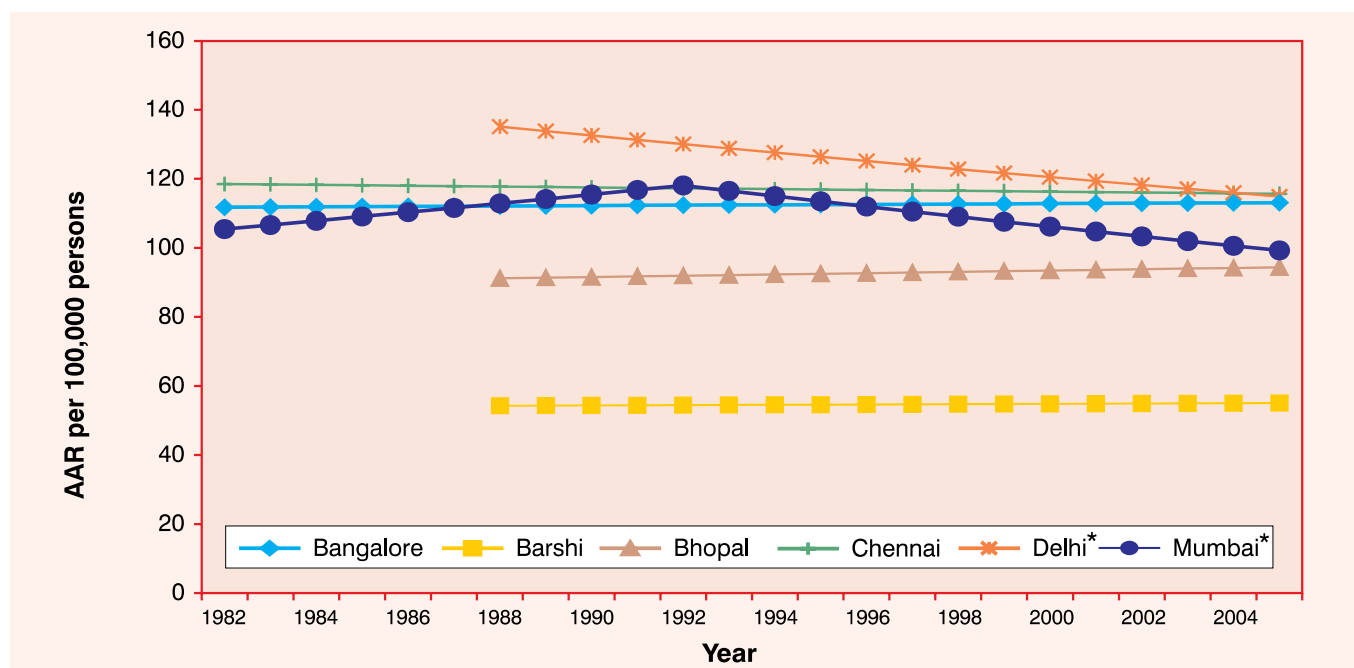


Table 4.2(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Barshi	Bhopal	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP0*	JP0*	JP0*	JP1*
1982	111.8			118.5		105.4
1983	111.8			118.4		106.6
1984	111.9			118.2		107.9
1985	112.0			118.1		109.1
1986	112.0			118.0		110.3
1987	112.1			117.9		111.6
1988	112.1	54.3	91.2	117.7	135.2	112.9
1989	112.2	54.3	91.4	117.6	133.9	114.2
1990	112.2	54.4	91.6	117.5	132.6	115.5
1991	112.3	54.4	91.8	117.4	131.3	116.8
1992	112.4	54.5	92.0	117.2	130.1	118.1
1993	112.4	54.5	92.1	117.1	128.8	116.5
1994	112.5	54.6	92.3	117.0	127.6	115.0
1995	112.5	54.6	92.5	116.9	126.4	113.5
1996	112.6	54.7	92.7	116.8	125.2	112.0
1997	112.6	54.7	92.9	116.6	124.0	110.5
1998	112.7	54.8	93.1	116.5	122.8	109.0
1999	112.8	54.8	93.3	116.4	121.7	107.6
2000	112.8	54.9	93.5	116.3	120.5	106.1
2001	112.9	54.9	93.6	116.1	119.4	104.7
2002	112.9	55.0	93.8	116.0	118.2	103.4
2003	113.0	55.0	94.0	115.9	117.1	102.0
2004	113.0	55.1	94.2	115.8	116.0	100.6
2005	113.1	55.1	94.4	115.7	114.9	99.3
APC0	0.05	0.09	0.20	-0.10	-0.95*	-0.33*
APC1	-	-	-	-	-	1.14*
APC2	-	-	-	-	-	-1.33*

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC ($p < 0.05$) values.

Fig. 4.3(a): TONGUE (ICD-10 : C01-C02) - Males
Trends over time (1982-2005) in AAR (Three Year Moving Average)

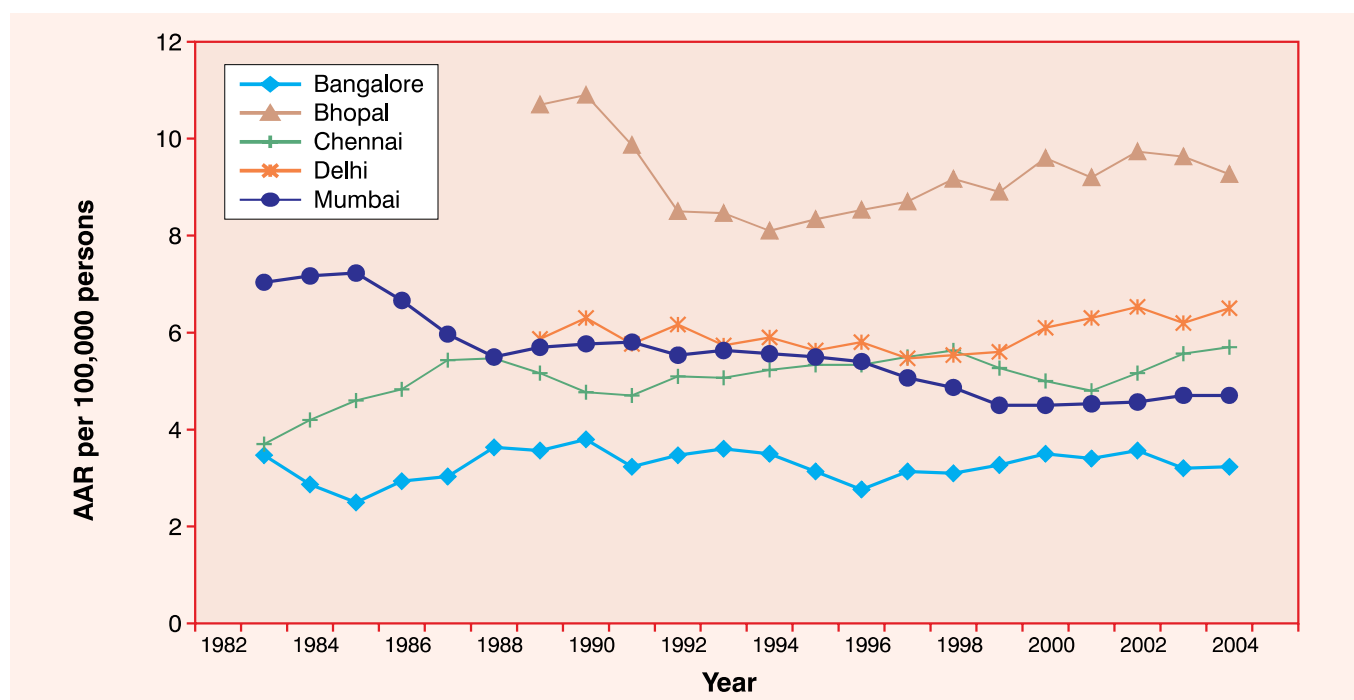


Table 4.3(a): Year wise AARs

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
1982	4.1		3.7		6.9
1983	3.6		3.4		6.9
1984	2.7		4.0		7.3
1985	2.3		5.2		7.3
1986	2.5		4.6		7.1
1987	4.0		4.7		5.6
1988	2.6	8.1	7.0	4.9	5.2
1989	4.3	11.9	4.7	7.3	5.7
1990	3.8	12.1	3.8	5.4	6.2
1991	3.3	8.7	5.8	6.2	5.4
1992	2.6	8.8	4.5	5.7	5.8
1993	4.5	8.0	5.0	6.6	5.4
1994	3.7	8.6	5.7	4.9	5.7
1995	2.3	7.7	5.0	6.2	5.6
1996	3.4	8.7	5.3	5.8	5.2
1997	2.6	9.2	5.7	5.4	5.4
1998	3.4	8.2	5.5	5.2	4.6
1999	3.3	10.1	5.7	6.0	4.6
2000	3.1	8.4	4.6	5.6	4.3
2001	4.1	10.3	4.7	6.7	4.6
2002	3.0	8.9	5.1	6.6	4.7
2003	3.6	10.0	5.7	6.3	4.4
2004	3.0	10.0	5.9	5.7	5.0
2005	3.1	7.8	5.5	7.5	4.7
Slope(b)	0.001	-0.035	0.056	0.043	-0.116
p-value	0.988	0.567	0.018	0.218	0.001

Fig. 4.3(b): TONGUE (ICD-10 : C01-C02) - Males
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

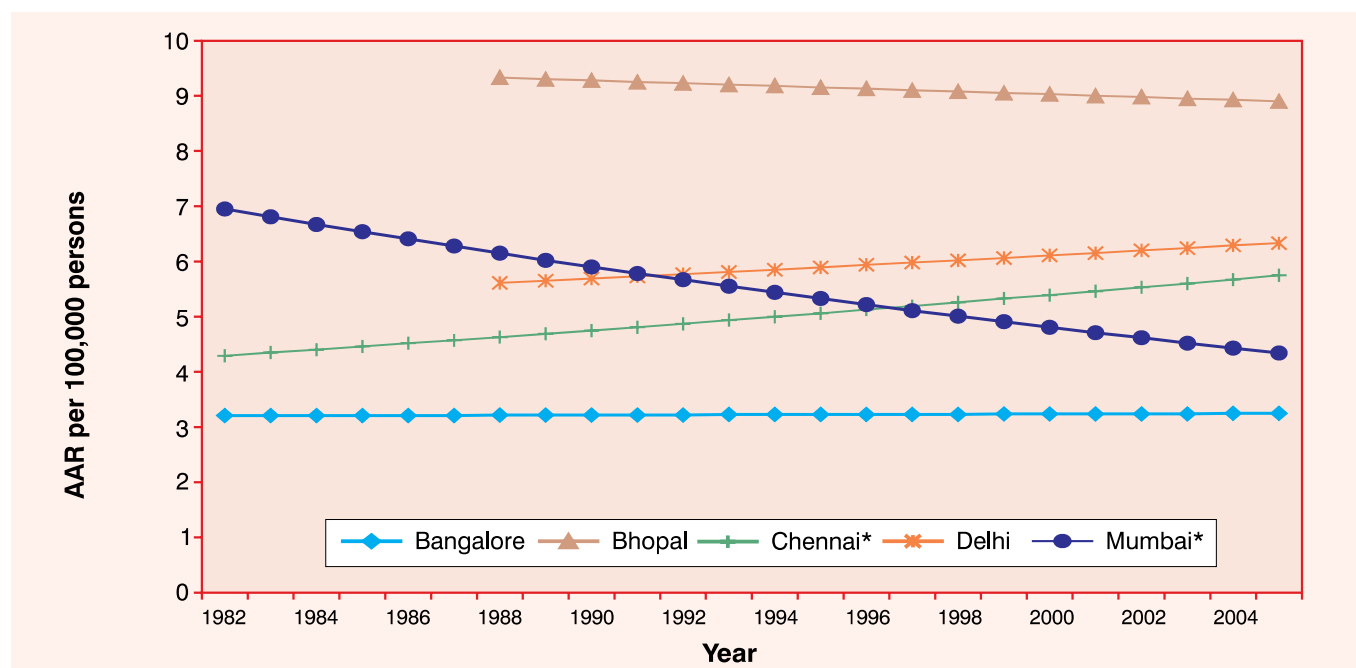


Table 4.3(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP0*	JP0*	JP0*
1982	3.2		4.3		7.0
1983	3.2		4.4		6.8
1984	3.2		4.4		6.7
1985	3.2		4.5		6.5
1986	3.2		4.5		6.4
1987	3.2		4.6		6.3
1988	3.2	9.3	4.6	5.6	6.2
1989	3.2	9.3	4.7	5.7	6.0
1990	3.2	9.3	4.8	5.7	5.9
1991	3.2	9.3	4.8	5.7	5.8
1992	3.2	9.2	4.9	5.8	5.7
1993	3.2	9.2	4.9	5.8	5.6
1994	3.2	9.2	5.0	5.9	5.4
1995	3.2	9.2	5.1	5.9	5.3
1996	3.2	9.1	5.1	5.9	5.2
1997	3.2	9.1	5.2	6.0	5.1
1998	3.2	9.1	5.3	6.0	5.0
1999	3.2	9.1	5.3	6.1	4.9
2000	3.2	9.0	5.4	6.1	4.8
2001	3.2	9.0	5.5	6.2	4.7
2002	3.2	9.0	5.5	6.2	4.6
2003	3.2	9.0	5.6	6.2	4.5
2004	3.3	8.9	5.7	6.3	4.4
2005	3.3	8.9	5.8	6.3	4.3
APC0	0.06	-0.28	1.27*	0.72	-2.03*
APC1	-	-	-	-	-
APC2	-	-	-	-	-

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC ($p < 0.05$) values.

Fig. 4.4(a): MOUTH (ICD-10 : C03-C06) - Males
Trends over time (1982-2005) in AAR (Three Year Moving Average)

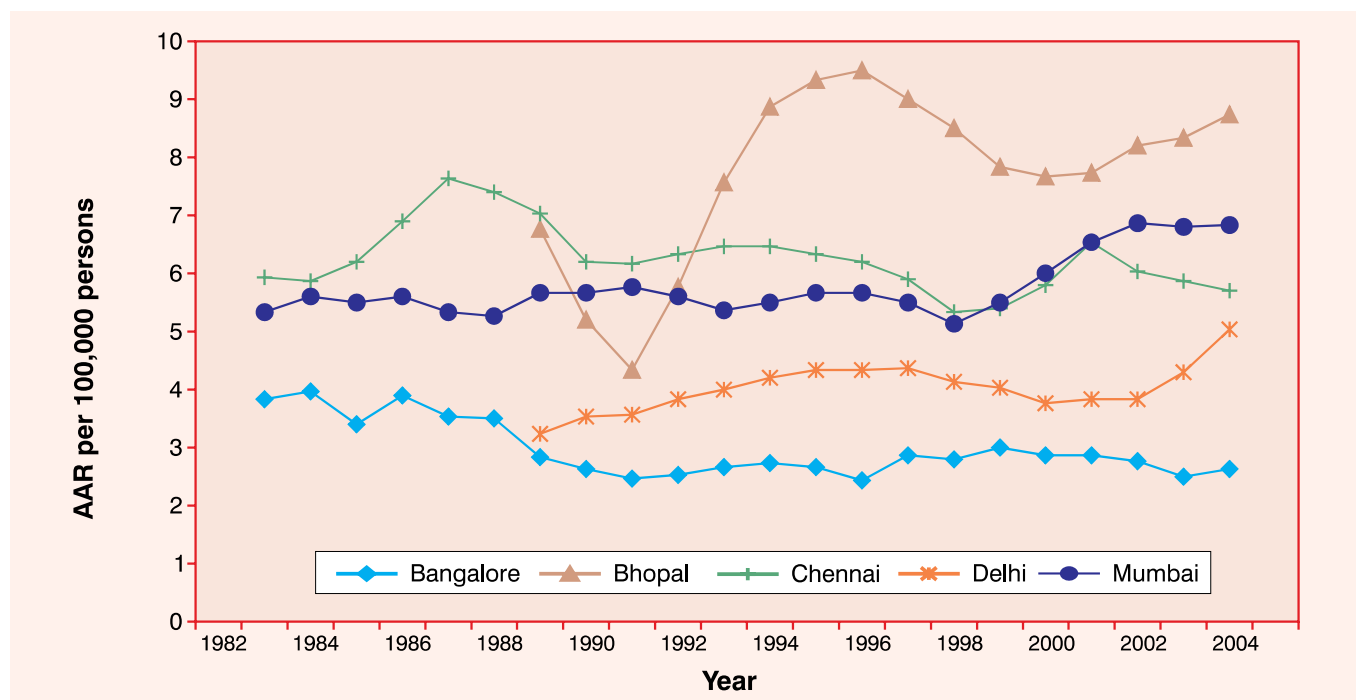


Table 4.4(a): Year wise AARs

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
1982	3.7		6.4		5.6
1983	4.5		6.0		5.7
1984	3.3		5.4		4.7
1985	4.1		6.2		6.4
1986	2.8		7.0		5.4
1987	4.8		7.5		5.0
1988	3.0	8.0	8.4	3.0	5.6
1989	2.7	9.1	6.3	3.5	5.2
1990	2.8	3.2	6.4	3.2	6.2
1991	2.4	3.3	5.9	3.9	5.6
1992	2.2	6.5	6.2	3.6	5.5
1993	3.0	7.5	6.9	4.0	5.7
1994	2.8	8.7	6.3	4.4	4.9
1995	2.4	10.4	6.2	4.2	5.9
1996	2.8	8.9	6.5	4.4	6.2
1997	2.1	9.2	5.9	4.4	4.9
1998	3.7	8.9	5.3	4.3	5.4
1999	2.6	7.4	4.8	3.7	5.1
2000	2.7	7.2	6.1	4.1	6.0
2001	3.3	8.4	6.5	3.5	6.9
2002	2.6	7.6	7.0	3.9	6.7
2003	2.4	8.6	4.6	4.1	7.0
2004	2.5	8.8	6.0	4.9	6.7
2005	3.0	8.8	6.5	6.1	6.8
Slope(b)	-0.052	0.135	-0.032	0.085	0.054
p-value	0.008	0.118	0.175	0.003	0.005

Fig. 4.4(b): MOUTH (ICD-10 : C03-C06) - Males
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

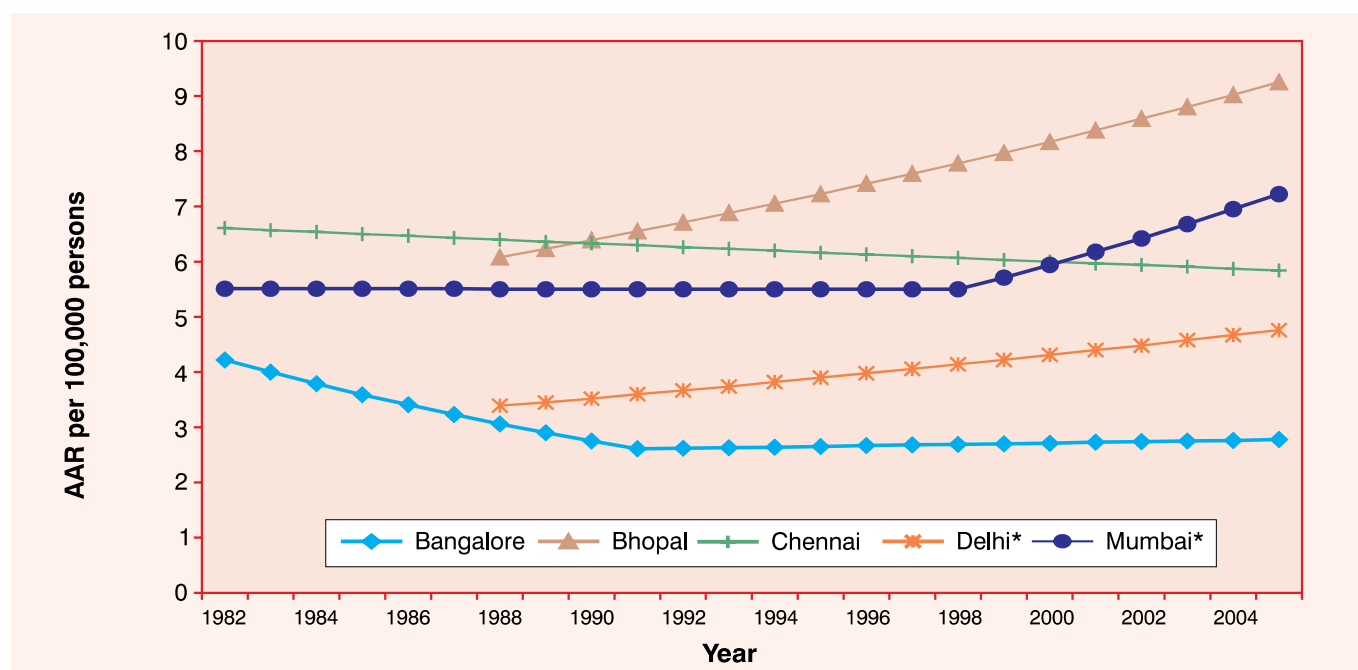


Table 4.4(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
	JP1*	JP0*	JP0*	JP0*	JP1*
1982	4.2		6.6		5.5
1983	4.0		6.6		5.5
1984	3.8		6.5		5.5
1985	3.6		6.5		5.5
1986	3.4		6.5		5.5
1987	3.2		6.4		5.5
1988	3.1	6.1	6.4	3.4	5.5
1989	2.9	6.2	6.4	3.5	5.5
1990	2.8	6.4	6.3	3.5	5.5
1991	2.6	6.6	6.3	3.6	5.5
1992	2.6	6.7	6.3	3.7	5.5
1993	2.6	6.9	6.2	3.7	5.5
1994	2.6	7.1	6.2	3.8	5.5
1995	2.7	7.2	6.2	3.9	5.5
1996	2.7	7.4	6.1	4.0	5.5
1997	2.7	7.6	6.1	4.1	5.5
1998	2.7	7.8	6.1	4.1	5.5
1999	2.7	8.0	6.0	4.2	5.7
2000	2.7	8.2	6.0	4.3	5.9
2001	2.7	8.4	6.0	4.4	6.2
2002	2.7	8.6	5.9	4.5	6.4
2003	2.8	8.8	5.9	4.6	6.7
2004	2.8	9.0	5.9	4.7	7.0
2005	2.8	9.3	5.8	4.8	7.2
APC0	-1.54*	2.5	-0.53	2.03*	0.89*
APC1	-5.21*	—	—	—	-0.02
APC2	0.45	—	—	—	3.98*

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC (p<0.05) values.

Fig. 4.5(a): MOUTH (ICD-10 : C03-C06) - Females
Trends over time (1982-2005) in AAR (Three Year Moving Average)

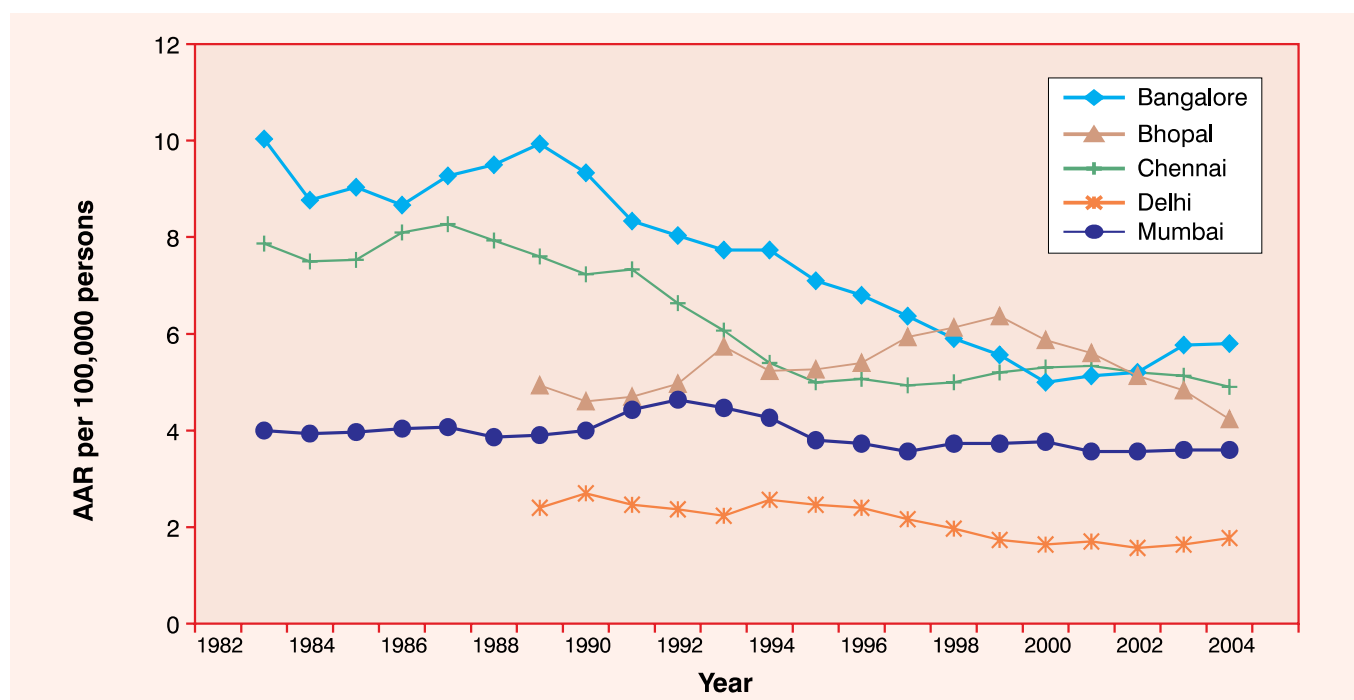


Table 4.5(a): Year wise AARs

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
1982	12.2		8.4		4.3
1983	8.7		8.1		4.0
1984	9.2		7.1		3.7
1985	8.4		7.3		4.1
1986	9.5		8.2		4.1
1987	8.1		8.8		3.9
1988	10.2	4.3	7.8	2.2	4.2
1989	10.2	6.0	7.2	2.3	3.5
1990	9.4	4.5	7.8	2.7	4.0
1991	8.4	3.3	6.7	3.1	4.5
1992	7.2	6.3	7.5	1.6	4.8
1993	8.5	5.3	5.7	2.4	4.6
1994	7.5	5.6	5.0	2.7	4.0
1995	7.2	4.8	5.5	2.6	4.2
1996	6.6	5.4	4.5	2.1	3.2
1997	6.6	6.0	5.2	2.5	3.8
1998	5.9	6.4	5.1	1.9	3.7
1999	5.2	6.0	4.7	1.5	3.7
2000	5.6	6.7	5.8	1.8	3.8
2001	4.2	4.9	5.4	1.6	3.8
2002	5.6	5.2	4.8	1.7	3.1
2003	5.8	5.3	5.4	1.4	3.8
2004	5.9	4.0	5.2	1.8	3.9
2005	5.7	3.4	4.1	2.1	3.1
Slope(b)	-0.242	-0.008	-0.176	-0.056	-0.028
p-value	0.001	0.87	0.001	0.006	0.022

Fig. 4.5(b): MOUTH (ICD-10 : C03-C06) - Females
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

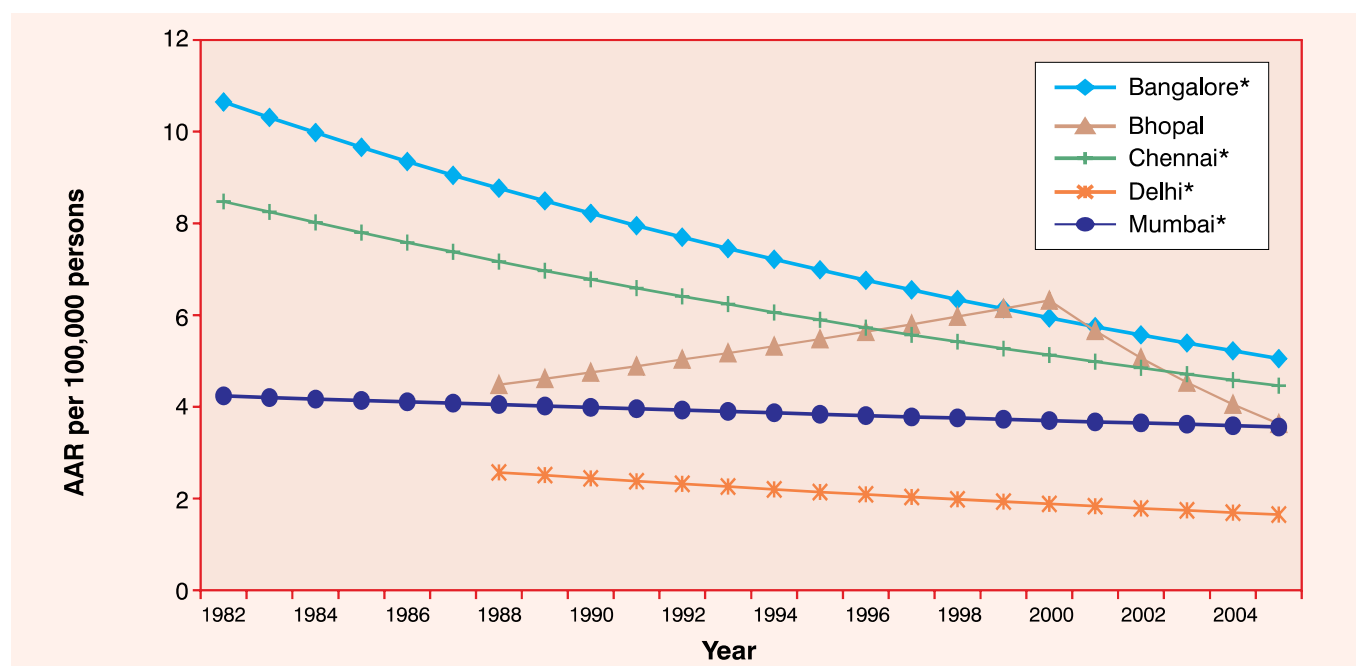


Table 4.5(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
	JP0*	JP1*	JP0*	JP0*	JP0*
1982	10.7		8.5		4.2
1983	10.3		8.3		4.2
1984	10.0		8.0		4.2
1985	9.7		7.8		4.1
1986	9.4		7.6		4.1
1987	9.1		7.4		4.1
1988	8.8	4.5	7.2	2.6	4.1
1989	8.5	4.6	7.0	2.5	4.0
1990	8.2	4.8	6.8	2.4	4.0
1991	8.0	4.9	6.6	2.4	4.0
1992	7.7	5.0	6.4	2.3	3.9
1993	7.5	5.2	6.2	2.3	3.9
1994	7.2	5.3	6.1	2.2	3.9
1995	7.0	5.5	5.9	2.1	3.8
1996	6.8	5.6	5.7	2.1	3.8
1997	6.6	5.8	5.6	2.0	3.8
1998	6.3	6.0	5.4	2.0	3.8
1999	6.1	6.1	5.3	1.9	3.7
2000	5.9	6.3	5.1	1.9	3.7
2001	5.8	5.7	5.0	1.8	3.7
2002	5.6	5.1	4.9	1.8	3.7
2003	5.4	4.5	4.7	1.7	3.6
2004	5.2	4.1	4.6	1.7	3.6
2005	5.1	3.6	4.5	1.7	3.6
APC0	-3.19*	-0.23	-2.76*	-2.58*	-0.75*
APC1	—	2.91	—	—	—
APC2	—	-10.51	—	—	—

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC ($p < 0.05$) values.

Fig. 4.6(a): HYPOPHARYNX (ICD-10 : C12-C13) - Males
Trends over time (1982-2005) in AAR (Three Year Moving Average)

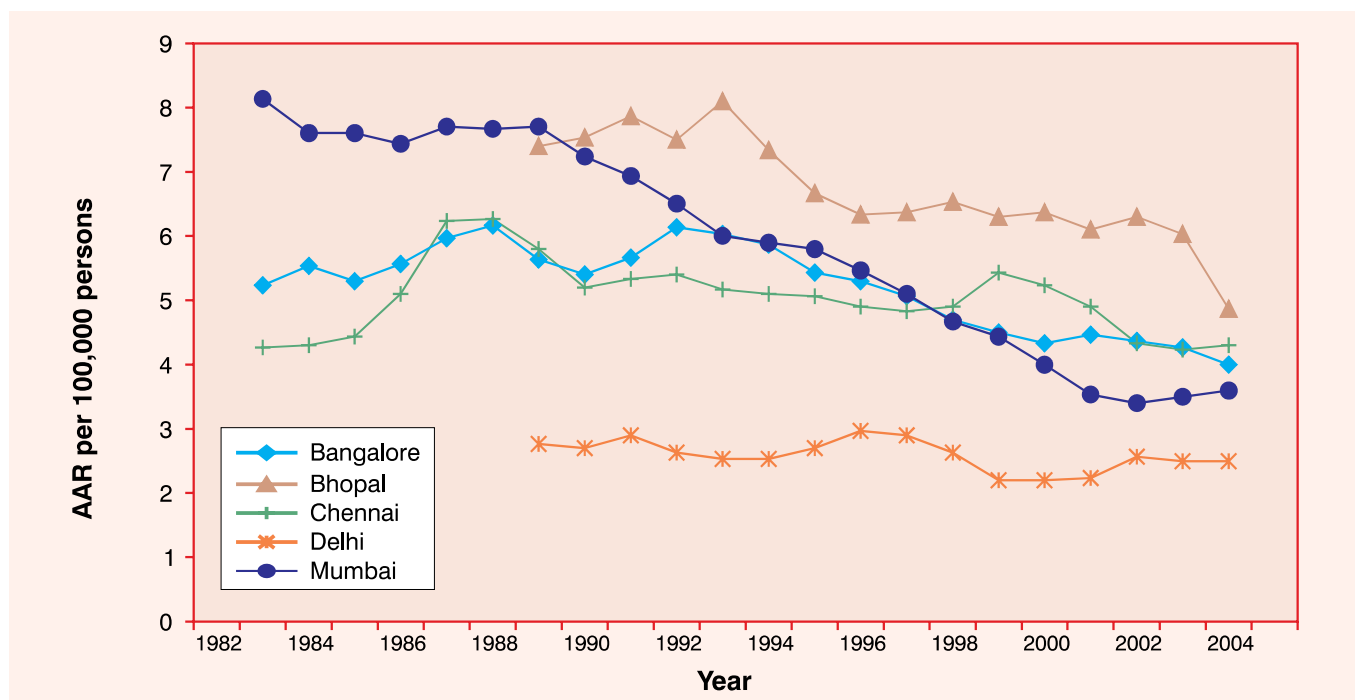


Table 4.6(a): Year wise AARs

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
1982	4.4		3.5		9.1
1983	5.4		5.2		7.3
1984	5.9		4.1		8.0
1985	5.3		3.6		7.5
1986	4.7		5.6		7.3
1987	6.7		6.1		7.5
1988	6.5	5.2	7.0	2.9	8.3
1989	5.3	7.6	5.7	2.1	7.2
1990	5.1	9.4	4.7	3.3	7.6
1991	5.8	5.6	5.2	2.7	6.9
1992	6.1	8.6	6.1	2.7	6.3
1993	6.5	8.3	4.9	2.5	6.3
1994	5.5	7.4	4.5	2.4	5.4
1995	5.6	6.3	5.9	2.7	6.0
1996	5.2	6.3	4.8	3.0	6.0
1997	5.1	6.4	4.0	3.2	4.4
1998	4.9	6.4	5.7	2.5	4.9
1999	4.1	6.8	5.0	2.2	4.7
2000	4.5	5.7	5.6	1.9	3.7
2001	4.4	6.6	5.1	2.5	3.6
2002	4.5	6.0	4.0	2.3	3.3
2003	4.2	6.3	3.9	2.9	3.3
2004	4.1	5.8	4.8	2.3	3.9
2005	3.7	2.5	4.2	2.3	3.6
Slope(b)	-0.068	-0.152	-0.015	-0.024	-0.240
p-value	0.003	0.020	0.586	0.177	0.001

Fig. 4.6(b): HYPOPHARYNX (ICD-10 : C12-C13) - Males
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

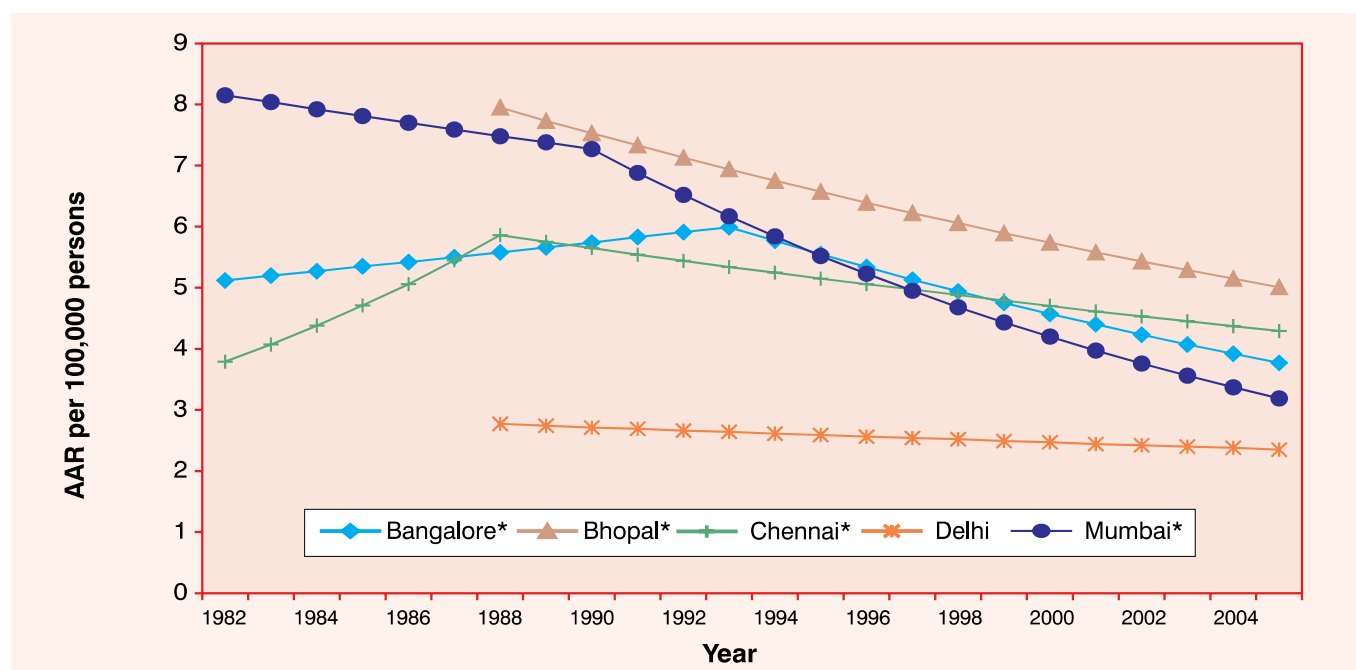


Table 4.6(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
	JP1*	JP0*	JP1*	JP0*	JP1*
1982	5.1		3.8		8.2
1983	5.2		4.1		8.0
1984	5.3		4.4		7.9
1985	5.4		4.7		7.8
1986	5.4		5.1		7.7
1987	5.5		5.5		7.6
1988	5.6	8.0	5.9	2.8	7.5
1989	5.7	7.7	5.8	2.7	7.4
1990	5.7	7.5	5.7	2.7	7.3
1991	5.8	7.3	5.5	2.7	6.9
1992	5.9	7.1	5.4	2.7	6.5
1993	6.0	6.9	5.3	2.6	6.2
1994	5.8	6.8	5.3	2.6	5.8
1995	5.6	6.6	5.2	2.6	5.5
1996	5.3	6.4	5.1	2.6	5.2
1997	5.1	6.2	5.0	2.5	5.0
1998	4.9	6.1	4.9	2.5	4.7
1999	4.8	5.9	4.8	2.5	4.4
2000	4.6	5.7	4.7	2.5	4.2
2001	4.4	5.6	4.6	2.4	4.0
2002	4.2	5.4	4.5	2.4	3.8
2003	4.1	5.3	4.5	2.4	3.6
2004	3.9	5.2	4.4	2.4	3.4
2005	3.8	5.0	4.3	2.4	3.2
APC0	-1.38*	-2.68*	-0.20	-0.95	-4.24*
APC1	1.44	-	7.55	-	-1.41
APC2	-3.80*	-	-1.82*	-	-5.35*

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC ($p < 0.05$) values.

Fig. 4.7(a): OESOPHAGUS (ICD-10 : C15) - Males
Trends over time (1982-2005) in AAR (Three Year Moving Average)

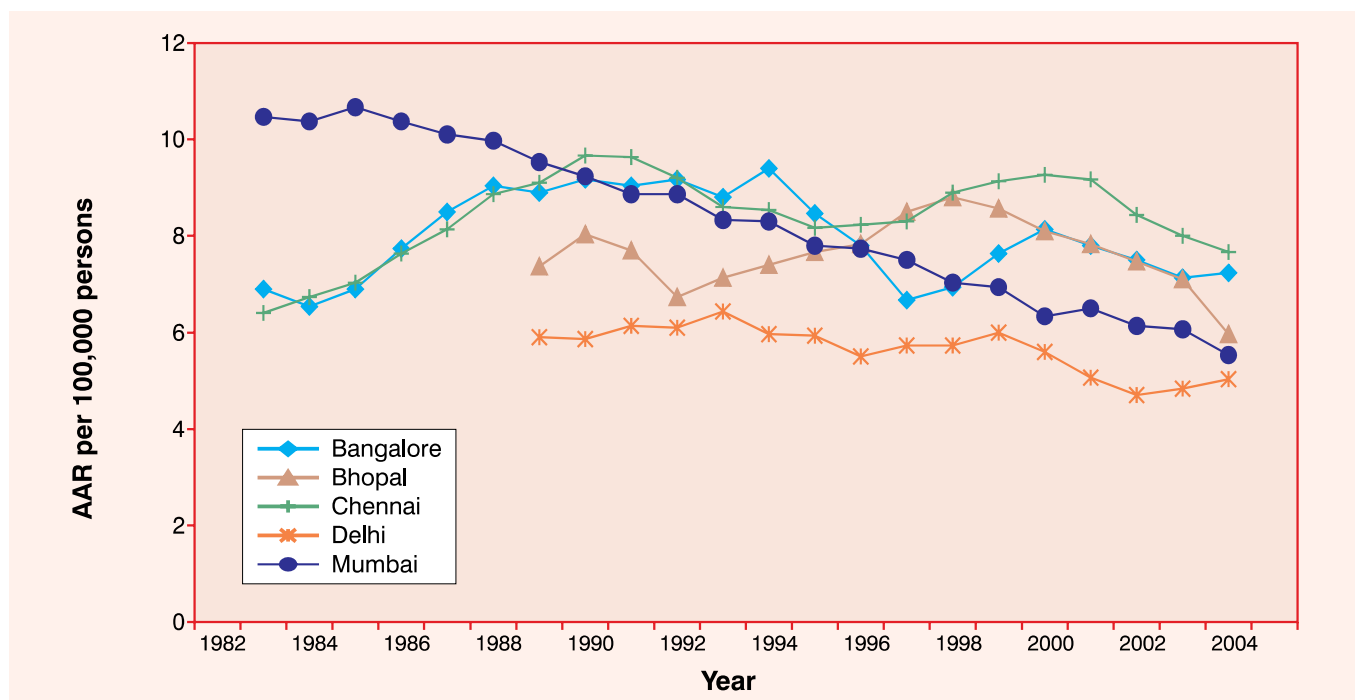


Table 4.7(a): Year wise AARs

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
1982	7.6		6.2		10.9
1983	5.7		5.8		9.3
1984	7.4		7.2		11.2
1985	6.5		7.2		10.6
1986	6.8		6.7		10.2
1987	9.9		9.0		10.3
1988	8.8	5.2	8.7	5.5	9.8
1989	8.4	7.0	8.9	6.0	9.8
1990	9.5	9.9	9.7	6.2	9.0
1991	9.6	7.2	10.4	5.4	8.9
1992	8.0	6.0	8.8	6.8	8.7
1993	9.9	7.0	8.4	6.1	9.0
1994	8.5	8.4	8.6	6.4	7.3
1995	9.8	6.8	8.6	5.4	8.6
1996	7.1	7.8	7.3	6.0	7.5
1997	6.5	8.9	8.8	5.1	7.1
1998	6.4	8.8	8.8	6.1	7.9
1999	7.9	8.7	9.1	6.0	6.1
2000	8.6	8.2	9.5	5.9	6.8
2001	7.9	7.4	9.2	4.9	6.1
2002	6.9	7.9	8.8	4.4	6.6
2003	7.7	7.1	7.3	4.8	5.7
2004	6.8	6.3	7.9	5.3	5.9
2005	7.2	4.5	7.8	5.0	5.0
Slope(b)	-0.014	-0.021	0.060	-0.070	-0.246
p-value	0.718	0.740	0.068	0.011	0.001

Fig. 4.7(b): OESOPHAGUS (ICD-10 : C15) - Males
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

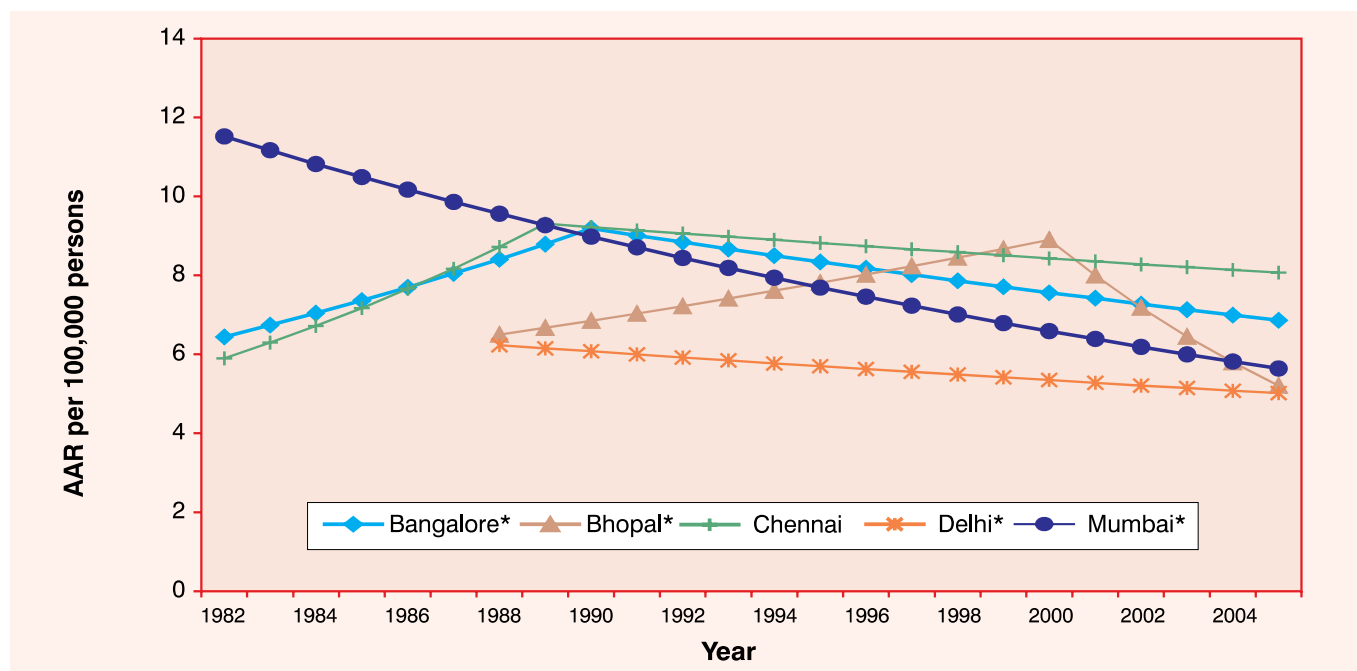


Table 4.7(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
	JP1*	JP1*	JP1*	JP0*	JP0*
1982	6.4		5.9		11.5
1983	6.7		6.3		11.2
1984	7.0		6.7		10.8
1985	7.4		7.2		10.5
1986	7.7		7.7		10.2
1987	8.1		8.2		9.9
1988	8.4	6.5	8.7	6.2	9.6
1989	8.8	6.7	9.3	6.2	9.3
1990	9.2	6.9	9.2	6.1	9.0
1991	9.0	7.0	9.1	6.0	8.7
1992	8.8	7.2	9.1	5.9	8.4
1993	8.7	7.4	9.0	5.9	8.2
1994	8.5	7.6	8.9	5.8	7.9
1995	8.3	7.8	8.8	5.7	7.7
1996	8.2	8.0	8.7	5.6	7.5
1997	8.0	8.2	8.7	5.6	7.2
1998	7.9	8.5	8.6	5.5	7.0
1999	7.7	8.7	8.5	5.4	6.8
2000	7.6	8.9	8.4	5.4	6.6
2001	7.4	8.0	8.4	5.3	6.4
2002	7.3	7.2	8.3	5.2	6.2
2003	7.1	6.5	8.2	5.2	6.0
2004	7.0	5.8	8.1	5.1	5.8
2005	6.9	5.2	8.1	5.0	5.6
APC0	-0.12	-0.34	0.82	-1.27*	-3.06*
APC1	4.54*	2.66	6.73*	-	-
APC2	-1.93*	-10.17*	-0.89	-	-

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC (p<0.05) values.

Fig. 4.8(a): OESOPHAGUS (ICD-10 : C15) - Females
Trends over time (1982-2005) in AAR (Three Year Moving Average)

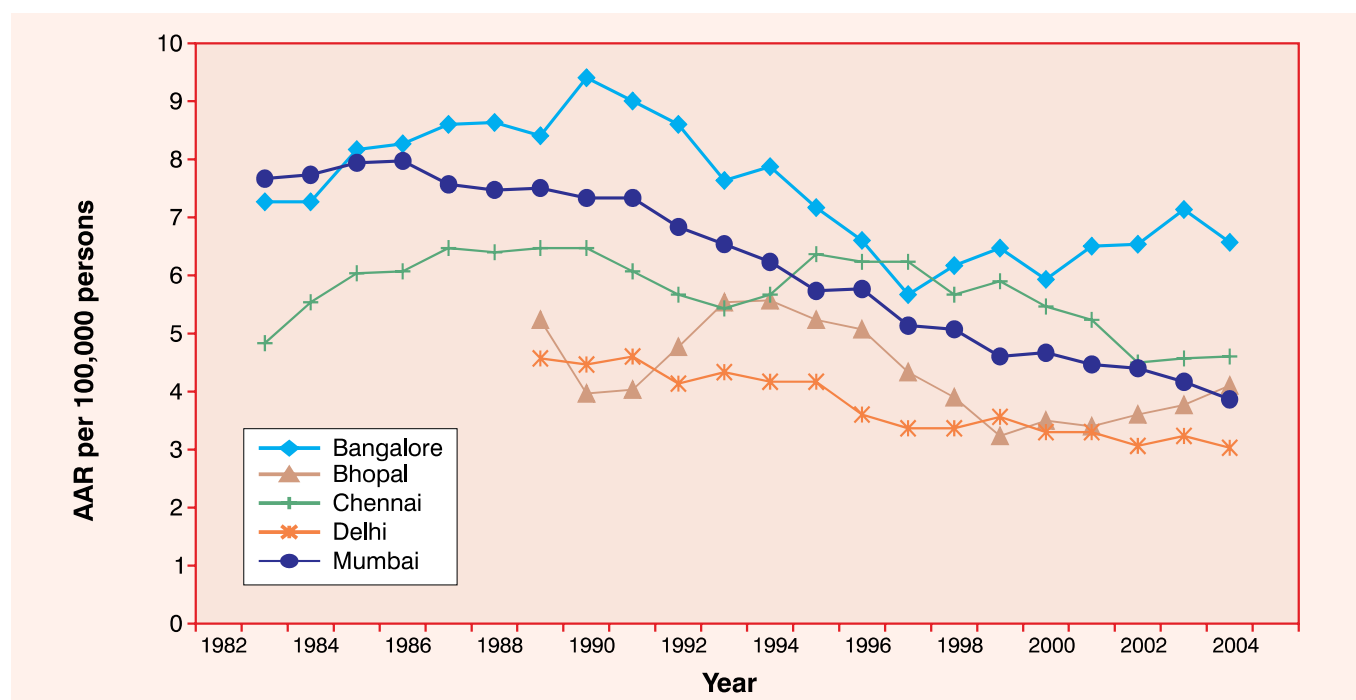


Table 4.8(a): Year wise AARs

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
1982	6.5		3.2		8.1
1983	6.6		5.6		7.0
1984	8.7		5.7		7.9
1985	6.5		5.3		8.3
1986	9.3		7.1		7.6
1987	9.0		5.8		8.0
1988	7.5	7.2	6.5	4.3	7.1
1989	9.4	4.7	6.9	4.3	7.3
1990	8.3	3.8	6.0	5.1	8.1
1991	10.5	3.4	6.5	4.0	6.6
1992	8.2	4.9	5.7	4.7	7.3
1993	7.1	6.0	4.8	3.7	6.6
1994	7.6	5.7	5.8	4.6	5.7
1995	8.9	5.0	6.4	4.2	6.4
1996	5.0	5.0	6.9	3.7	5.1
1997	5.9	5.2	5.4	2.9	5.8
1998	6.1	2.8	6.4	3.5	4.5
1999	6.5	3.7	5.2	3.7	4.9
2000	6.8	3.2	6.1	3.5	4.4
2001	4.5	3.6	5.1	2.7	4.7
2002	8.2	3.4	4.5	3.7	4.3
2003	6.9	3.8	3.9	2.8	4.2
2004	6.3	4.1	5.3	3.2	4.0
2005	6.5	4.4	4.6	3.1	3.4
Slope(b)	-0.084	-0.108	-0.029	-0.101	-0.021
p-value	0.051	0.029	0.315	0.001	0.001

Fig. 4.8(b): OESOPHAGUS (ICD-10 : C15) - Females
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

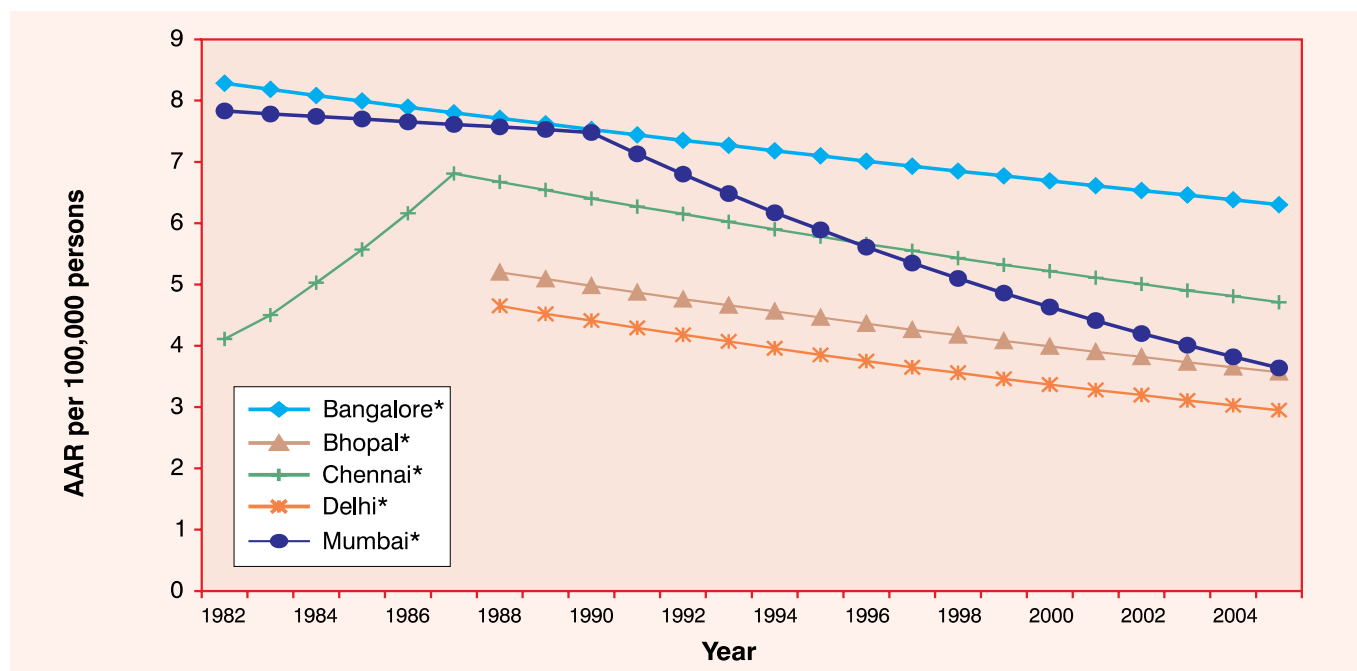


Table 4.8(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP1*	JP0*	JP1*
1982	8.3		4.1		7.8
1983	8.2		4.5		7.8
1984	8.1		5.0		7.7
1985	8.0		5.6		7.7
1986	7.9		6.2		7.7
1987	7.8		6.8		7.6
1988	7.7	5.2	6.7	4.7	7.6
1989	7.6	5.1	6.5	4.5	7.5
1990	7.5	5.0	6.4	4.4	7.5
1991	7.4	4.9	6.3	4.3	7.1
1992	7.4	4.8	6.2	4.2	6.8
1993	7.3	4.7	6.0	4.1	6.5
1994	7.2	4.6	5.9	4.0	6.2
1995	7.1	4.5	5.8	3.9	5.9
1996	7.0	4.4	5.7	3.8	5.6
1997	6.9	4.3	5.6	3.7	5.4
1998	6.9	4.2	5.4	3.6	5.1
1999	6.8	4.1	5.3	3.5	4.9
2000	6.7	4.0	5.2	3.4	4.6
2001	6.6	3.9	5.1	3.3	4.4
2002	6.5	3.8	5.0	3.2	4.2
2003	6.5	3.7	4.9	3.1	4.0
2004	6.4	3.7	4.8	3.0	3.8
2005	6.3	3.6	4.7	3.0	3.6
APC0	-1.18*	-2.19*	-0.44	-2.64*	-3.52*
APC1	-	-	10.63*	-	-0.56
APC2	-	-	-2.03*	-	-4.69*

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC (p<0.05) values.

Fig. 4.9(a): STOMACH (ICD-10 : C16) - Males
Trends over time (1982-2005) in AAR (Three Year Moving Average)

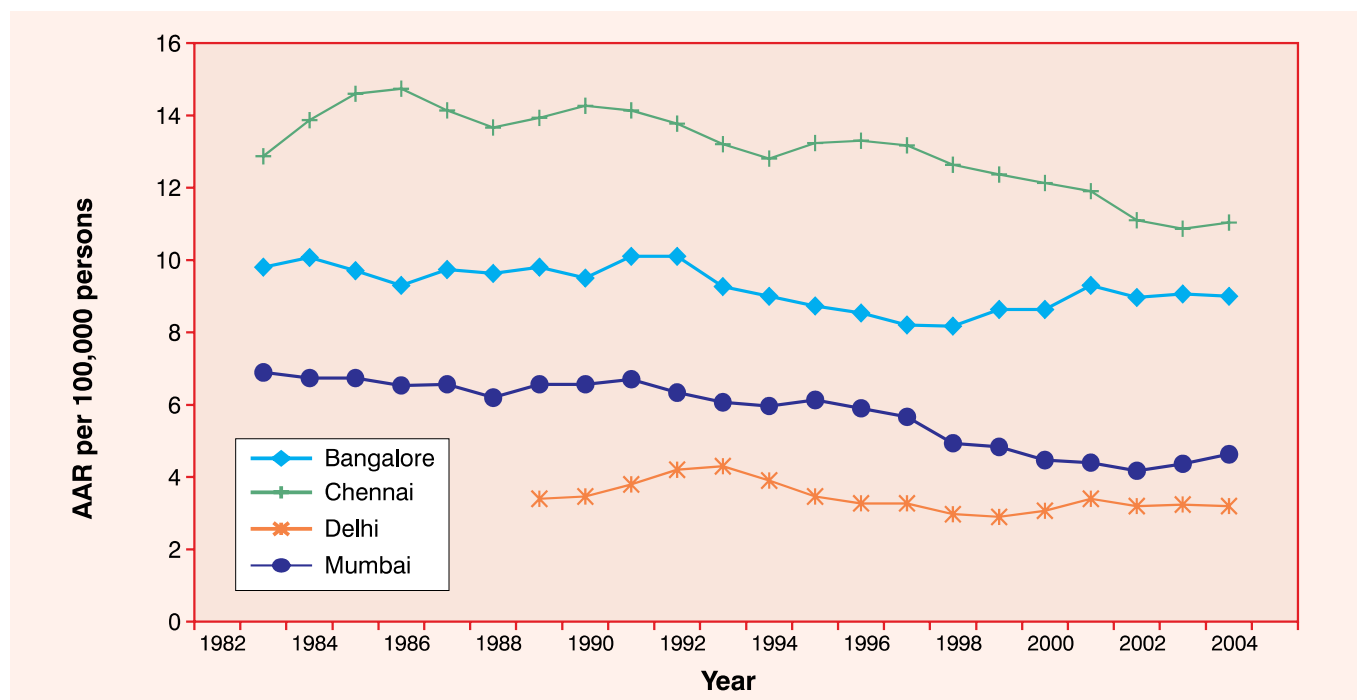


Table 4.9(a): Year wise AARs

Year	Bangalore	Chennai	Delhi	Mumbai
1982	10.0	11.8		7.1
1983	9.9	13.7		7.0
1984	9.5	13.1		6.6
1985	10.8	14.8		6.6
1986	8.8	15.9		7.0
1987	8.3	13.5		6.0
1988	12.1	13.0	3.4	6.7
1989	8.5	14.5	3.2	5.9
1990	8.8	14.3	3.6	7.1
1991	11.2	14.0	3.6	6.7
1992	10.3	14.1	4.2	6.3
1993	8.8	13.2	4.8	6.0
1994	8.7	12.3	3.9	5.9
1995	9.5	12.9	3.0	6.0
1996	8.0	14.5	3.5	6.5
1997	8.1	12.5	3.3	5.2
1998	8.5	12.5	3.0	5.3
1999	7.9	12.9	2.6	4.3
2000	9.5	11.7	3.1	4.9
2001	8.5	11.8	3.5	4.2
2002	9.9	12.2	3.6	4.1
2003	8.5	9.3	2.5	4.2
2004	8.8	11.1	3.6	4.8
2005	9.7	12.7	3.5	4.9
Slope(b)	-0.054	-0.117	-0.034	-0.125
p-value	0.089	0.002	0.178	0.001

Fig. 4.9(b): STOMACH (ICD-10 : C16) - Males
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

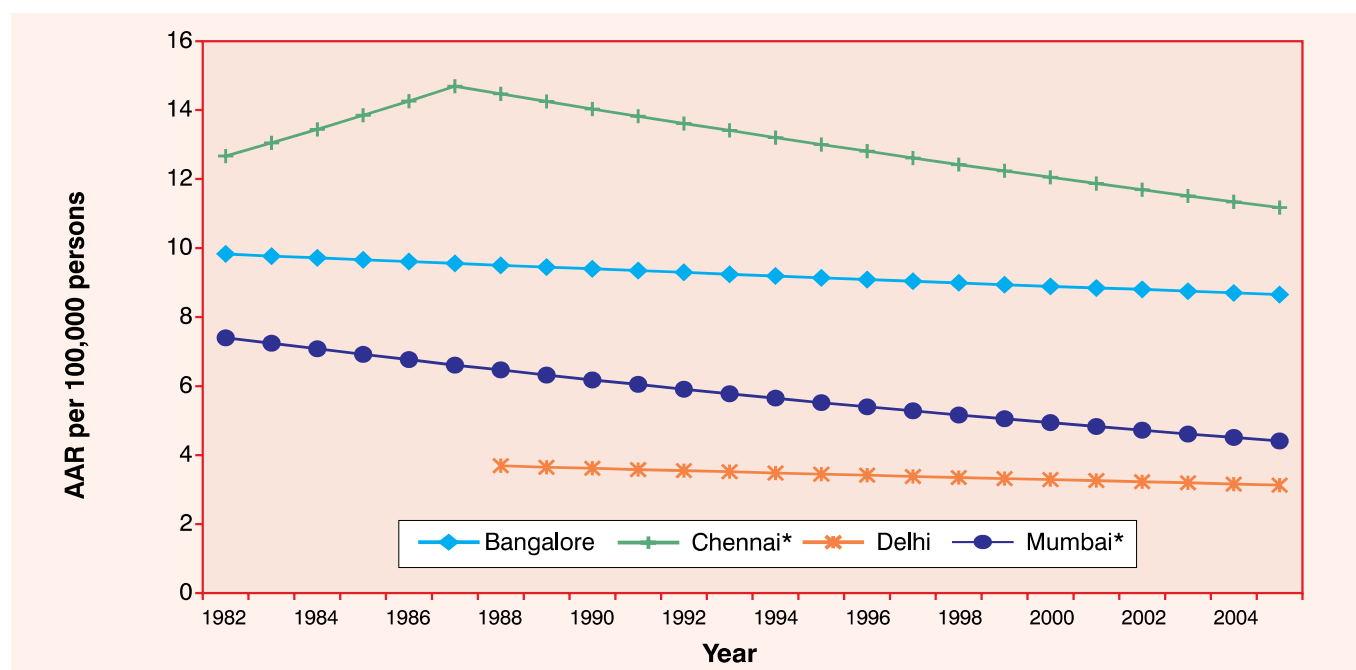


Table 4.9(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Chennai	Delhi	Mumbai
	JP0*	JP1*	JP0*	JP0*
1982	9.8	12.7		7.4
1983	9.8	13.1		7.2
1984	9.7	13.4		7.1
1985	9.7	13.9		6.9
1986	9.6	14.3		6.8
1987	9.6	14.7		6.6
1988	9.5	14.5	3.7	6.5
1989	9.5	14.3	3.7	6.3
1990	9.4	14.0	3.6	6.2
1991	9.4	13.8	3.6	6.1
1992	9.3	13.6	3.6	5.9
1993	9.2	13.4	3.5	5.8
1994	9.2	13.2	3.5	5.7
1995	9.1	13.0	3.5	5.5
1996	9.1	12.8	3.4	5.4
1997	9.0	12.6	3.4	5.3
1998	9.0	12.4	3.4	5.2
1999	8.9	12.2	3.3	5.1
2000	8.9	12.1	3.3	4.9
2001	8.8	11.9	3.3	4.8
2002	8.8	11.7	3.2	4.7
2003	8.8	11.5	3.2	4.6
2004	8.7	11.3	3.2	4.5
2005	8.7	11.2	3.1	4.4
APC0	-0.55	-0.93*	-0.95	-2.23*
APC1	-	3.00	-	-
APC2	-	-1.51*	-	-

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC ($p < 0.05$) values.

Fig. 4.10(a): COLON (ICD-10 : C18) - Males
Trends over time (1982-2005) in AAR (Three Year Moving Average)

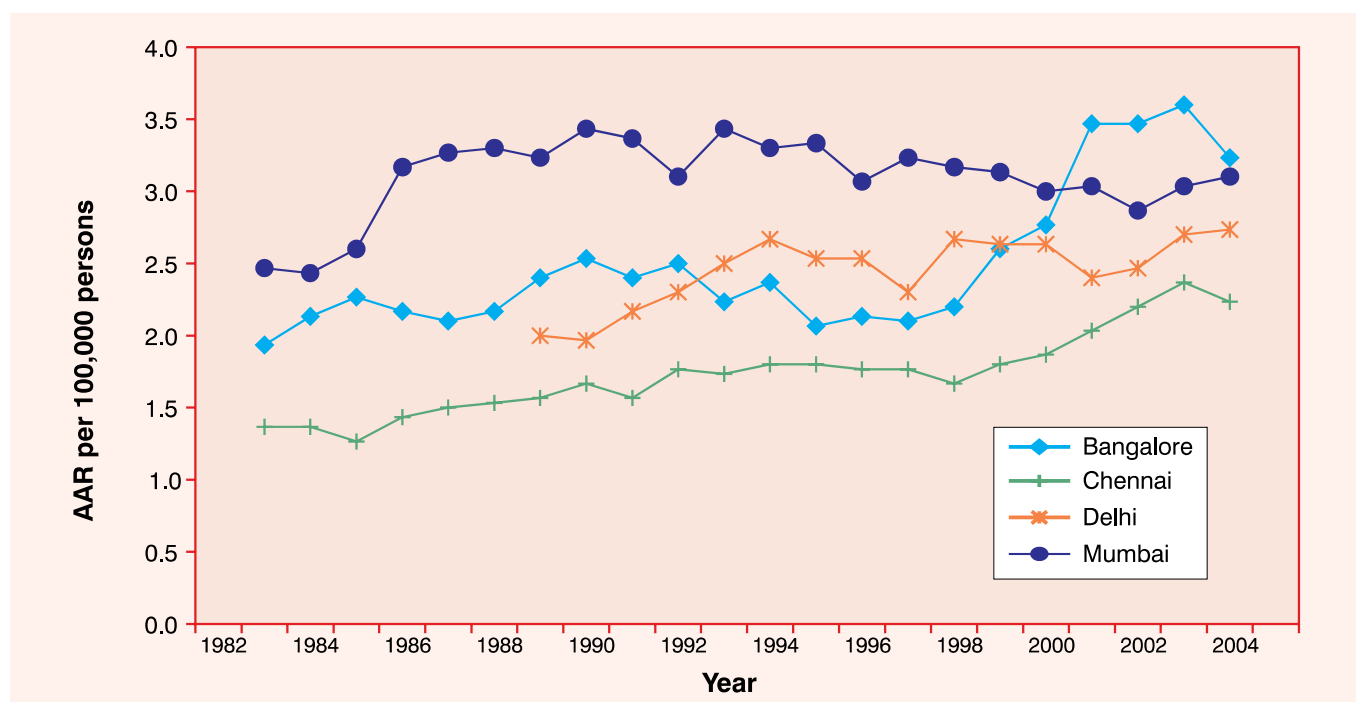


Table 4.10(a): Year wise AARs

Year	Bangalore	Chennai	Delhi	Mumbai
1982	1.8	1.4		2.4
1983	1.8	2.0		2.7
1984	2.2	0.7		2.3
1985	2.4	1.4		2.3
1986	2.2	1.7		3.2
1987	1.9	1.2		4.0
1988	2.2	1.6	2.0	2.6
1989	2.4	1.8	1.9	3.3
1990	2.6	1.3	2.1	3.8
1991	2.6	1.9	1.9	3.2
1992	2.0	1.5	2.5	3.1
1993	2.9	1.9	2.5	3.0
1994	1.8	1.8	2.5	4.2
1995	2.4	1.7	3.0	2.7
1996	2.0	1.9	2.1	3.1
1997	2.0	1.7	2.5	3.4
1998	2.3	1.7	2.3	3.2
1999	2.3	1.6	3.2	2.9
2000	3.2	2.1	2.4	3.3
2001	2.8	1.9	2.3	2.8
2002	4.4	2.1	2.5	3.0
2003	3.2	2.6	2.6	2.8
2004	3.2	2.4	3.0	3.3
2005	3.3	1.7	2.6	3.2
Slope(b)	0.060	0.035	0.040	0.016
p-value	0.001	0.001	0.013	0.274

Fig. 4.10(b): COLON (ICD-10 : C18) - Males
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

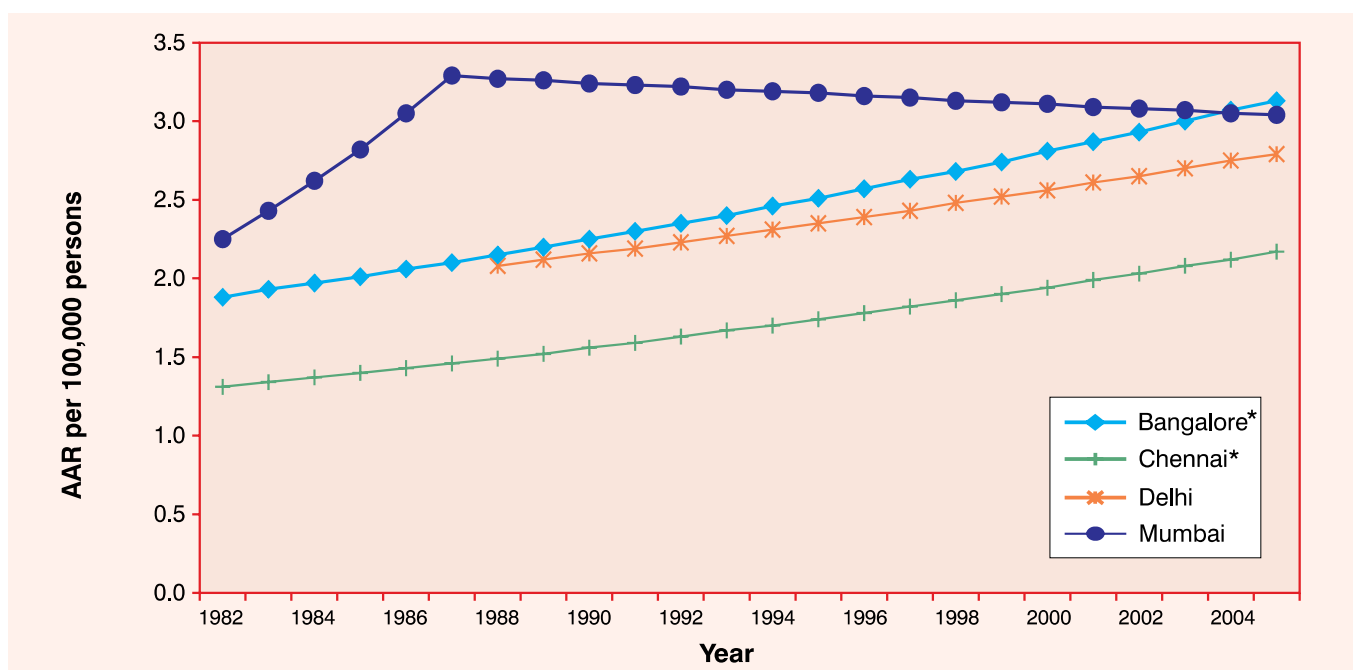


Table 4.10(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP0*	JP1*
1982	1.9	1.3		2.3
1983	1.9	1.3		2.4
1984	2.0	1.4		2.6
1985	2.0	1.4		2.8
1986	2.1	1.4		3.1
1987	2.1	1.5		3.3
1988	2.2	1.5	2.1	3.3
1989	2.2	1.5	2.1	3.3
1990	2.3	1.6	2.2	3.2
1991	2.3	1.6	2.2	3.2
1992	2.4	1.6	2.2	3.2
1993	2.4	1.7	2.3	3.2
1994	2.5	1.7	2.3	3.2
1995	2.5	1.7	2.4	3.2
1996	2.6	1.8	2.4	3.2
1997	2.6	1.8	2.4	3.2
1998	2.7	1.9	2.5	3.1
1999	2.7	1.9	2.5	3.1
2000	2.8	1.9	2.6	3.1
2001	2.9	2.0	2.6	3.1
2002	2.9	2.0	2.7	3.1
2003	3.0	2.1	2.7	3.1
2004	3.1	2.1	2.8	3.1
2005	3.1	2.2	2.8	3.0
APC0	2.24*	2.23*	1.74*	0.63
APC1	-	-	-	7.88
APC2	-	-	-	-0.43

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC (p<0.05) values.

Fig. 4.11(a): RECTUM (ICD-10 : C19-C20) - Males
Trends over time (1982-2005) in AAR (Three Year Moving Average)

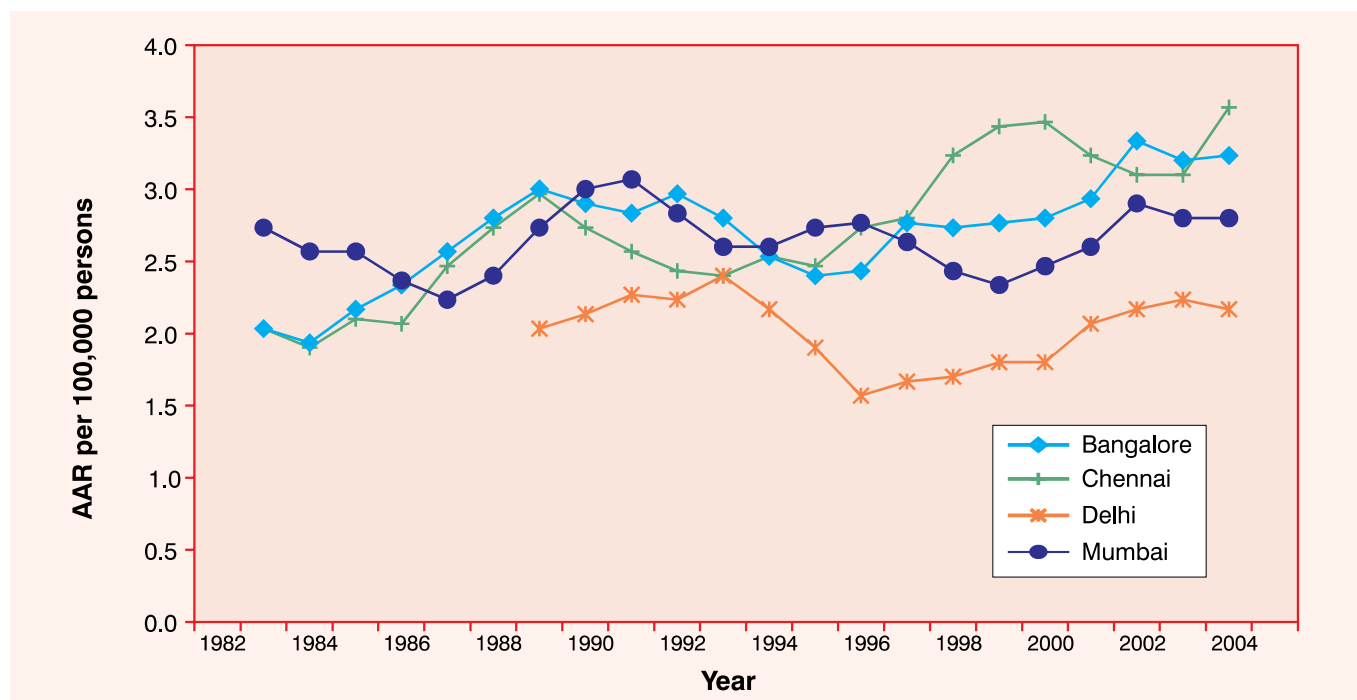


Table 4.11(a): Year wise AARs

Year	Bangalore	Chennai	Delhi	Mumbai
1982	2.5	2.2		3.1
1983	1.8	1.8		2.2
1984	1.8	2.1		2.9
1985	2.2	1.8		2.6
1986	2.5	2.4		2.2
1987	2.3	2.0		2.3
1988	2.9	3.0	1.8	2.2
1989	3.2	3.2	1.9	2.7
1990	2.9	2.7	2.4	3.3
1991	2.6	2.3	2.1	3.0
1992	3.0	2.7	2.3	2.9
1993	3.3	2.3	2.3	2.6
1994	2.1	2.2	2.6	2.3
1995	2.2	3.1	1.6	2.9
1996	2.9	2.1	1.5	3.0
1997	2.2	3.0	1.6	2.4
1998	3.2	3.3	1.9	2.5
1999	2.8	3.4	1.6	2.4
2000	2.3	3.6	1.9	2.1
2001	3.3	3.4	1.9	2.9
2002	3.2	2.7	2.4	2.8
2003	3.5	3.2	2.2	3.0
2004	2.9	3.4	2.1	2.6
2005	3.3	4.1	2.2	2.8
Slope(b)	0.040	0.069	-0.001	0.004
p-value	0.004	0.001	0.973	0.718

Fig. 4.11(b): RECTUM (ICD-10 : C19-C20) - Males
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

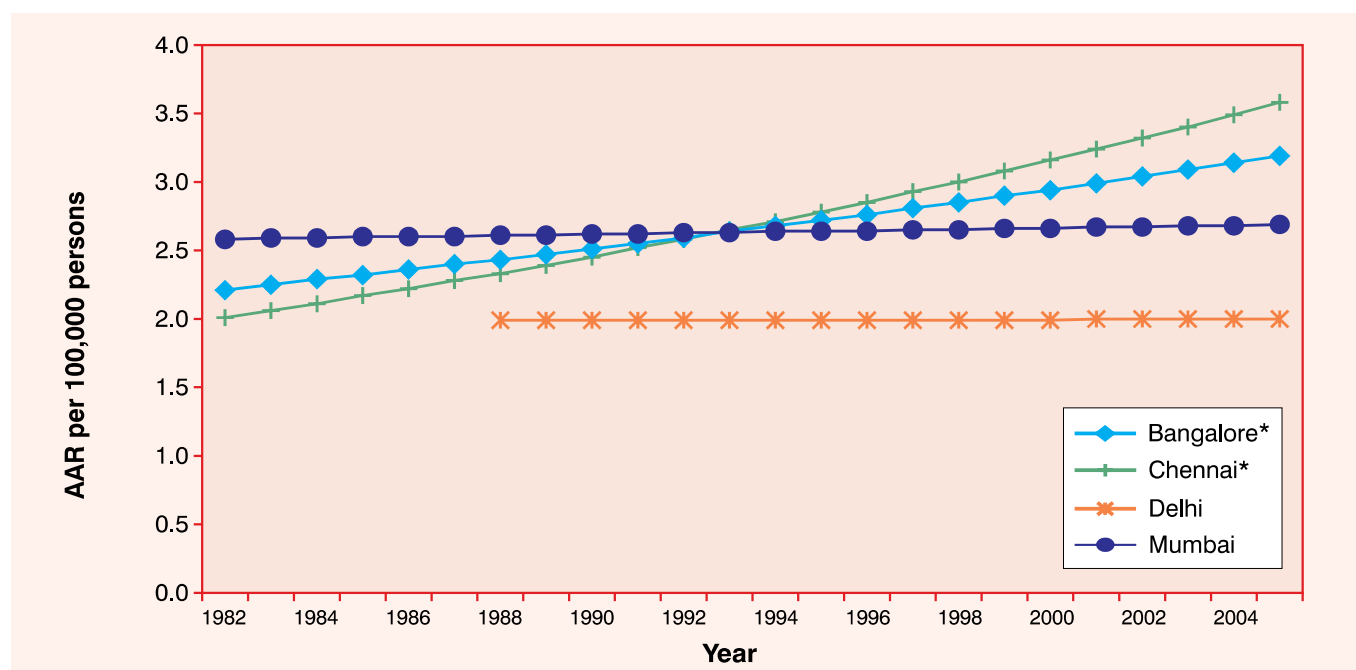


Table 4.11(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP0*	JP0*
1982	2.2	2.0		2.6
1983	2.3	2.1		2.6
1984	2.3	2.1		2.6
1985	2.3	2.2		2.6
1986	2.4	2.2		2.6
1987	2.4	2.3		2.6
1988	2.4	2.3	2.0	2.6
1989	2.5	2.4	2.0	2.6
1990	2.5	2.5	2.0	2.6
1991	2.6	2.5	2.0	2.6
1992	2.6	2.6	2.0	2.6
1993	2.6	2.7	2.0	2.6
1994	2.7	2.7	2.0	2.6
1995	2.7	2.8	2.0	2.6
1996	2.8	2.9	2.0	2.6
1997	2.8	2.9	2.0	2.7
1998	2.9	3.0	2.0	2.7
1999	2.9	3.1	2.0	2.7
2000	2.9	3.2	2.0	2.7
2001	3.0	3.2	2.0	2.7
2002	3.0	3.3	2.0	2.7
2003	3.1	3.4	2.0	2.7
2004	3.1	3.5	2.0	2.7
2005	3.2	3.6	2.0	2.7
APC0	1.60*	2.54*	0.04	0.00
APC1	-	-	-	0.17
APC2	-	-	-	-

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC (p<0.05) values.

Fig. 4.12(a): LIVER (ICD-10 : C22) - Males
Trends over time (1982-2005) in AAR (Three Year Moving Average)

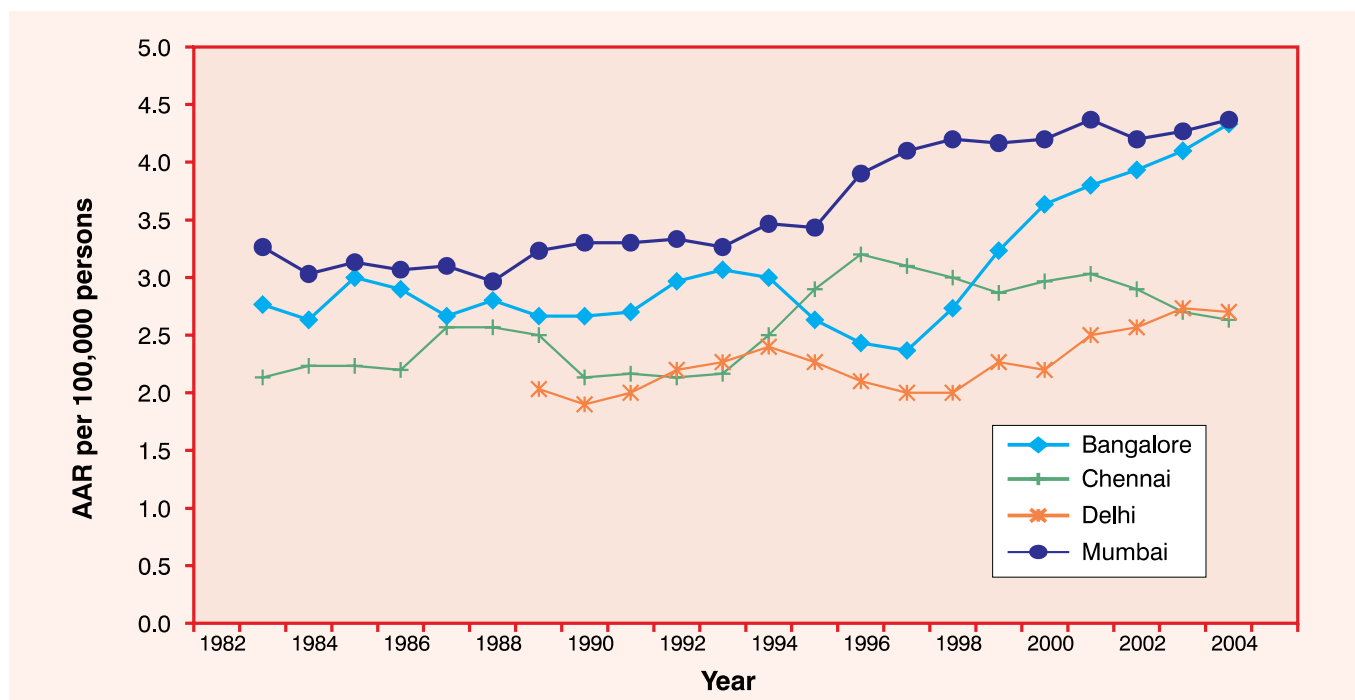


Table 4.12(a): Year wise AARs

Year	Bangalore	Chennai	Delhi	Mumbai
1982	3.6	1.8		3.7
1983	1.4	1.4		3.1
1984	3.3	2.4		3.0
1985	3.2	2.3		3.0
1986	2.5	1.9		3.4
1987	3.0	2.3		2.8
1988	2.5	3.4	2.3	3.1
1989	2.9	1.6	2.0	3.0
1990	2.6	2.1	1.8	3.6
1991	2.5	2.3	1.9	3.3
1992	3.0	2.0	2.3	3.0
1993	3.4	1.6	2.4	3.7
1994	2.8	2.4	2.1	3.1
1995	2.8	3.0	2.7	3.6
1996	2.3	3.2	2.0	3.6
1997	2.2	3.3	1.6	4.5
1998	2.6	2.8	2.4	4.2
1999	3.4	2.9	2.0	3.9
2000	3.7	2.9	2.4	4.4
2001	3.8	3.1	2.2	4.3
2002	3.9	3.0	2.9	4.4
2003	4.1	2.5	2.6	3.9
2004	4.3	2.5	2.7	4.5
2005	4.6	2.9	2.8	4.7
Slope(b)	0.061	0.048	0.039	0.068
p-value	0.003	0.002	0.011	0.001

Fig. 4.12(b): LIVER (ICD-10 : C22) - Males
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

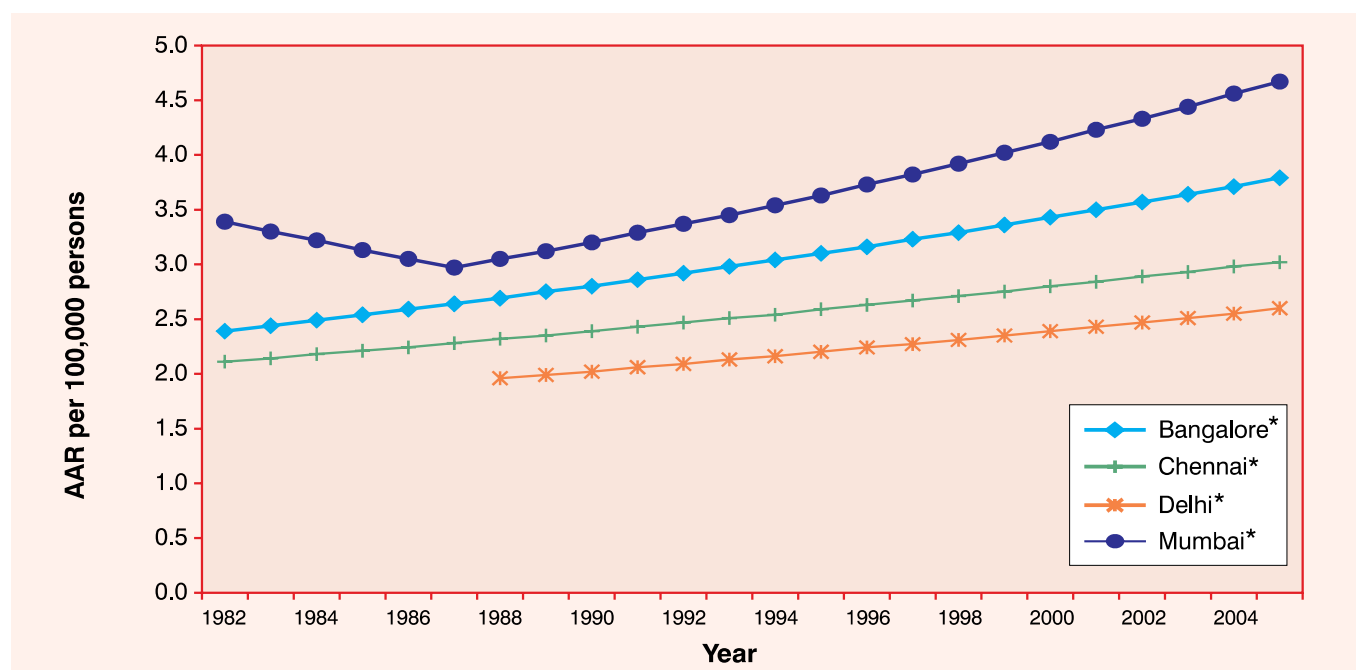


Table 4.12(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP0*	JP1*
1982	2.4	2.1		3.4
1983	2.4	2.1		3.3
1984	2.5	2.2		3.2
1985	2.5	2.2		3.1
1986	2.6	2.2		3.1
1987	2.6	2.3		3.0
1988	2.7	2.3	2.0	3.1
1989	2.8	2.4	2.0	3.1
1990	2.8	2.4	2.0	3.2
1991	2.9	2.4	2.1	3.3
1992	2.9	2.5	2.1	3.4
1993	3.0	2.5	2.1	3.5
1994	3.0	2.5	2.2	3.5
1995	3.1	2.6	2.2	3.6
1996	3.2	2.6	2.2	3.7
1997	3.2	2.7	2.3	3.8
1998	3.3	2.7	2.3	3.9
1999	3.4	2.8	2.4	4.0
2000	3.4	2.8	2.4	4.1
2001	3.5	2.8	2.4	4.2
2002	3.6	2.9	2.5	4.3
2003	3.6	2.9	2.5	4.4
2004	3.7	3.0	2.6	4.6
2005	3.8	3.0	2.6	4.7
APC0	2.02*	1.58*	1.67*	1.85*
APC1	—	—	—	-2.61
APC2	—	—	—	2.55*

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC ($p < 0.05$) values.

Fig. 4.13(a): GALLBLADDER (ICD-10 : C23-C24) - Females
Trends over time (1982-2005) in AAR (Three Year Moving Average)

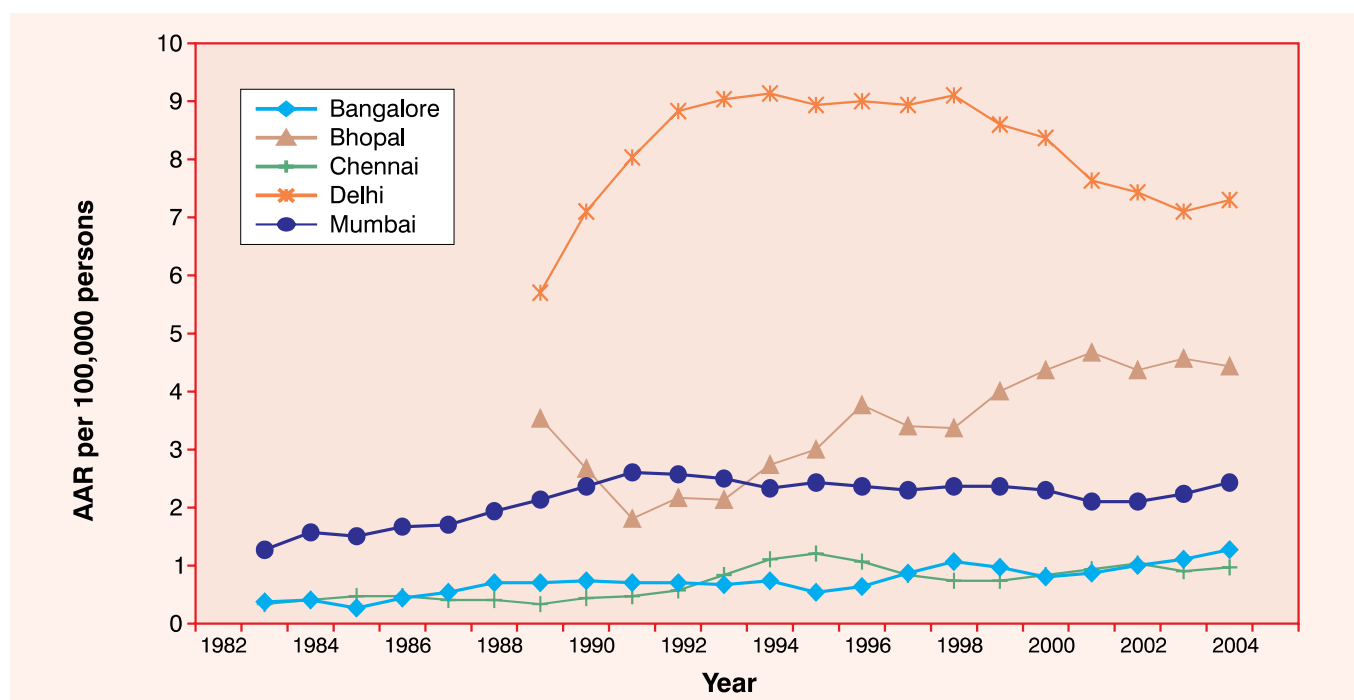


Table 4.13(a): Year wise AARs

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
1982	0.0		0.2		0.9
1983	0.6		0.3		1.6
1984	0.3		0.5		1.3
1985	0.3		0.4		1.8
1986	0.2		0.5		1.4
1987	0.8		0.5		1.8
1988	0.6	4.1	0.2	4.2	1.9
1989	0.7	4.8	0.5	6.2	2.1
1990	0.8	1.7	0.3	6.7	2.4
1991	0.7	1.5	0.5	8.4	2.6
1992	0.6	2.2	0.6	9.0	2.8
1993	0.8	2.8	0.6	9.1	2.3
1994	0.6	1.4	1.3	9.0	2.4
1995	0.8	4.0	1.4	9.3	2.3
1996	0.2	3.6	0.9	8.5	2.6
1997	0.9	3.7	0.9	9.2	2.2
1998	1.5	2.9	0.7	9.1	2.1
1999	0.8	3.5	0.6	9.0	2.8
2000	0.6	5.6	0.9	7.7	2.2
2001	1.0	4.0	1.0	8.4	1.9
2002	1.0	4.4	0.9	6.8	2.2
2003	1.0	4.7	1.2	7.1	2.2
2004	1.3	4.6	0.6	7.4	2.3
2005	1.5	4.0	1.1	7.4	2.8
Slope(b)	0.040	0.114	0.034	0.045	0.044
p-value	0.001	0.033	0.001	0.477	0.001

Fig. 4.13(b): GALLBLADDER (ICD-10 : C23-C24) - Females
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

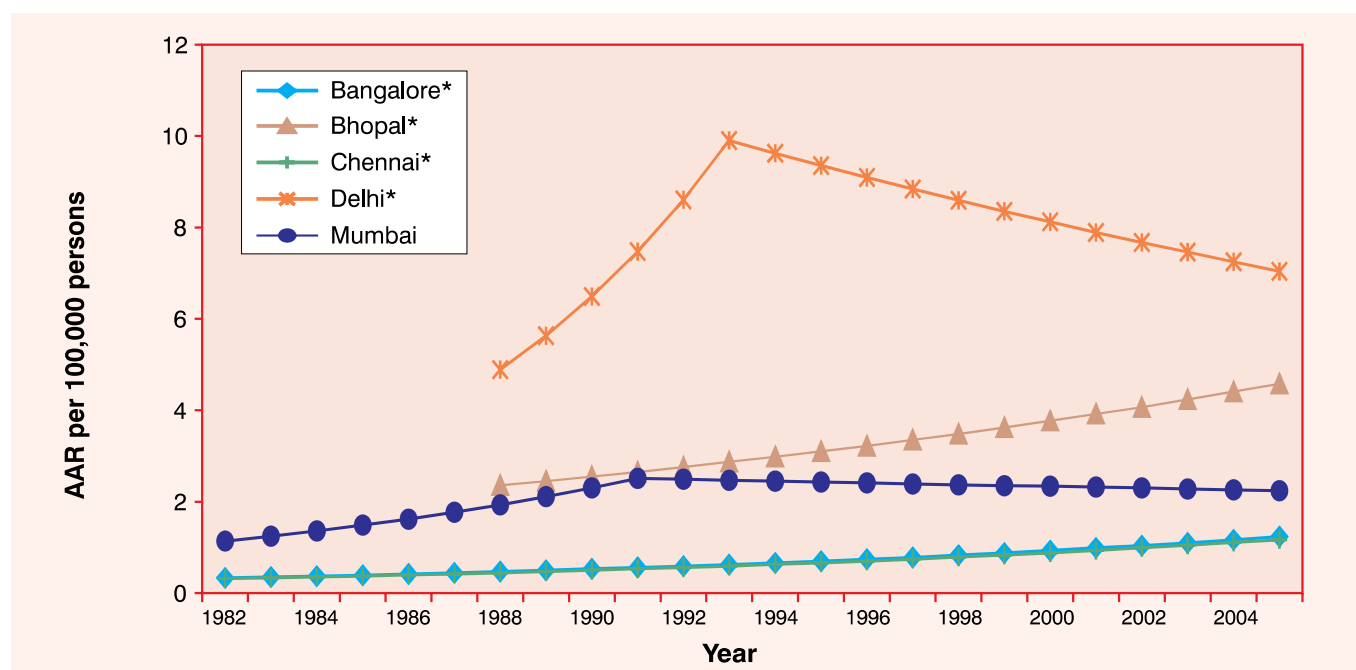


Table 4.13(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore [§]	Bhopal	Chennai [§]	Delhi	Mumbai
	JP0*	JP0*	JP0*	JP1*	JP1*
1982	0.3		0.3		1.1
1983	0.4		0.3		1.3
1984	0.4		0.4		1.4
1985	0.4		0.4		1.5
1986	0.4		0.4		1.6
1987	0.4		0.4		1.8
1988	0.5	2.4	0.4	4.9	1.9
1989	0.5	2.5	0.5	5.6	2.1
1990	0.5	2.6	0.5	6.5	2.3
1991	0.6	2.7	0.5	7.5	2.5
1992	0.6	2.8	0.6	8.6	2.5
1993	0.6	2.9	0.6	9.9	2.5
1994	0.7	3.0	0.6	9.6	2.5
1995	0.7	3.1	0.7	9.4	2.4
1996	0.7	3.2	0.7	9.1	2.4
1997	0.8	3.4	0.7	8.8	2.4
1998	0.8	3.5	0.8	8.6	2.4
1999	0.9	3.6	0.8	8.4	2.4
2000	0.9	3.8	0.9	8.1	2.3
2001	1.0	3.9	0.9	7.9	2.3
2002	1.0	4.1	1.0	7.7	2.3
2003	1.1	4.2	1.1	7.5	2.3
2004	1.2	4.4	1.1	7.3	2.3
2005	1.2	4.6	1.2	7.0	2.2
APC0	5.88*	3.99*	5.87*	0.93	2.53*
APC1	-	-	-	15.13*	9.14*
APC2	-	-	-	-2.79*	-0.8

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC ($p < 0.05$) values.

[§] Kindly note the trend values in the 2 PBCRs are identical and therefore only one line is visible in the graph.

Fig. 4.14(a): LARYNX (ICD-10 : C32) - Males
Trends over time (1982-2005) in AAR (Three Year Moving Average)

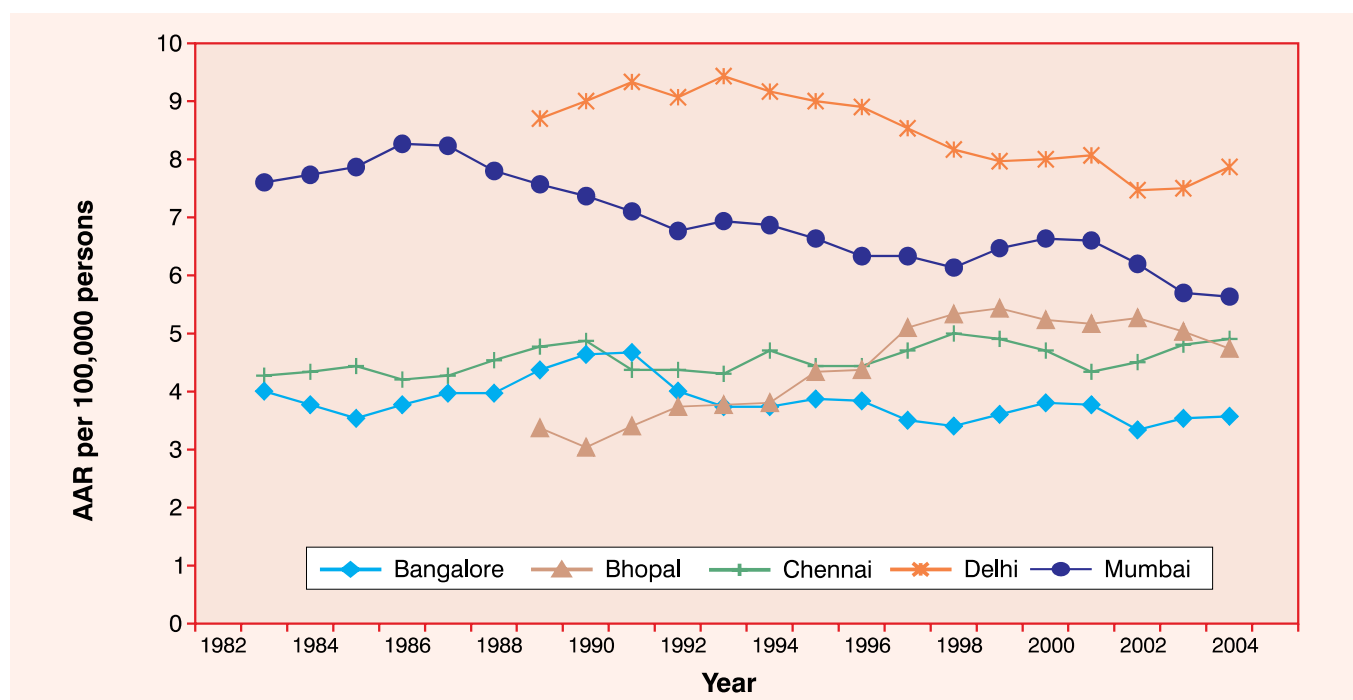


Table 4.14(a): Year wise AARs

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
1982	4.0		4.2		6.7
1983	4.4		3.7		8.5
1984	3.6		4.9		7.6
1985	3.3		4.4		7.1
1986	3.7		4.0		8.9
1987	4.3		4.2		8.8
1988	3.9	5.1	4.6	7.4	7.0
1989	3.7	2.6	4.8	8.3	7.6
1990	5.5	2.4	4.9	10.4	8.1
1991	4.7	4.1	4.9	8.3	6.4
1992	3.8	3.7	3.3	9.3	6.8
1993	3.5	3.4	4.9	9.6	7.1
1994	3.9	4.2	4.7	9.4	6.9
1995	3.8	3.8	4.5	8.5	6.6
1996	3.9	5.0	4.1	9.1	6.4
1997	3.8	4.3	4.7	9.1	6.0
1998	2.8	6.0	5.3	7.4	6.6
1999	3.6	5.7	5.0	8.0	5.8
2000	4.4	4.6	4.4	8.5	7.0
2001	3.4	5.4	4.7	7.5	7.1
2002	3.5	5.5	3.9	8.2	5.7
2003	3.1	4.9	4.9	6.7	5.8
2004	4.0	4.7	5.6	7.6	5.6
2005	3.6	4.6	4.2	9.3	5.5
Slope(b)	-0.024	0.111	0.024	-0.062	-0.102
p-value	0.140	0.010	0.118	0.160	0.001

Fig. 4.14(b): LARYNX (ICD-10 : C32) - Males
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

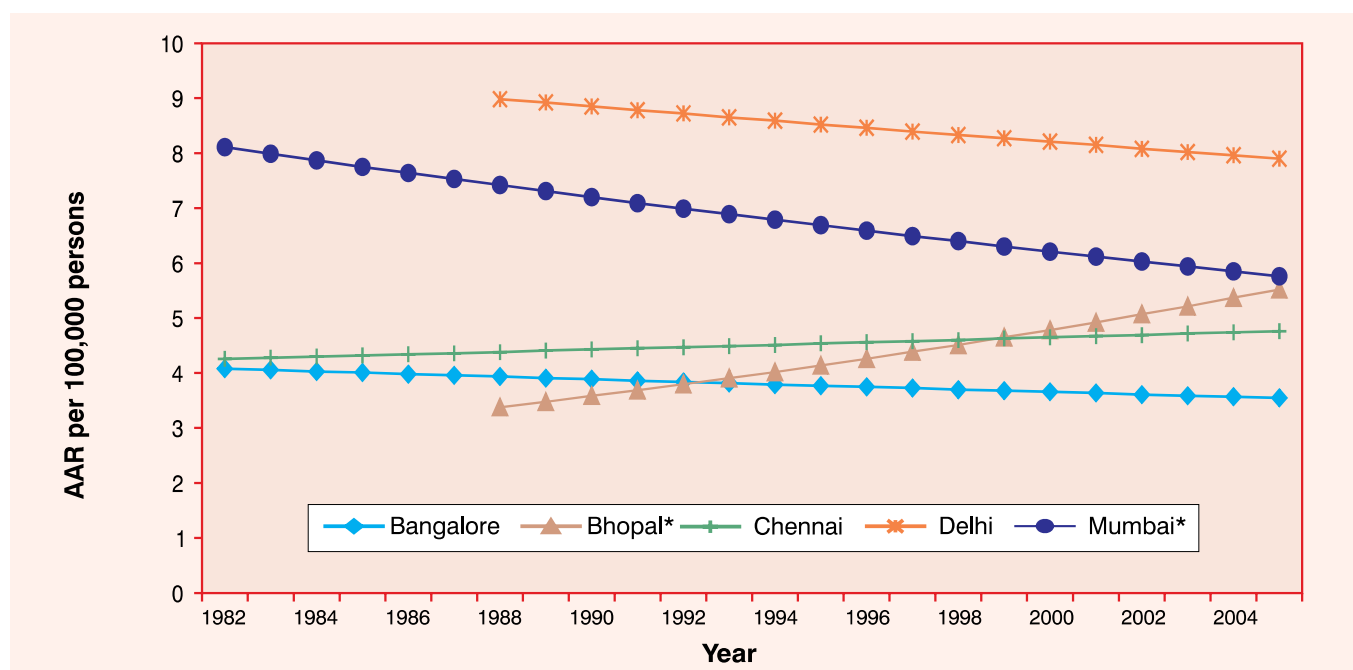


Table 4.14(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP0*	JP0*	JP0*
1982	4.1		4.3		8.1
1983	4.1		4.3		8.0
1984	4.0		4.3		7.9
1985	4.0		4.3		7.8
1986	4.0		4.3		7.6
1987	4.0		4.4		7.5
1988	3.9	3.4	4.4	9.0	7.4
1989	3.9	3.5	4.4	8.9	7.3
1990	3.9	3.6	4.4	8.9	7.2
1991	3.9	3.7	4.5	8.8	7.1
1992	3.8	3.8	4.5	8.7	7.0
1993	3.8	3.9	4.5	8.7	6.9
1994	3.8	4.0	4.5	8.6	6.8
1995	3.8	4.1	4.5	8.5	6.7
1996	3.8	4.3	4.6	8.5	6.6
1997	3.7	4.4	4.6	8.4	6.5
1998	3.7	4.5	4.6	8.3	6.4
1999	3.7	4.7	4.6	8.3	6.3
2000	3.7	4.8	4.7	8.2	6.2
2001	3.6	4.9	4.7	8.2	6.1
2002	3.6	5.1	4.7	8.1	6.0
2003	3.6	5.2	4.7	8.0	5.9
2004	3.6	5.4	4.7	8.0	5.9
2005	3.6	5.5	4.8	7.9	5.8
APC0	-0.61	2.92*	0.49	-0.75	-1.47*
APC1	-	-	-	-	-
APC2	-	-	-	-	-

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC ($p < 0.05$) values.

Fig. 4.15(a): LUNG (ICD-10 : C33-C34) - Males
Trends over time (1982-2005) in AAR (Three Year Moving Average)

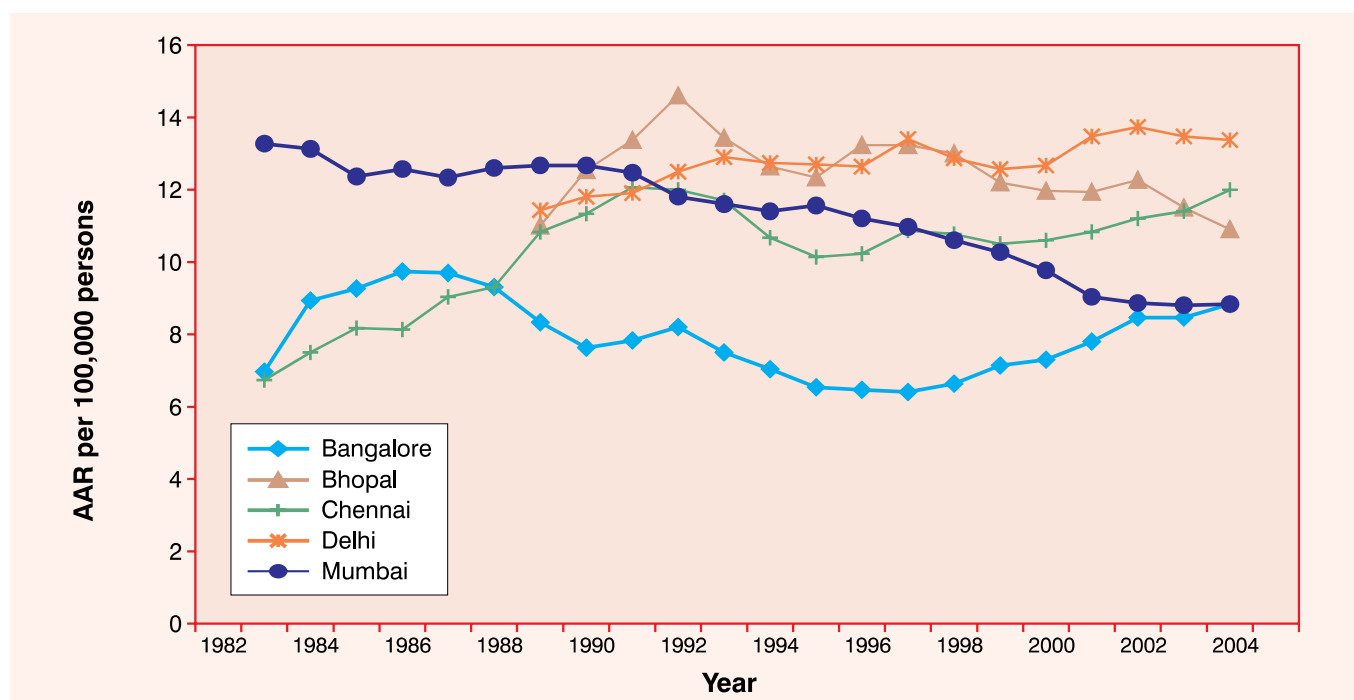


Table 4.15(a): Year wise AARs

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
1982	4.7		5.0		13.3
1983	7.9		7.1		14.0
1984	8.3		8.1		12.5
1985	10.6		7.3		12.9
1986	8.9		9.1		11.7
1987	9.7		8.0		13.1
1988	10.5	10.1	10.0	10.5	12.2
1989	7.7	12.5	9.9	11.3	12.5
1990	6.8	10.4	12.6	12.0	13.3
1991	8.4	14.7	11.5	12.1	12.2
1992	8.3	15.0	12.1	11.6	11.9
1993	7.9	14.1	12.4	13.8	11.3
1994	6.3	11.2	10.6	13.3	11.6
1995	6.9	12.6	9.0	11.1	11.3
1996	6.4	13.2	10.8	13.7	11.8
1997	6.1	13.9	10.9	13.1	10.5
1998	6.7	12.6	10.9	13.4	10.6
1999	7.1	12.5	10.5	12.1	10.7
2000	7.6	11.5	10.1	12.2	9.5
2001	7.2	11.9	11.2	13.7	9.1
2002	8.6	12.4	11.2	14.5	8.5
2003	9.6	12.5	11.2	13.0	9.0
2004	7.2	9.6	11.8	12.9	8.9
2005	9.7	10.6	13.0	14.2	8.6
Slope(b)	-0.013	-0.075	0.198	0.139	-0.217
p-value	0.776	0.306	0.001	0.004	0.001

Fig. 4.15(b): LUNG (ICD-10 : C33-C34) - Males
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

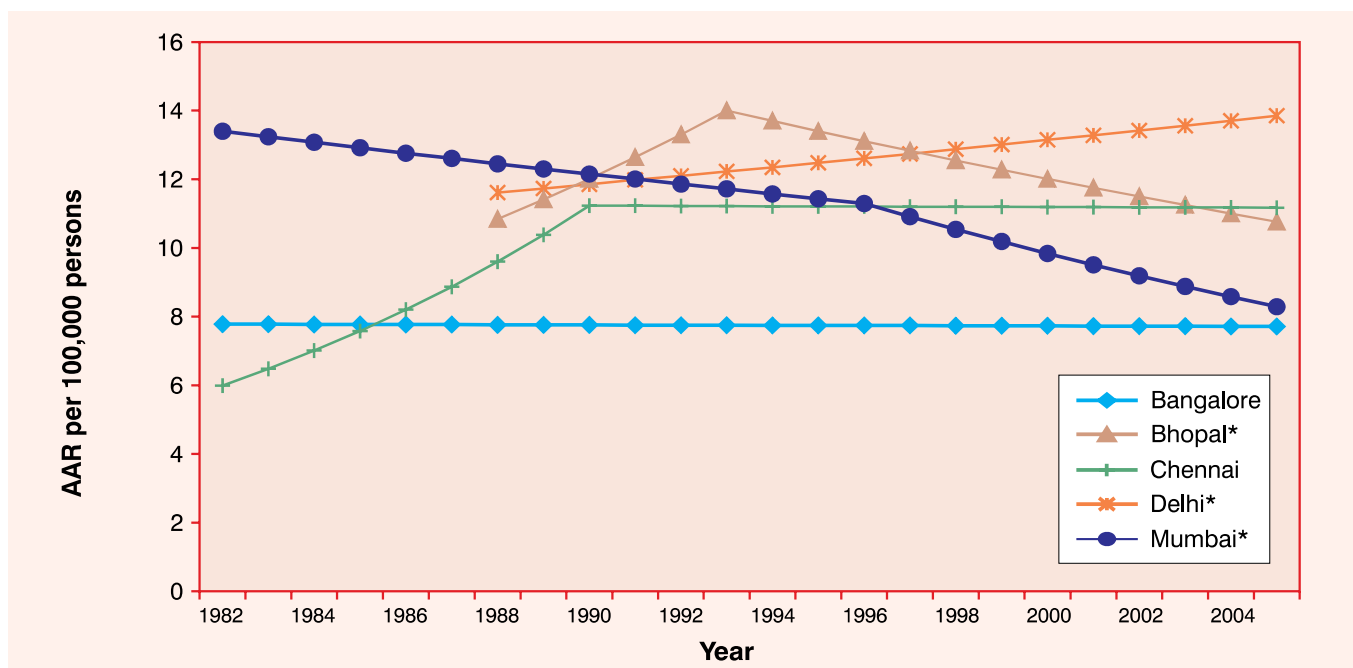


Table 4.15(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
	JP0*	JP1*	JP1*	JP0*	JP1*
1982	7.8		6.0		13.4
1983	7.8		6.5		13.2
1984	7.8		7.0		13.1
1985	7.8		7.6		12.9
1986	7.8		8.2		12.8
1987	7.8		8.9		12.6
1988	7.8	10.8	9.6	11.6	12.5
1989	7.8	11.4	10.4	11.7	12.3
1990	7.8	12.0	11.2	11.9	12.2
1991	7.8	12.6	11.2	12.0	12.0
1992	7.8	13.3	11.2	12.1	11.9
1993	7.8	14.0	11.2	12.2	11.7
1994	7.7	13.7	11.2	12.4	11.6
1995	7.7	13.4	11.2	12.5	11.4
1996	7.7	13.1	11.2	12.6	11.3
1997	7.7	12.8	11.2	12.7	10.9
1998	7.7	12.6	11.2	12.9	10.5
1999	7.7	12.3	11.2	13.0	10.2
2000	7.7	12.0	11.2	13.2	9.8
2001	7.7	11.8	11.2	13.3	9.5
2002	7.7	11.5	11.2	13.4	9.2
2003	7.7	11.3	11.2	13.6	8.9
2004	7.7	11.0	11.2	13.7	8.6
2005	7.7	10.8	11.2	13.9	8.3
APC0	-0.04	-0.57	2.25*	1.04*	-1.97*
APC1	-	5.25	8.16*	-	-1.22*
APC2	-	-2.17*	-0.03	-	-3.38*

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC (p<0.05) values.

Fig. 4.16(a): LUNG (ICD-10 : C33-C34) - Females
Trends over time (1982-2005) in AAR (Three Year Moving Average)

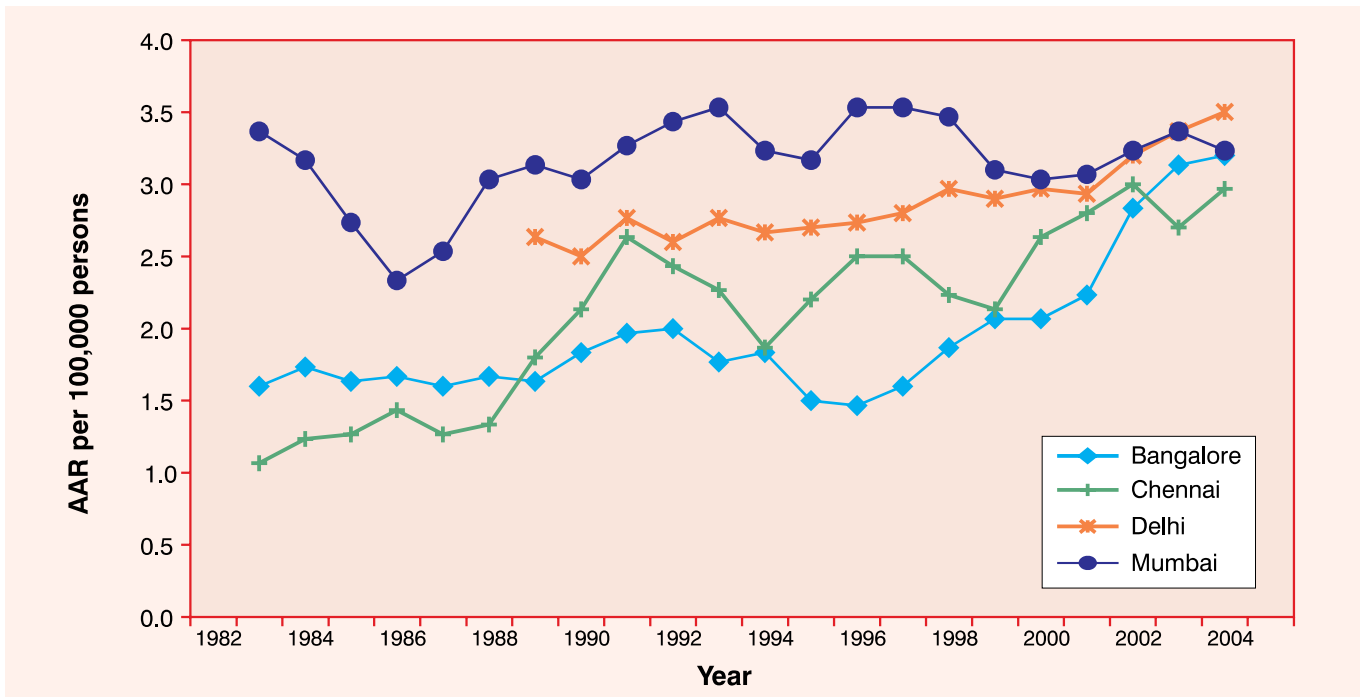


Table 4.16(a): Year wise AARs

Year	Bangalore	Chennai	Delhi	Mumbai
1982	1.2	1.1		3.2
1983	1.6	1.3		3.1
1984	2.0	0.8		3.8
1985	1.6	1.6		2.6
1986	1.3	1.4		1.8
1987	2.1	1.3		2.6
1988	1.4	1.1	2.6	3.2
1989	1.5	1.6	2.1	3.3
1990	2.0	2.7	3.2	2.9
1991	2.0	2.1	2.2	2.9
1992	1.9	3.1	2.9	4.0
1993	2.1	2.1	2.7	3.4
1994	1.3	1.6	2.7	3.2
1995	2.1	1.9	2.6	3.1
1996	1.1	3.1	2.8	3.2
1997	1.2	2.5	2.8	4.3
1998	2.5	1.9	2.8	3.1
1999	1.9	2.3	3.3	3.0
2000	1.8	2.2	2.6	3.2
2001	2.5	3.4	3.0	2.9
2002	2.4	2.8	3.2	3.1
2003	3.6	2.8	3.4	3.7
2004	3.4	2.5	3.5	3.3
2005	2.6	3.6	3.6	2.7
Slope(b)	0.057	0.087	0.056	0.012
p-value	0.023	0.001	0.001	0.421

Fig. 4.16(b): LUNG (ICD-10 : C33-C34) - Females
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

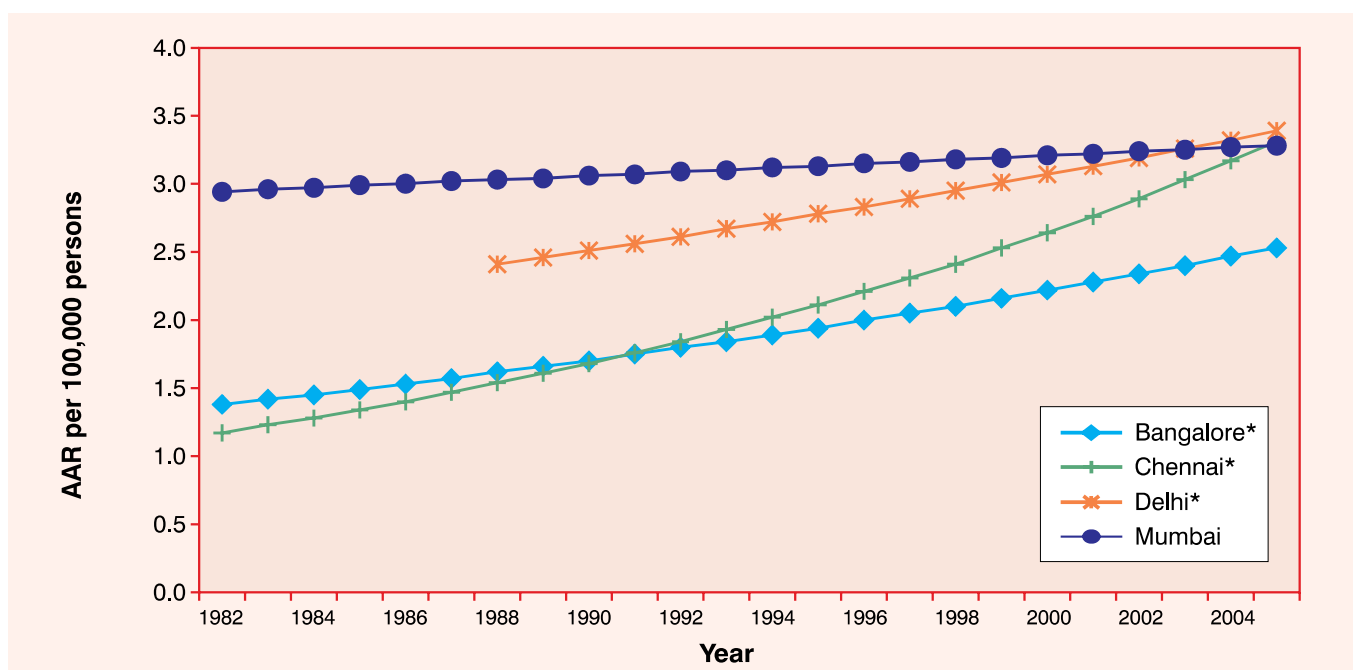


Table 4.16(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP0*	JP0*
1982	1.4	1.2		2.9
1983	1.4	1.2		3.0
1984	1.5	1.3		3.0
1985	1.5	1.3		3.0
1986	1.5	1.4		3.1
1987	1.6	1.5		3.0
1988	1.6	1.5	2.4	3.0
1989	1.7	1.6	2.5	3.0
1990	1.7	1.7	2.5	3.1
1991	1.8	1.8	2.6	3.1
1992	1.8	1.8	2.6	3.1
1993	1.8	1.9	2.7	3.1
1994	1.9	2.0	2.7	3.1
1995	1.9	2.1	2.8	3.1
1996	2.0	2.2	2.8	3.2
1997	2.1	2.3	2.9	3.2
1998	2.1	2.4	3.0	3.2
1999	2.2	2.5	3.0	3.2
2000	2.2	2.6	3.1	3.2
2001	2.3	2.8	3.1	3.2
2002	2.3	2.9	3.2	3.2
2003	2.4	3.0	3.3	3.3
2004	2.5	3.2	3.3	3.3
2005	2.5	3.3	3.4	3.3
APC0	2.67*	4.62*	2.02*	0.47
APC1	-	-	-	-
APC2	-	-	-	-

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC (p<0.05) values.

Fig. 4.17(a): BREAST (ICD-10 : C50) - Females
Trends over time (1982-2005) in AAR (Three Year Moving Average)

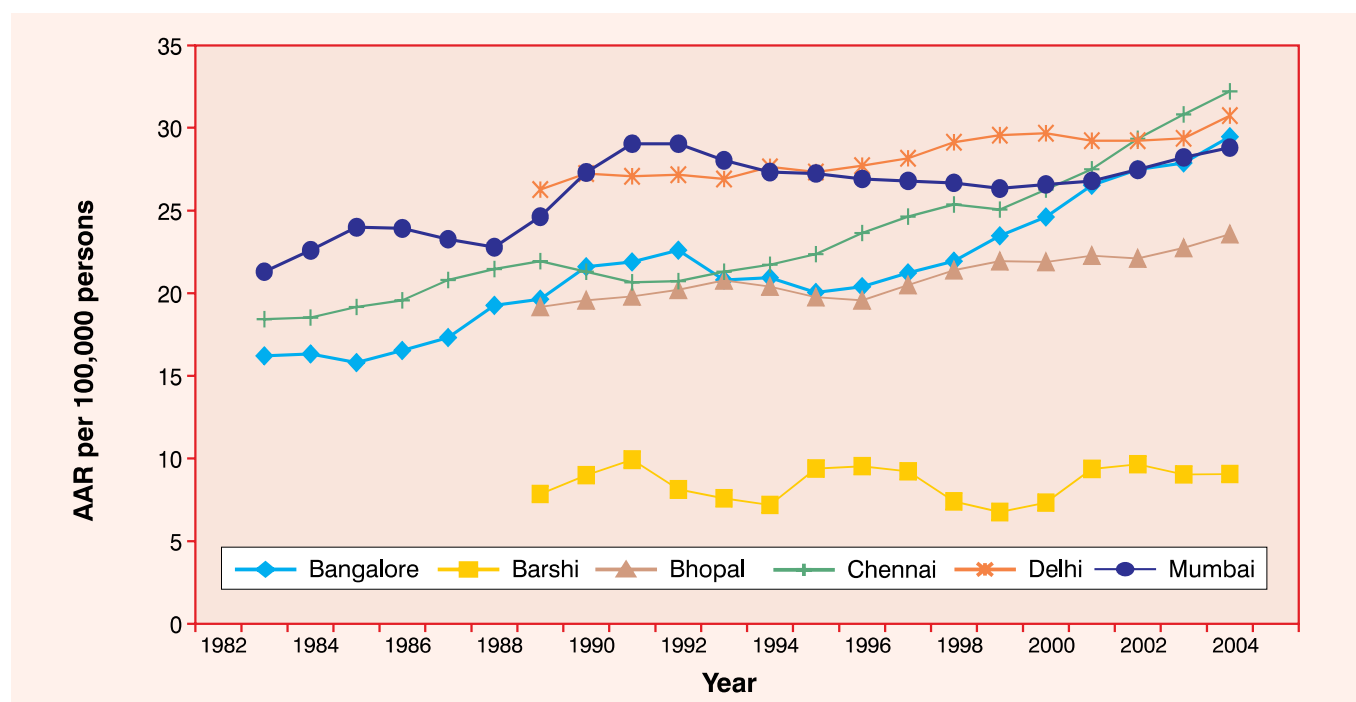


Table 4.17(a): Year wise AARs

Year	Bangalore	Barshi	Bhopal	Chennai	Delhi	Mumbai
1982	15.8			18.4		20.8
1983	16.0			18.2		20.7
1984	16.8			18.7		22.4
1985	16.2			18.7		24.7
1986	14.4			20.1		24.9
1987	19.0			19.9		22.2
1988	18.6	7.2	18.2	22.4	24.8	22.7
1989	20.2	6.6	19.5	22.1	26.9	23.5
1990	20.1	9.8	19.8	21.3	27.1	27.7
1991	24.5	10.6	19.4	20.5	27.7	30.7
1992	21.1	9.4	20.2	20.2	26.4	28.7
1993	22.2	4.4	21.0	21.5	27.4	27.7
1994	19.1	9.0	21.1	22.2	26.9	27.7
1995	21.5	8.2	19.1	21.5	28.6	26.6
1996	19.5	11.0	19.1	23.4	26.5	27.4
1997	20.2	9.4	20.5	26.0	28.0	26.7
1998	24.0	7.3	21.9	24.5	30.0	26.3
1999	21.6	5.5	21.8	25.6	29.4	27.0
2000	24.8	7.5	22.1	25.1	29.3	25.7
2001	27.4	9.0	21.8	28.1	30.3	27.0
2002	27.4	11.6	22.9	29.3	28.1	27.7
2003	27.6	8.4	21.6	30.6	29.3	27.7
2004	28.6	7.1	23.7	32.5	30.7	29.2
2005	32.2	11.7	25.4	33.5	32.2	29.5
Slope(b)	0.587	0.074	0.293	0.587	0.292	0.283
p-value	0.001	0.438	0.001	0.001	0.001	0.001

Fig. 4.17(b): BREAST (ICD-10 : C50) - Females
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

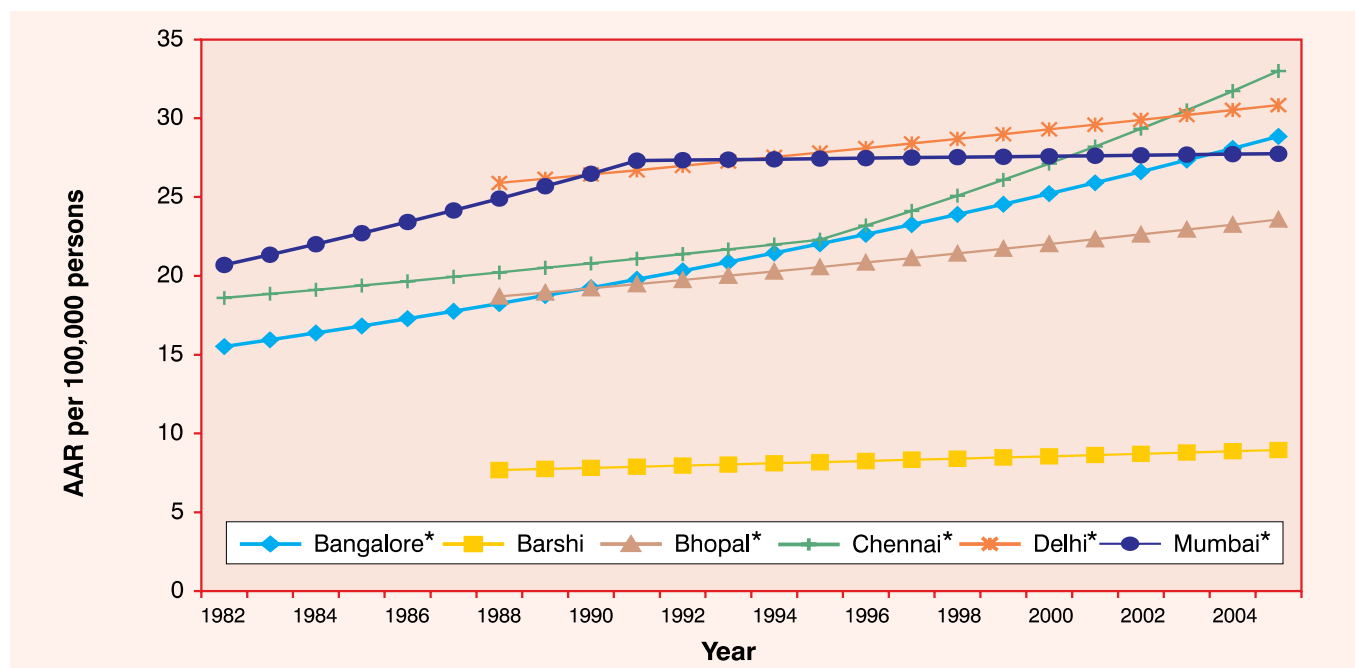


Table 4.17(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Barshi	Bhopal	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP0*	JP1*	JP0*	JP1*
1982	15.5	-	-	18.6	-	20.7
1983	15.9	-	-	18.9	-	21.3
1984	16.4	-	-	19.1	-	22.0
1985	16.8	-	-	19.4	-	22.7
1986	17.3	-	-	19.7	-	23.4
1987	17.8	-	-	19.9	-	24.1
1988	18.2	7.7	18.7	20.2	26.0	24.9
1989	18.7	7.8	19.0	20.5	26.2	25.7
1990	19.3	7.8	19.2	20.8	26.4	26.5
1991	19.8	7.9	19.5	21.1	26.7	27.3
1992	20.3	8.0	19.7	21.4	27.0	27.3
1993	20.9	8.0	20.0	21.7	27.3	27.4
1994	21.4	8.1	20.3	22.0	27.5	27.4
1995	22.0	8.2	20.6	22.3	27.8	27.4
1996	22.6	8.3	20.9	23.2	28.1	27.5
1997	23.3	8.3	21.1	24.1	28.4	27.5
1998	23.9	8.4	21.4	25.1	28.7	27.5
1999	24.5	8.5	21.7	26.1	29.0	27.6
2000	25.2	8.6	22.0	27.1	29.3	27.6
2001	25.9	8.6	22.3	28.2	29.6	27.6
2002	26.6	8.7	22.6	29.3	29.9	27.7
2003	27.3	8.8	22.9	30.5	30.2	27.7
2004	28.1	8.9	23.3	31.7	30.5	27.7
2005	28.9	9.0	23.6	33.0	30.8	27.8
APC0	2.73*	0.9	1.38*	2.45*	1.03*	1.15*
APC1	-	-	-	1.40*	-	3.13*
APC2	-	-	-	4.00*	-	0.11

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC (p<0.05) values.

Fig. 4.18(a): CERVIX (ICD-10 : C53) - Females
Trends over time (1982-2005) in AAR (Three Year Moving Average)

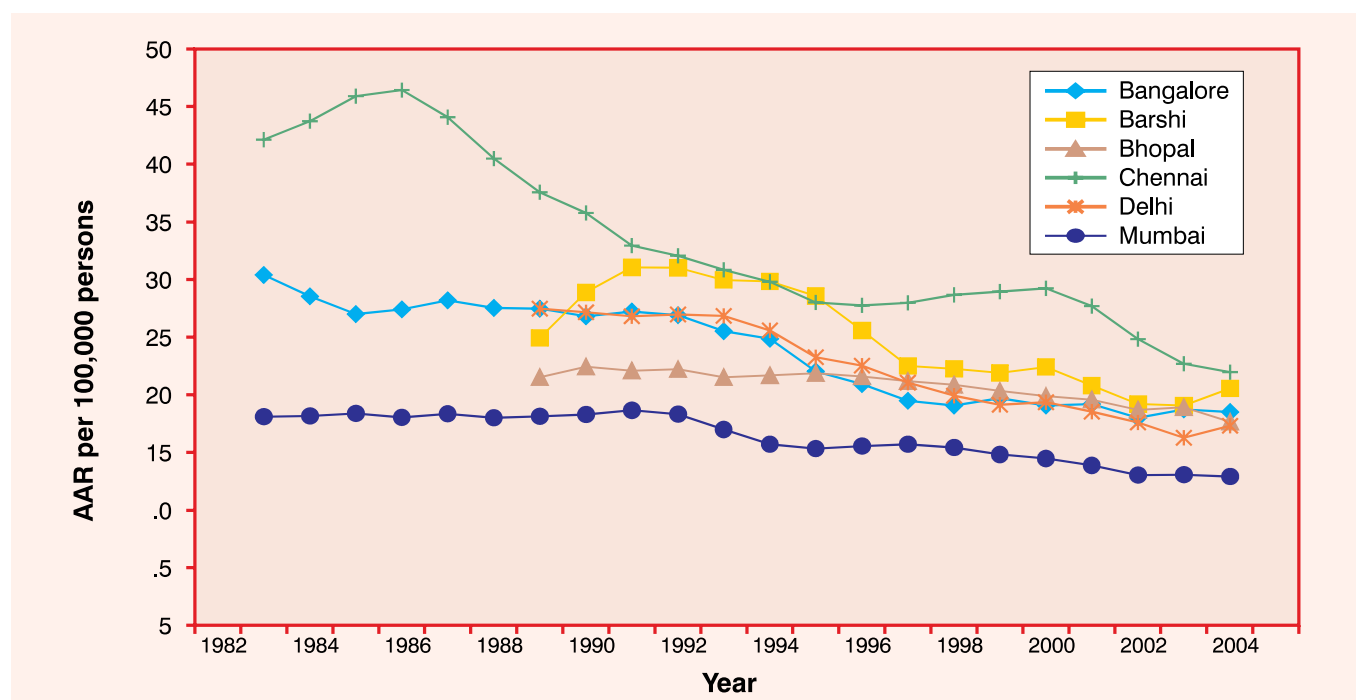


Table 4.18(a): Year wise AARs

Year	Bangalore	Barshi	Bhopal	Chennai	Delhi	Mumbai
1982	32.4			41.0		17.9
1983	30.6			43.5		17.8
1984	28.2			41.9		18.6
1985	26.8			45.8		18.1
1986	26.0			50.0		18.4
1987	29.4			43.5		17.6
1988	29.2	22.1	21.7	38.8	25.9	19.0
1989	24.0	24.9	21.8	39.2	28.4	17.4
1990	29.2	27.8	21.1	34.7	28.1	18.0
1991	27.2	34.0	24.4	33.4	25.0	19.4
1992	25.3	31.4	20.8	30.7	27.3	18.6
1993	28.2	27.7	21.4	32.1	28.6	16.9
1994	23.1	30.8	22.4	29.7	24.6	15.5
1995	23.3	31.0	21.2	27.6	23.5	14.7
1996	19.7	23.9	22.0	26.7	21.7	15.8
1997	19.8	21.8	21.6	29.0	22.4	16.1
1998	18.9	21.8	19.9	28.2	19.1	15.2
1999	18.5	23.1	21.1	28.8	18.3	15.0
2000	21.7	20.8	20.0	29.8	20.0	14.3
2001	17.0	23.3	18.6	29.1	19.8	14.1
2002	18.9	18.3	20.1	24.2	15.8	13.2
2003	18.1	16.0	17.4	21.2	17.2	11.8
2004	19.2	22.9	19.2	22.7	15.8	14.2
2005	18.2	22.7	16.4	22.0	18.9	12.7
Slope	-0.611	-0.554	-0.271	-1.051	-0.747	-0.271
p-value	0.001	0.007	0.001	0.001	0.001	0.001

Fig. 4.18(b): CERVIX (ICD-10 : C53) - Females
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

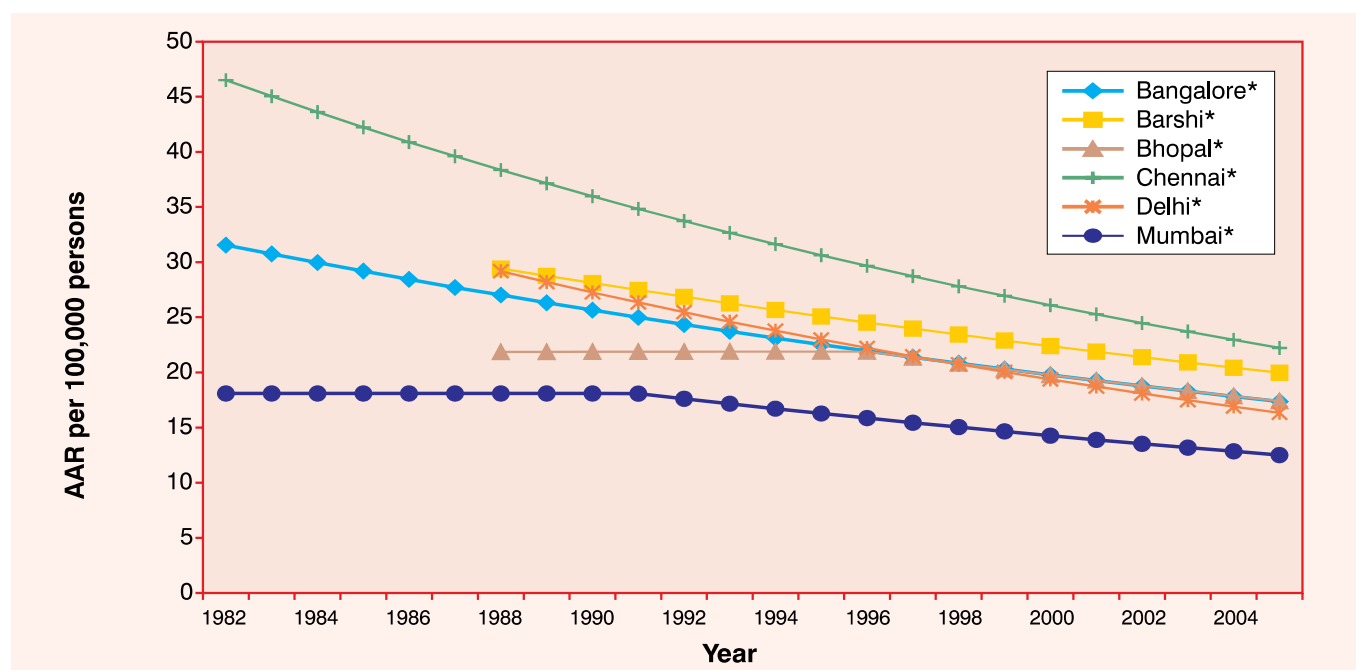


Table 4.18(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Barshi	Bhopal	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP1*	JP0*	JP0*	JP1*
1982	31.6			46.5		18.1
1983	30.8			45.0		18.1
1984	30.0			43.6		18.1
1985	29.2			42.2		18.1
1986	28.4			40.9		18.1
1987	27.7			39.6		18.1
1988	27.0	29.4	21.9	38.4	29.2	18.1
1989	26.3	28.8	21.9	37.1	28.2	18.1
1990	25.6	28.1	21.9	36.0	27.3	18.1
1991	25.0	27.5	21.9	34.8	26.3	18.1
1992	24.3	26.9	21.9	33.7	25.5	17.6
1993	23.7	26.3	21.9	32.7	24.6	17.2
1994	23.1	25.7	21.9	31.6	23.8	16.7
1995	22.5	25.1	21.9	30.6	23.0	16.3
1996	21.9	24.5	21.9	29.7	22.2	15.9
1997	21.4	24.0	21.3	28.7	21.5	15.4
1998	20.8	23.4	20.8	27.8	20.8	15.0
1999	20.3	22.9	20.3	26.9	20.1	14.7
2000	19.8	22.4	19.8	26.1	19.4	14.3
2001	19.3	21.9	19.3	25.3	18.7	13.9
2002	18.8	21.4	18.8	24.5	18.1	13.5
2003	18.3	20.9	18.3	23.7	17.5	13.2
2004	17.8	20.4	17.9	23.0	16.9	12.8
2005	17.4	20.0	17.4	22.2	16.3	12.5
APC0	-2.56*	-2.25*	-1.36*	-3.16*	-3.35*	-1.71*
APC1	-	-	0.02	-	-	-0.01
APC2	-	-	-2.51*	-	-	-2.60*

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC (p<0.05) values.

Fig. 4.19(a): CORPUS UTERI (ICD-10 : C54) - Females
Trends over time (1982-2005) in AAR (Three Year Moving Average)

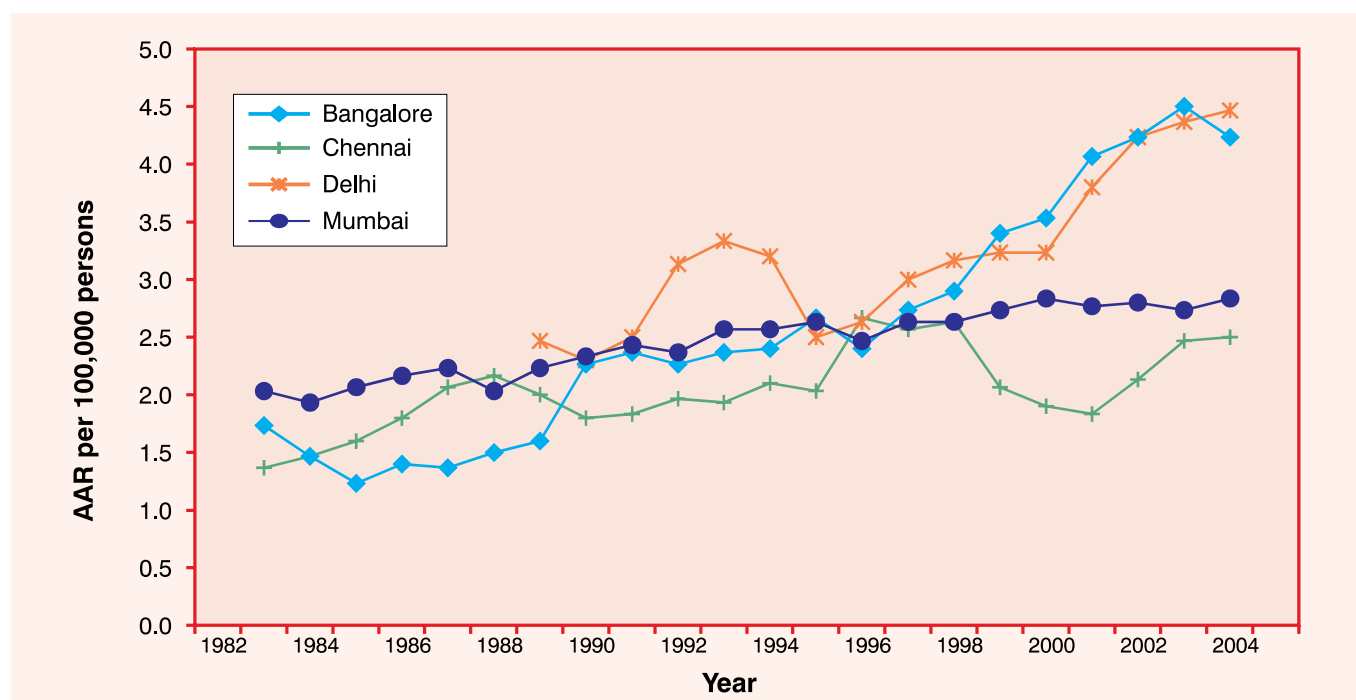


Table 4.19(a): Year wise AARs

Year	Bangalore	Chennai	Delhi	Mumbai
1982	1.7	1.3		2.1
1983	2.1	1.0		2.1
1984	1.4	1.8		1.9
1985	0.9	1.6		1.8
1986	1.4	1.4		2.5
1987	1.9	2.4		2.2
1988	0.8	2.4	2.6	2.0
1989	1.8	1.7	2.4	1.9
1990	2.2	1.9	2.4	2.8
1991	2.8	1.8	2.1	2.3
1992	2.1	1.8	3.0	2.2
1993	1.9	2.3	4.3	2.6
1994	3.1	1.7	2.7	2.9
1995	2.2	2.3	2.6	2.2
1996	2.7	2.1	2.2	2.8
1997	2.3	3.6	3.1	2.4
1998	3.2	2.0	3.7	2.7
1999	3.2	2.3	2.7	2.8
2000	3.8	1.9	3.3	2.7
2001	3.6	1.5	3.7	3.0
2002	4.8	2.1	4.4	2.6
2003	4.3	2.8	4.6	2.8
2004	4.4	2.5	4.1	2.8
2005	4.0	2.2	4.7	2.9
Slope	0.140	0.039	0.124	0.041
p-value	0.001	0.010	0.001	0.001

Fig. 4.19(b): CORPUS UTERI (ICD-10 : C54) - Females
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

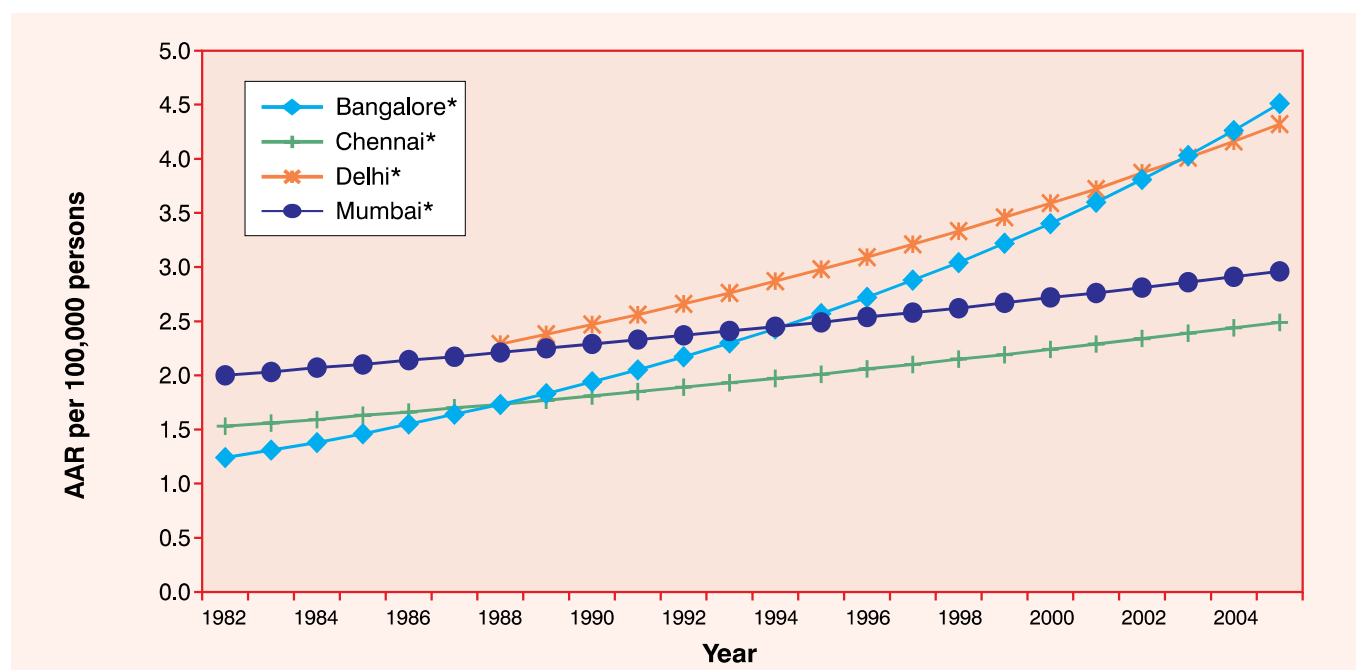


Table 4.19(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP0*	JP0*
1982	1.2	1.5		2
1983	1.3	1.6		2.0
1984	1.4	1.6		2.1
1985	1.5	1.6		2.1
1986	1.6	1.7		2.1
1987	1.6	1.7		2.2
1988	1.7	1.7	2.3	2.2
1989	1.8	1.8	2.4	2.3
1990	1.9	1.8	2.5	2.3
1991	2.1	1.9	2.6	2.3
1992	2.2	1.9	2.7	2.4
1993	2.3	1.9	2.8	2.4
1994	2.4	2.0	2.9	2.5
1995	2.6	2.0	3.0	2.5
1996	2.7	2.1	3.1	2.5
1997	2.9	2.1	3.2	2.6
1998	3.0	2.2	3.3	2.6
1999	3.2	2.2	3.5	2.7
2000	3.4	2.2	3.6	2.7
2001	3.6	2.3	3.7	2.8
2002	3.8	2.3	3.9	2.8
2003	4.0	2.4	4.0	2.9
2004	4.3	2.4	4.2	2.9
2005	4.5	2.5	4.3	3.0
APC0	5.79*	2.15*	3.80*	1.73*
APC1	-	-	-	-
APC2	-	-	-	-

Values of years where a shift in trend observed is highlighted;* represents significant Joinpoint Model & APC ($p < 0.05$) values.

Fig. 4.20(a): OVARY (ICD-10 : C56) - Females
Trends over time (1982-2005) in AAR (Three Year Moving Average)

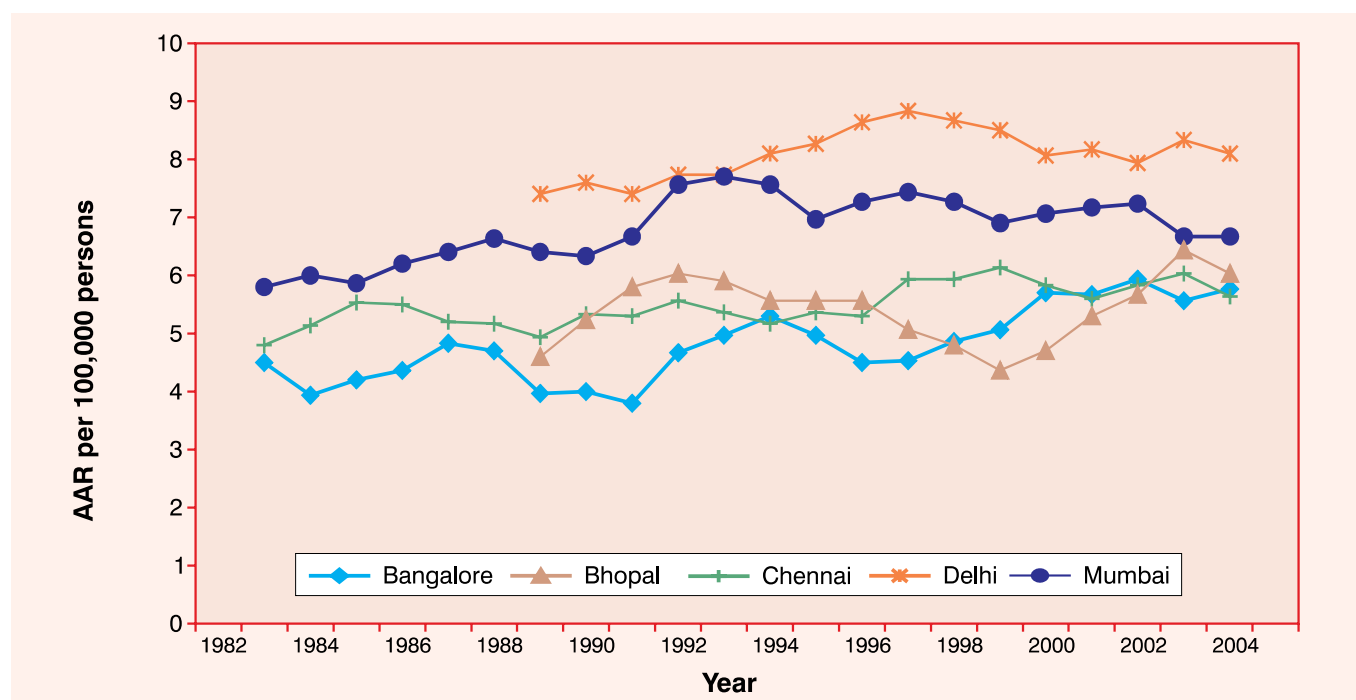


Table 4.20(a): Year wise AARs

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
1982	4.6		4.2		5.6
1983	3.9		4.4		6.0
1984	5.0		5.8		5.8
1985	2.9		5.2		6.2
1986	4.7		5.6		5.6
1987	5.5		5.7		6.8
1988	4.3	3.7	4.3	7.3	6.8
1989	4.3	5.5	5.5	8.0	6.3
1990	3.3	4.6	5.0	6.9	6.1
1991	4.4	5.6	5.5	7.9	6.6
1992	3.7	7.2	5.4	7.4	7.3
1993	5.9	5.3	5.8	7.9	8.8
1994	5.3	5.2	4.9	7.9	7.0
1995	4.7	6.2	4.8	8.5	6.9
1996	4.9	5.3	6.4	8.4	7.0
1997	3.9	5.2	4.7	9.0	7.9
1998	4.8	4.7	6.7	9.1	7.4
1999	5.9	4.5	6.4	7.9	6.5
2000	4.5	3.9	5.3	8.5	6.8
2001	6.7	5.7	5.8	7.8	7.9
2002	5.8	6.3	5.7	8.2	6.8
2003	5.3	5.0	6.0	7.8	7.0
2004	5.6	8.0	6.4	9.0	6.2
2005	6.4	5.1	4.5	7.5	6.8
Slope	0.079	0.044	0.040	0.046	0.051
p-value	0.003	0.378	0.049	0.095	0.019

Fig. 4.20(b): OVARY (ICD-10 : C56) - Females
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

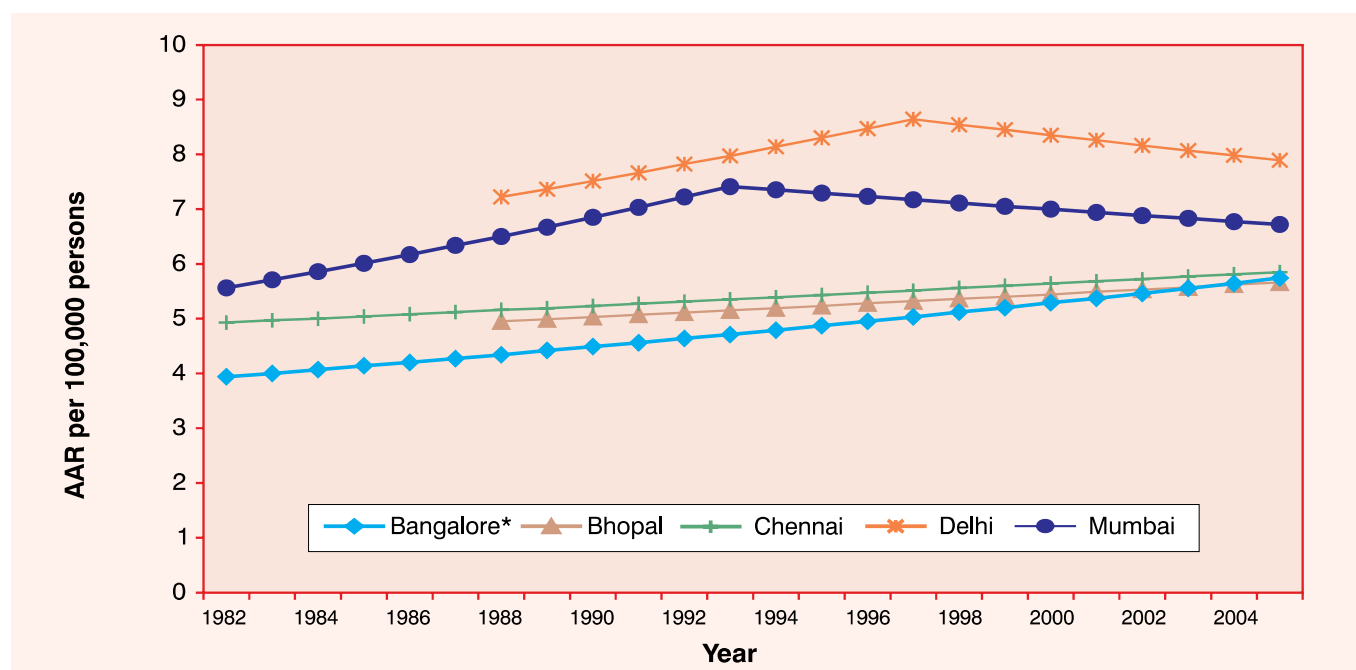


Table 4.20(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP0*	JP1*	JP1*
1982	3.9		4.9		5.6
1983	4.0		5.0		5.7
1984	4.1		5.0		5.9
1985	4.1		5.0		6.0
1986	4.2		5.1		6.2
1987	4.3		5.1		6.3
1988	4.3	5.0	5.2	7.2	6.5
1989	4.4	5.0	5.2	7.4	6.7
1990	4.5	5.0	5.2	7.5	6.9
1991	4.6	5.1	5.3	7.7	7.0
1992	4.6	5.1	5.3	7.8	7.2
1993	4.7	5.2	5.4	8.0	7.4
1994	4.8	5.2	5.4	8.1	7.4
1995	4.9	5.2	5.4	8.3	7.3
1996	5.0	5.3	5.5	8.5	7.2
1997	5.0	5.3	5.5	8.6	7.2
1998	5.1	5.4	5.6	8.5	7.1
1999	5.2	5.4	5.6	8.5	7.1
2000	5.3	5.4	5.6	8.4	7.0
2001	5.4	5.5	5.7	8.3	6.9
2002	5.5	5.5	5.7	8.2	6.9
2003	5.6	5.6	5.8	8.1	6.8
2004	5.6	5.6	5.8	8.0	6.8
2005	5.7	5.7	5.9	8.0	6.7
APC0	1.65*	0.79	0.75	0.57	0.79*
APC1	—	—	—	2.02*	2.64*
APC2	—	—	—	-1.12	-0.81

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC ($p < 0.05$) values.

Fig. 4.21 (a): PROSTATE (ICD-10 : C61) - Males
Trends over time (1982-2005) in AAR (Three Year Moving Average)

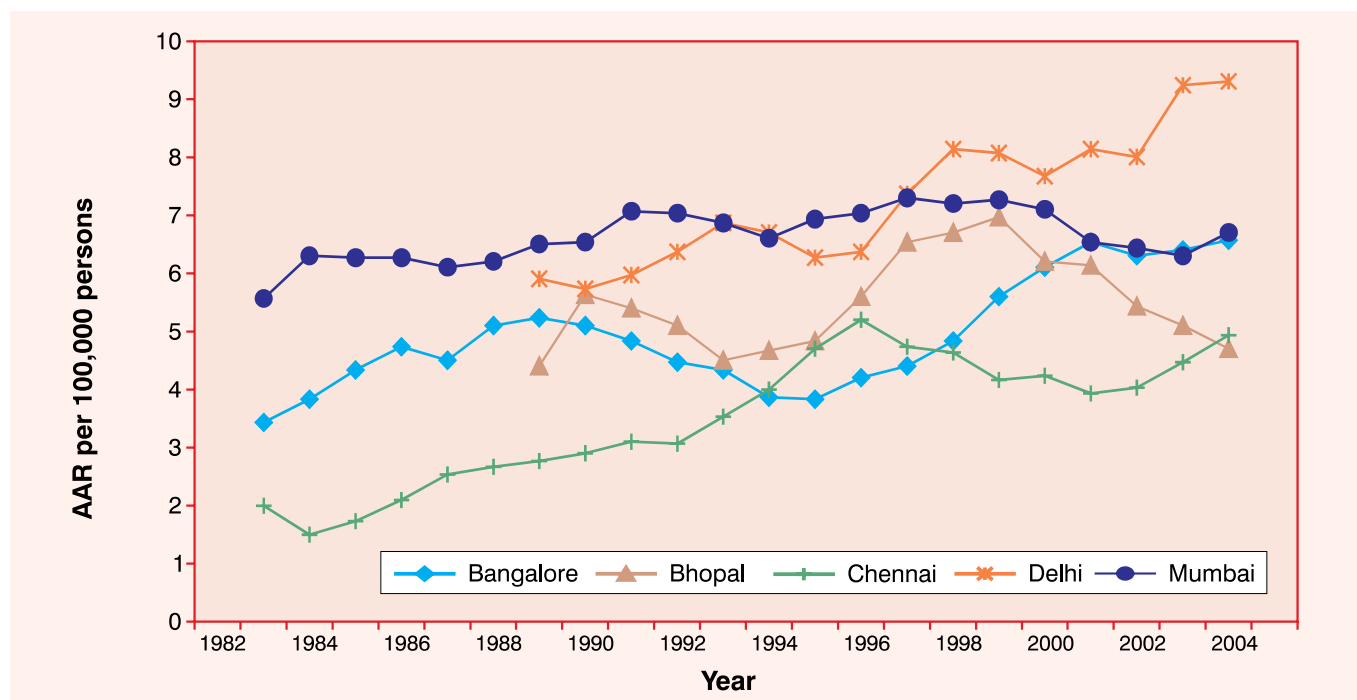


Table 4.21 (a): Year wise AARs

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
1982	3.7		2.8		5.1
1983	2.9		2.0		5.4
1984	3.7		1.2		6.2
1985	4.9		1.3		7.3
1986	4.4		2.7		5.3
1987	4.9		2.3		6.2
1988	4.2	1.9	2.6	6.3	6.8
1989	6.2	5.0	3.1	5.8	5.6
1990	5.3	6.3	2.6	5.6	7.1
1991	3.8	5.6	3.0	5.8	6.9
1992	5.4	4.3	3.7	6.5	7.2
1993	4.2	5.4	2.5	6.8	7.0
1994	3.4	3.8	4.4	7.3	6.4
1995	4.0	4.8	5.1	6.0	6.4
1996	4.1	5.9	4.6	5.5	8.0
1997	4.5	6.1	5.9	7.6	6.7
1998	4.6	7.6	3.7	9.0	7.2
1999	5.4	6.4	4.3	7.8	7.7
2000	6.8	6.9	4.5	7.4	6.9
2001	6.1	5.3	3.9	7.8	6.7
2002	6.7	6.2	3.4	9.2	6.0
2003	6.1	4.8	4.8	7.0	6.6
2004	6.4	4.3	5.2	11.5	6.3
2005	7.2	5.0	4.8	9.4	7.2
Slope(b)	0.118	0.073	0.141	0.230	0.046
p-value	0.001	0.221	0.001	0.001	0.030

Fig. 4.21(b): PROSTATE (ICD-10 : C61) - Males
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

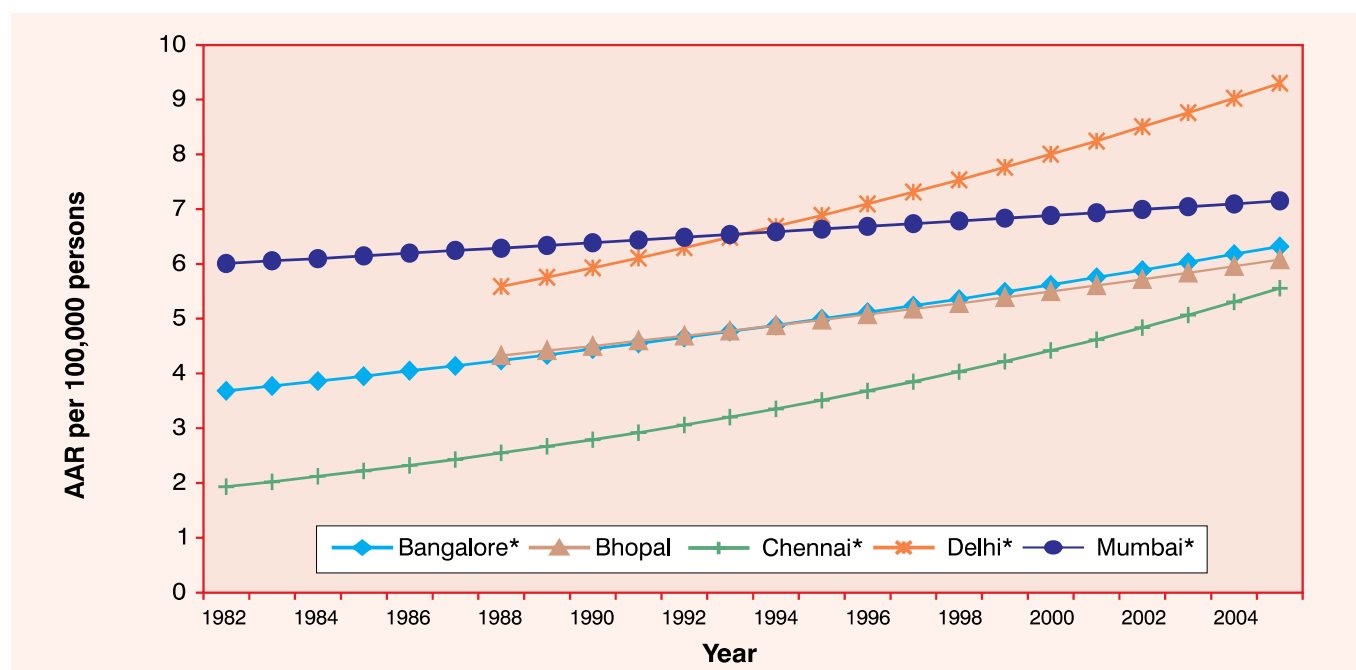


Table 4.21(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP0*	JP0*	JP0*
1982	3.7		1.9		6.0
1983	3.8		2.0		6.1
1984	3.9		2.1		6.1
1985	3.9		2.2		6.1
1986	4.0		2.3		6.2
1987	4.1		2.4		6.2
1988	4.2	4.3	2.5	5.6	6.3
1989	4.3	4.4	2.7	5.8	6.3
1990	4.4	4.5	2.8	5.9	6.4
1991	4.5	4.6	2.9	6.1	6.4
1992	4.7	4.7	3.1	6.3	6.5
1993	4.8	4.8	3.2	6.5	6.5
1994	4.9	4.9	3.3	6.7	6.6
1995	5.0	5.0	3.5	6.9	6.6
1996	5.1	5.1	3.7	7.1	6.7
1997	5.2	5.2	3.8	7.3	6.7
1998	5.4	5.3	4.0	7.5	6.8
1999	5.5	5.4	4.2	7.8	6.8
2000	5.6	5.5	4.4	8.0	6.9
2001	5.8	5.6	4.6	8.2	6.9
2002	5.9	5.7	4.8	8.5	7.0
2003	6.0	5.8	5.1	8.8	7.0
2004	6.2	6.0	5.3	9.0	7.1
2005	6.3	6.1	5.6	9.3	7.2
APC0	2.38*	2.02	4.71*	3.05*	0.76*
APC1	—	—	—	—	—
APC2	—	—	—	—	—

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC ($p < 0.05$) values.

Fig. 4.22(a): BRAIN NERVOUS SYSTEM (ICD-10 : C70-72) - Males
Trends over time (1982-2005) in AAR (Three Year Moving Average)

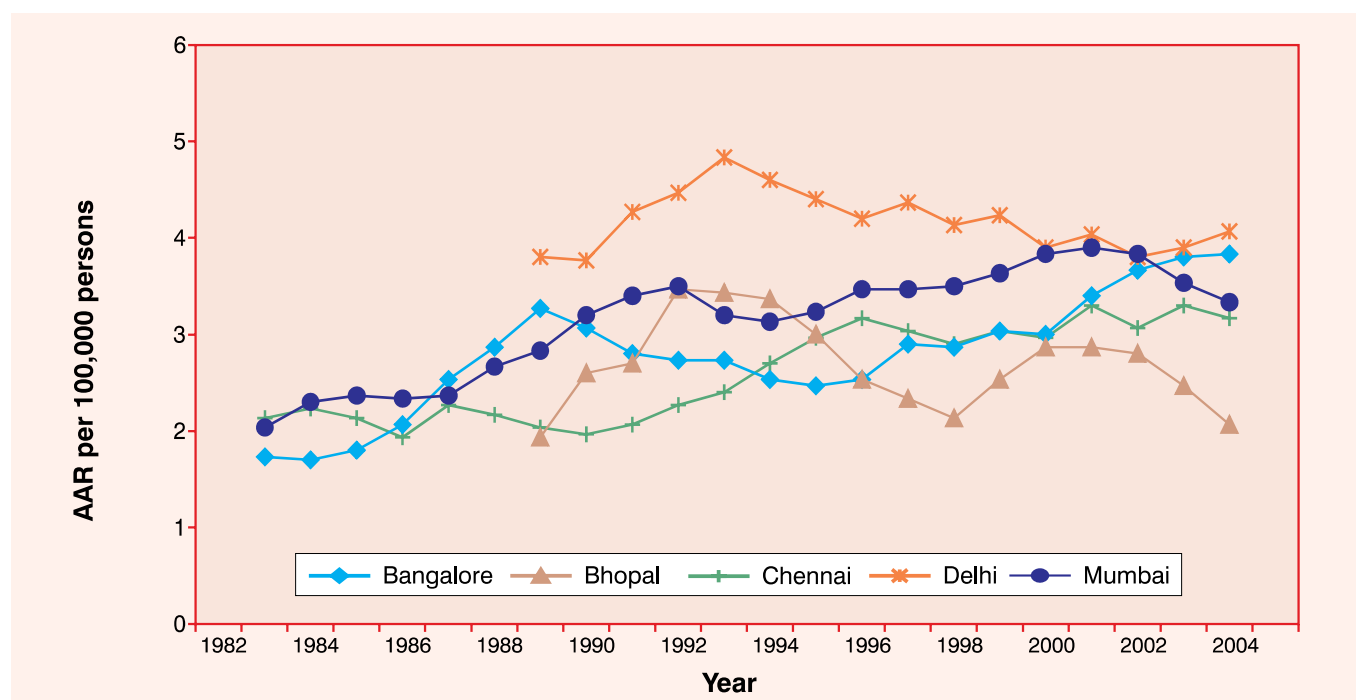


Table 4.22(a): Year wise AARs

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
1982	1.6		1.2		1.8
1983	2.4		2.3		1.7
1984	1.0		2.9		2.6
1985	1.5		1.5		2.6
1986	2.7		2.0		1.9
1987	2.0		2.3		2.5
1988	2.9	0.9	2.5	3.8	2.7
1989	3.7	3.0	1.7	3.4	2.8
1990	3.2	1.9	1.9	4.2	3.0
1991	2.3	2.9	2.3	3.7	3.8
1992	2.9	3.3	2.0	4.9	3.4
1993	3.0	4.2	2.5	4.8	3.3
1994	2.3	2.8	2.7	4.8	2.9
1995	2.3	3.1	2.9	4.2	3.2
1996	2.8	3.1	3.3	4.2	3.6
1997	2.5	1.4	3.3	4.2	3.6
1998	3.4	2.5	2.5	4.7	3.2
1999	2.7	2.5	2.9	3.5	3.7
2000	3.0	2.6	3.7	4.5	4.0
2001	3.3	3.5	2.3	3.7	3.8
2002	3.9	2.5	3.9	3.9	3.9
2003	3.8	2.4	3.0	3.8	3.8
2004	3.7	2.5	3.0	4.0	2.9
2005	4.0	1.3	3.5	4.4	3.3
Slope(b)	0.081	-0.012	0.069	-0.001	0.074
p-value	0.001	0.764	0.001	0.969	0.001

Fig. 4.22(b): BRAIN, NERVOUS SYSTEM (ICD-10 : C70-72) - Males
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

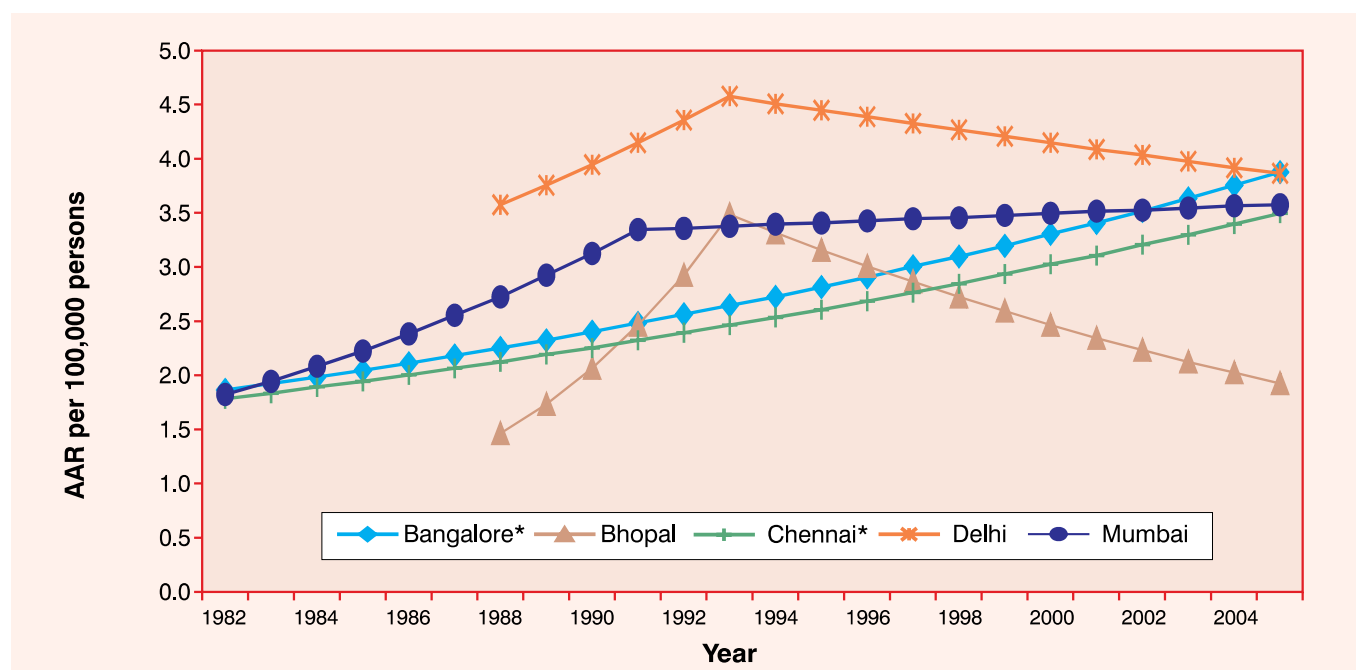


Table 4.22(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
	JP0*	JP1*	JP0*	JP1*	JP1*
1982	1.9		1.8		1.8
1983	1.9		1.8		1.9
1984	2.0		1.9		2.1
1985	2.0		1.9		2.2
1986	2.1		2.0		2.4
1987	2.2		2.1		2.6
1988	2.3	1.5	2.1	3.6	2.7
1989	2.3	1.7	2.2	3.8	2.9
1990	2.4	2.1	2.3	3.9	3.1
1991	2.5	2.5	2.3	4.1	3.3
1992	2.6	2.9	2.4	4.4	3.4
1993	2.6	3.5	2.5	4.6	3.4
1994	2.7	3.3	2.5	4.5	3.4
1995	2.8	3.2	2.6	4.4	3.4
1996	2.9	3.0	2.7	4.4	3.4
1997	3.0	2.9	2.8	4.3	3.4
1998	3.1	2.7	2.8	4.3	3.5
1999	3.2	2.6	2.9	4.2	3.5
2000	3.3	2.5	3.0	4.1	3.5
2001	3.4	2.3	3.1	4.1	3.5
2002	3.5	2.2	3.2	4.0	3.5
2003	3.6	2.1	3.3	4.0	3.5
2004	3.8	2.0	3.4	3.9	3.6
2005	3.9	1.9	3.5	3.9	3.6
APC0	3.24*	0.01	2.97*	0.00	2.69*
APC1	–	19.07	–	5.04	6.99*
APC2	–	-4.84	–	-1.39	0.49

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC ($p < 0.05$) values.

Fig. 4.23(a): BRAIN NERVOUS SYSTEM (ICD-10 : C70-72) - Females
Trends over time (1982-2005) in AAR (Three Year Moving Average)

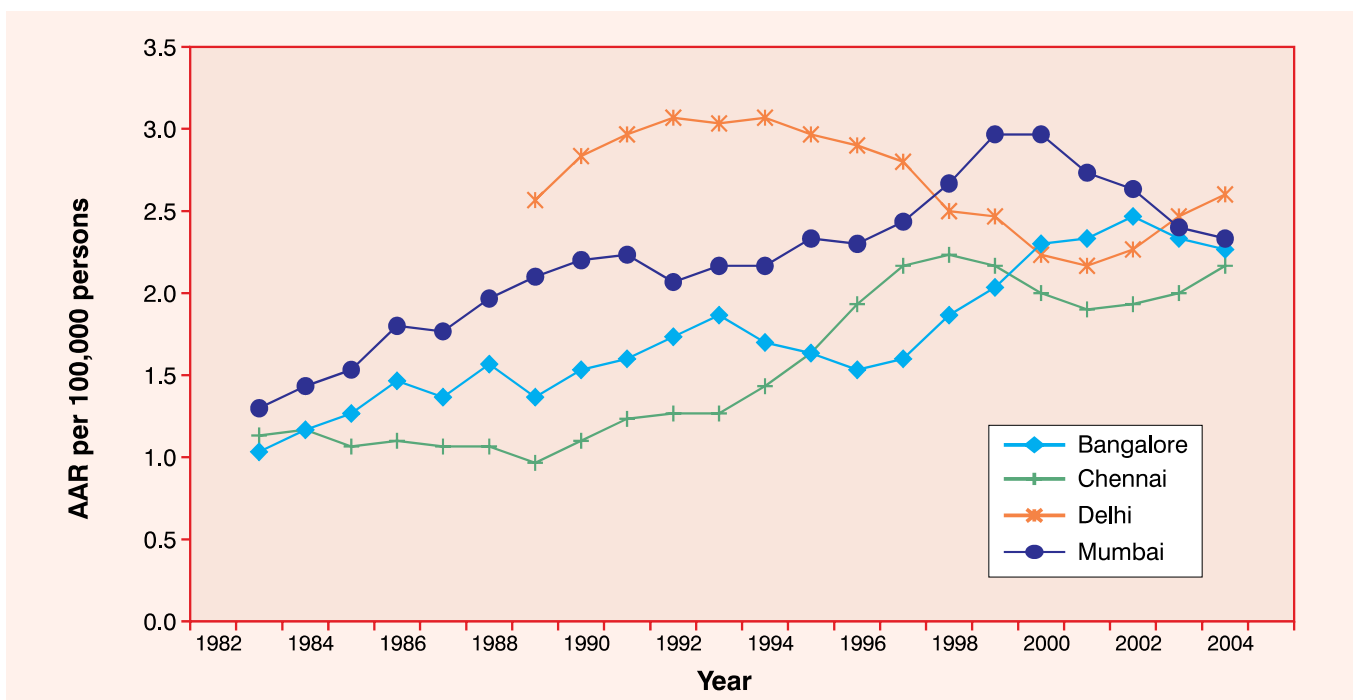


Table 4.23(a): Year wise AARs

Year	Bangalore	Chennai	Delhi	Mumbai
1982	1.1	0.8		1.3
1983	0.9	1.0		1.2
1984	1.1	1.6		1.4
1985	1.5	0.9		1.7
1986	1.2	0.7		1.5
1987	1.7	1.7		2.2
1988	1.2	0.8	2.0	1.6
1989	1.8	0.7	2.6	2.1
1990	1.1	1.4	3.1	2.6
1991	1.7	1.2	2.8	1.9
1992	2.0	1.1	3.0	2.2
1993	1.5	1.5	3.4	2.1
1994	2.1	1.2	2.7	2.2
1995	1.5	1.6	3.1	2.2
1996	1.3	2.1	3.1	2.6
1997	1.8	2.1	2.5	2.1
1998	1.7	2.3	2.8	2.6
1999	2.1	2.3	2.2	3.3
2000	2.3	1.9	2.4	3.0
2001	2.5	1.8	2.1	2.6
2002	2.2	2.0	2.0	2.6
2003	2.7	2.0	2.7	2.7
2004	2.1	2.0	2.7	1.9
2005	2.0	2.5	2.4	2.4
Slope	0.054	0.063	-0.022	0.057
p-value	0.001	0.001	0.229	0.001

Fig. 4.23(b): BRAIN NERVOUS SYSTEM (ICD-10 : C70-72) - Females
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

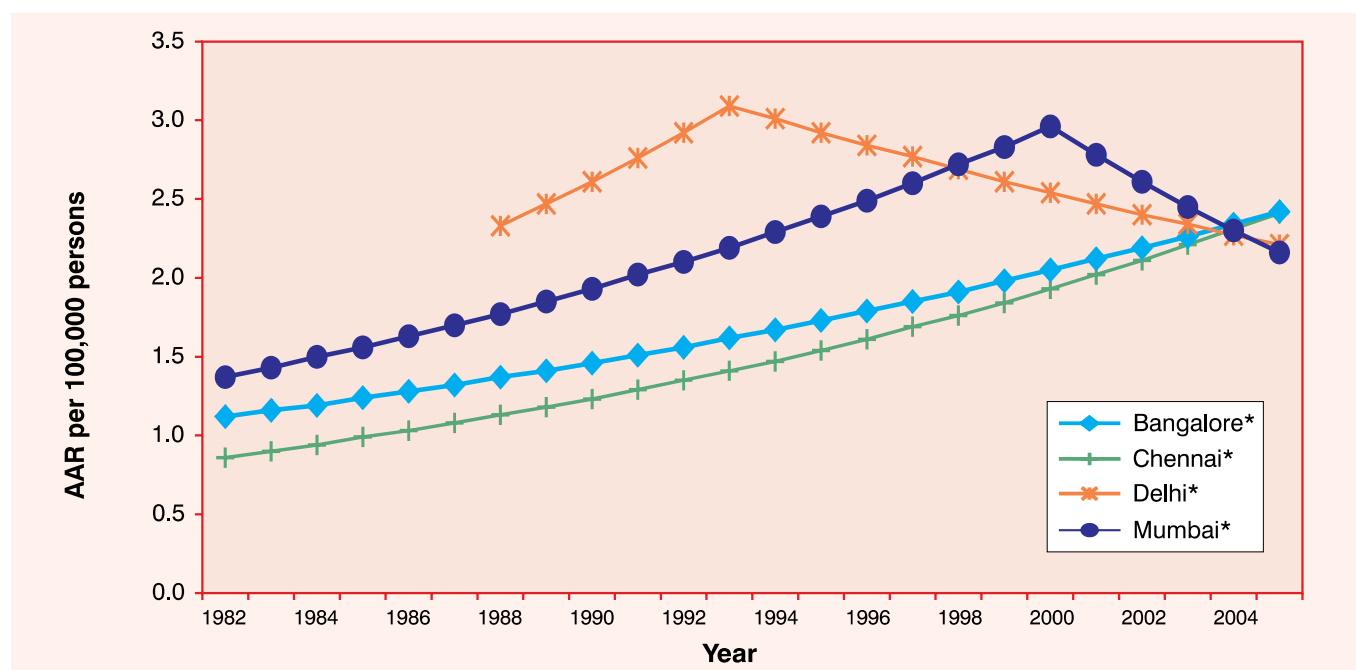


Table 4.23(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP1*	JP1*
1982	1.1	0.9		1.4
1983	1.2	0.9		1.4
1984	1.2	0.9		1.5
1985	1.2	1.0		1.6
1986	1.3	1.0		1.6
1987	1.3	1.1		1.7
1988	1.4	1.1	2.3	1.8
1989	1.4	1.2	2.5	1.9
1990	1.5	1.2	2.6	1.9
1991	1.5	1.3	2.8	2.0
1992	1.6	1.4	2.9	2.1
1993	1.6	1.4	3.1	2.2
1994	1.7	1.5	3.0	2.3
1995	1.7	1.5	2.9	2.4
1996	1.8	1.6	2.8	2.5
1997	1.9	1.7	2.8	2.6
1998	1.9	1.8	2.7	2.7
1999	2.0	1.8	2.6	2.8
2000	2.1	1.9	2.5	3.0
2001	2.1	2.0	2.5	2.8
2002	2.2	2.1	2.4	2.6
2003	2.3	2.2	2.3	2.5
2004	2.3	2.3	2.3	2.3
2005	2.4	2.4	2.2	2.2
APC0	3.42*	4.58*	-0.93	2.90*
APC1	-	-	5.8	4.35*
APC2	-	-	-2.76*	-6.12

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC (p<0.05) values.

Fig. 4.24(a): THYROID GLAND (ICD-10 : C73) - Females
Trends over time (1982-2005) in AAR (Three Year Moving Average)

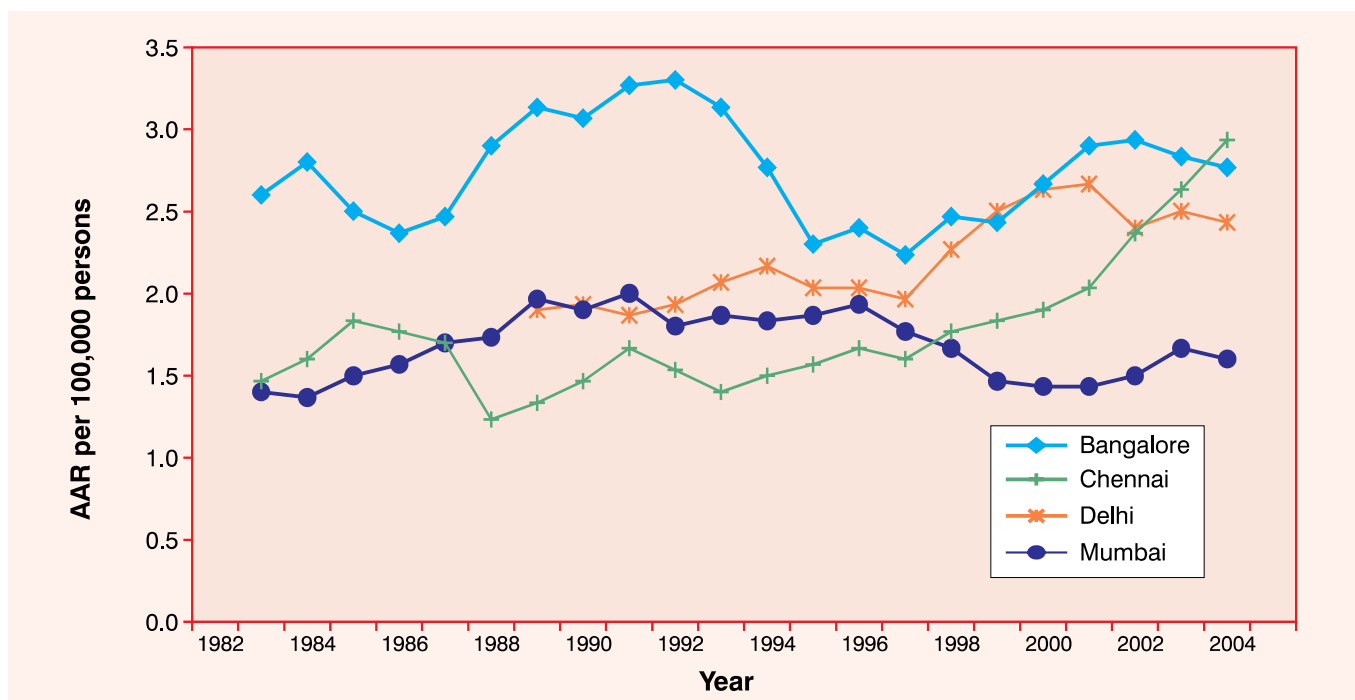


Table 4.24(a): Year wise AARs

Year	Bangalore	Chennai	Delhi	Mumbai
1982	2.2	1.3		1.5
1983	2.5	1.6		1.3
1984	3.1	1.5		1.4
1985	2.8	1.7		1.4
1986	1.6	2.3		1.7
1987	2.7	1.3		1.6
1988	3.1	1.5	1.7	1.8
1989	2.9	0.9	2.1	1.8
1990	3.4	1.6	1.9	2.3
1991	2.9	1.9	1.8	1.6
1992	3.5	1.5	1.9	2.1
1993	3.5	1.2	2.1	1.7
1994	2.4	1.5	2.2	1.8
1995	2.4	1.8	2.2	2.0
1996	2.1	1.4	1.7	1.8
1997	2.7	1.8	2.2	2.0
1998	1.9	1.6	2.0	1.5
1999	2.8	1.9	2.6	1.5
2000	2.6	2.0	2.9	1.4
2001	2.6	1.8	2.4	1.4
2002	3.5	2.3	2.7	1.5
2003	2.7	3.0	2.1	1.6
2004	2.3	2.6	2.7	1.9
2005	3.3	3.2	2.5	1.3
Slope	0.005	0.050	0.049	0.000
p-value	0.733	0.001	0.001	0.961

Fig. 4.24(b): THYROID GLAND (ICD-10 : C73) - Females
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

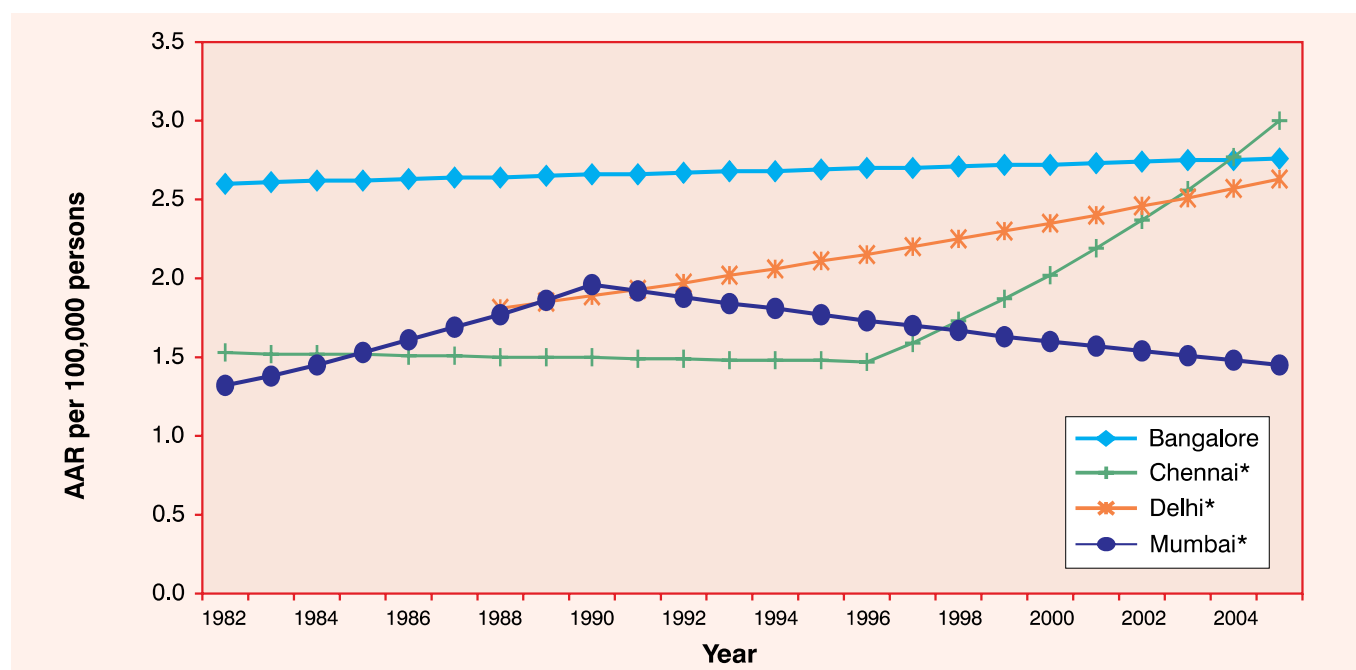


Table 4.24(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Chennai	Delhi	Mumbai
	JP0*	JP1*	JP0*	JP1*
1982	2.6	1.5		1.3
1983	2.6	1.5		1.4
1984	2.6	1.5		1.5
1985	2.6	1.5		1.5
1986	2.6	1.5		1.6
1987	2.6	1.5		1.7
1988	2.6	1.5	1.8	1.8
1989	2.7	1.5	1.9	1.9
1990	2.7	1.5	1.9	2.0
1991	2.7	1.5	1.9	1.9
1992	2.7	1.5	2.0	1.9
1993	2.7	1.5	2.0	1.8
1994	2.7	1.5	2.1	1.8
1995	2.7	1.5	2.1	1.8
1996	2.7	1.5	2.2	1.7
1997	2.7	1.6	2.2	1.7
1998	2.7	1.7	2.3	1.7
1999	2.7	1.9	2.3	1.6
2000	2.7	2.0	2.4	1.6
2001	2.7	2.2	2.4	1.6
2002	2.7	2.4	2.5	1.5
2003	2.8	2.6	2.5	1.5
2004	2.8	2.8	2.6	1.5
2005	2.8	3.0	2.6	1.5
APC0	0.26	2.60*	2.22*	-0.02
APC1	-	-0.26	-	5.08*
APC2	-	8.23*	-	-2.00*

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC (p<0.05) values.

Fig. 4.25(a): NHL (ICD-10 : C82-85,C96) - Males
Trends over time (1982-2005) in AAR (Three Year Moving Average)

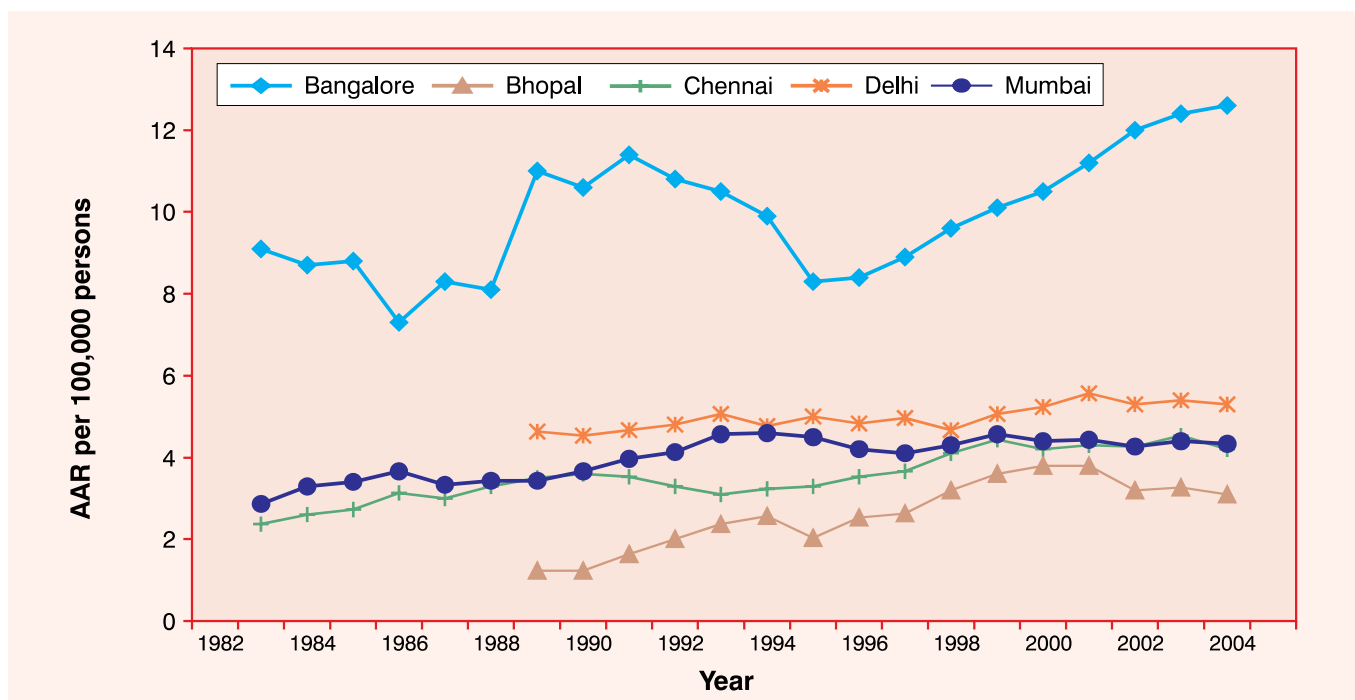


Table 4.25(a): Year wise AARs

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
1982	3.1		2.7		2.5
1983	2.9		2.2		3
1984	3.1		2.2		3.1
1985	2.7		3.4		3.8
1986	3.0		2.6		3.3
1987	1.6		3.4		3.9
1988	3.7	1.0	3.0	4.8	2.8
1989	2.8	0.6	3.5	4.8	3.6
1990	4.5	2.1	4.0	4.3	3.9
1991	3.3	1.0	3.3	4.5	3.5
1992	3.6	1.8	3.3	5.2	4.5
1993	3.9	3.2	3.3	4.7	4.4
1994	3.0	2.1	2.7	5.3	4.8
1995	3.0	2.4	3.7	4.3	4.6
1996	2.3	1.6	3.5	5.4	4.1
1997	3.1	3.6	3.4	4.8	3.9
1998	3.5	2.7	4.1	4.7	4.3
1999	3.0	3.3	4.8	4.5	4.7
2000	3.6	4.8	4.4	6.0	4.7
2001	3.9	3.3	3.4	5.2	3.8
2002	3.7	3.3	5.1	5.5	4.8
2003	4.4	3.0	4.3	5.2	4.2
2004	4.3	3.5	4.2	5.5	4.2
2005	3.9	2.8	4.1	5.2	4.6
Slope(b)	0.047	0.149	0.082	0.047	0.070
p-value	0.014	0.001	0.001	0.023	0.001

Fig. 4.25(b): NHL (ICD-10 : C82-85,C96) - Males
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

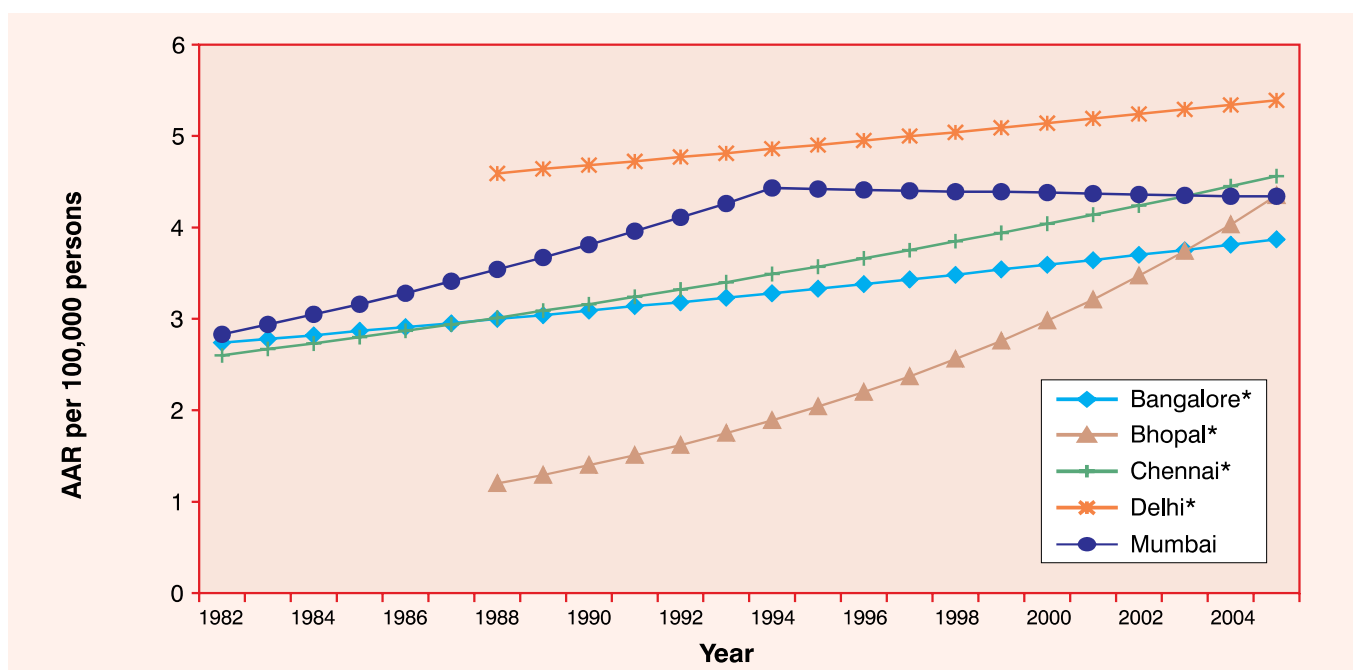


Table 4.25(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP0*	JP0*	JP1*
1982	2.7		2.6		2.8
1983	2.8		2.7		2.9
1984	2.8		2.7		3.1
1985	2.9		2.8		3.2
1986	2.9		2.9		3.3
1987	3.0		2.9		3.4
1988	3.0	1.2	3.0	4.6	3.5
1989	3.0	1.3	3.1	4.6	3.7
1990	3.1	1.4	3.2	4.7	3.8
1991	3.1	1.5	3.2	4.7	4.0
1992	3.2	1.6	3.3	4.8	4.1
1993	3.2	1.8	3.4	4.8	4.3
1994	3.3	1.9	3.5	4.9	4.4
1995	3.3	2.0	3.6	4.9	4.4
1996	3.4	2.2	3.7	5.0	4.4
1997	3.4	2.4	3.8	5.0	4.4
1998	3.5	2.6	3.9	5.0	4.4
1999	3.5	2.8	3.9	5.1	4.4
2000	3.6	3.0	4.0	5.1	4.4
2001	3.6	3.2	4.1	5.2	4.4
2002	3.7	3.5	4.2	5.2	4.4
2003	3.8	3.7	4.3	5.3	4.4
2004	3.8	4.0	4.5	5.3	4.3
2005	3.9	4.4	4.6	5.4	4.3
APC0	1.51*	7.87*	2.47*	0.95*	1.91*
APC1	-	-	-	-	3.80*
APC2	-	-	-	-	-0.19

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC (p<0.05) values.

Fig. 4.26(a): NHL (ICD-10 : C82-85,C96) - Females
Trends over time (1982-2005) in AAR (Three Year Moving Average)

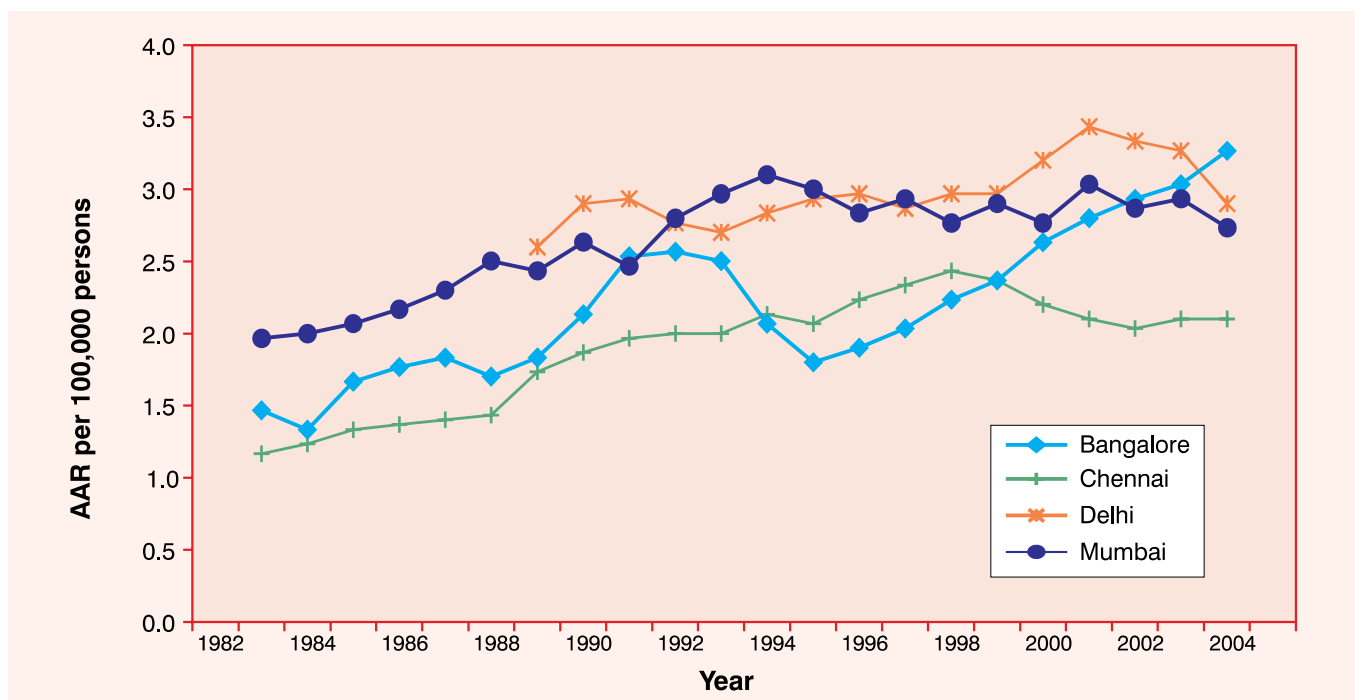


Table 4.26(a): Year wise AARs

Year	Bangalore	Chennai	Delhi	Mumbai
1982	1.4	1.3		1.8
1983	1.4	1.3		1.9
1984	1.6	0.9		2.2
1985	1.0	1.5		1.9
1986	2.4	1.6		2.1
1987	1.9	1.0		2.5
1988	1.2	1.6	2.3	2.3
1989	2.0	1.7	2.4	2.7
1990	2.3	1.9	3.1	2.3
1991	2.1	2.0	3.2	2.9
1992	3.2	2.0	2.5	2.2
1993	2.4	2.0	2.6	3.3
1994	1.9	2.0	3.0	3.4
1995	1.9	2.4	2.9	2.6
1996	1.6	1.8	2.9	3.0
1997	2.2	2.5	3.1	2.9
1998	2.3	2.7	2.6	2.9
1999	2.2	2.1	3.2	2.5
2000	2.6	2.3	3.1	3.3
2001	3.1	2.2	3.3	2.5
2002	2.7	1.8	3.9	3.3
2003	3.0	2.1	2.8	2.8
2004	3.4	2.4	3.1	2.7
2005	3.4	1.8	2.8	2.7
Slope	0.075	0.048	0.034	0.043
p-value	0.001	0.001	0.044	0.001

Fig. 4.26(b): NHL (ICD-10 : C82-85,C96) - Females
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

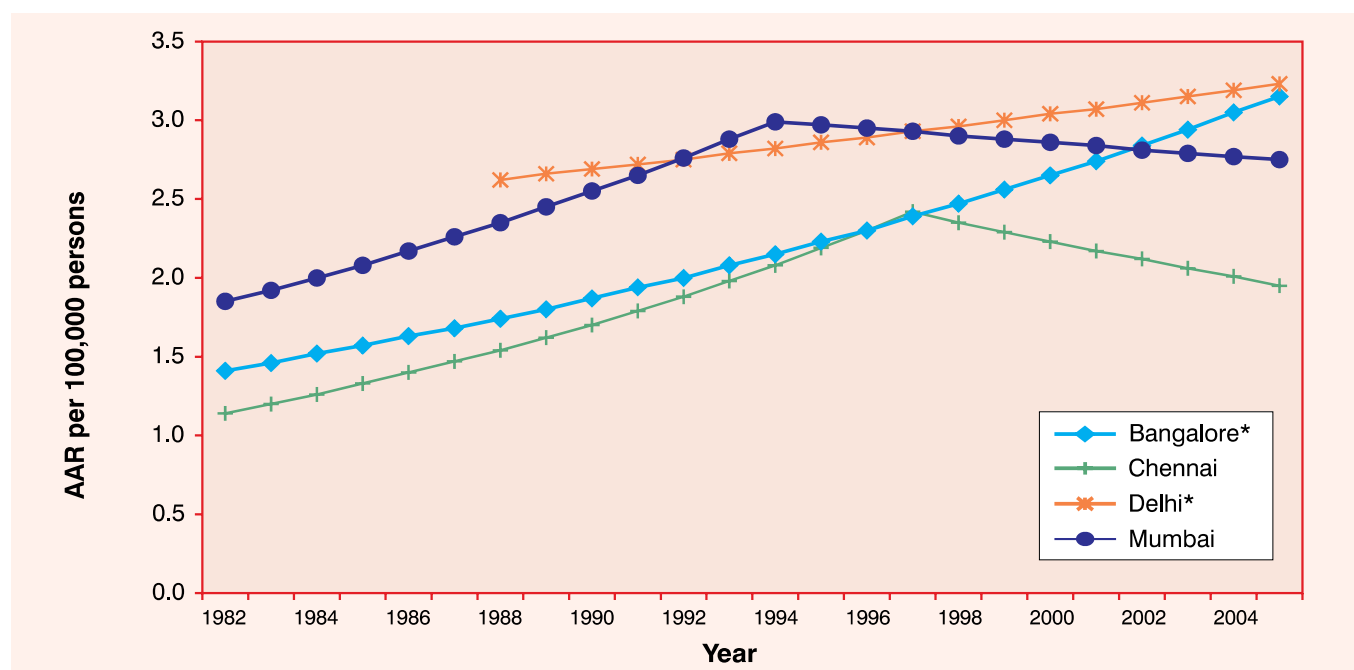


Table 4.26(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Chennai	Delhi	Mumbai
	JP0*	JP1*	JP0*	JP1*
1982	1.4	1.1		1.9
1983	1.5	1.2		1.9
1984	1.5	1.3		2.0
1985	1.6	1.3		2.1
1986	1.6	1.4		2.2
1987	1.7	1.5		2.3
1988	1.7	1.5	2.6	2.4
1989	1.8	1.6	2.7	2.5
1990	1.9	1.7	2.7	2.6
1991	1.9	1.8	2.7	2.7
1992	2.0	1.9	2.8	2.8
1993	2.1	2.0	2.8	2.9
1994	2.2	2.1	2.8	3.0
1995	2.2	2.2	2.9	3.0
1996	2.3	2.3	2.9	3.0
1997	2.4	2.4	2.9	2.9
1998	2.5	2.4	3.0	2.9
1999	2.6	2.3	3.0	2.9
2000	2.7	2.2	3.0	2.9
2001	2.7	2.2	3.1	2.8
2002	2.8	2.1	3.1	2.8
2003	2.9	2.1	3.2	2.8
2004	3.1	2.0	3.2	2.8
2005	3.2	2.0	3.2	2.8
APC0	3.55*	2.83*	1.23*	1.79*
APC1	-	5.11*	-	4.11*
APC2	-	-2.62	-	-0.78

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC ($p < 0.05$) values.

Fig. 4.27(a): LYMPHOID LEUKAEMIA (ICD-10 : C91) - Males
Trends over time (1982-2005) in AAR (Three Year Moving Average)

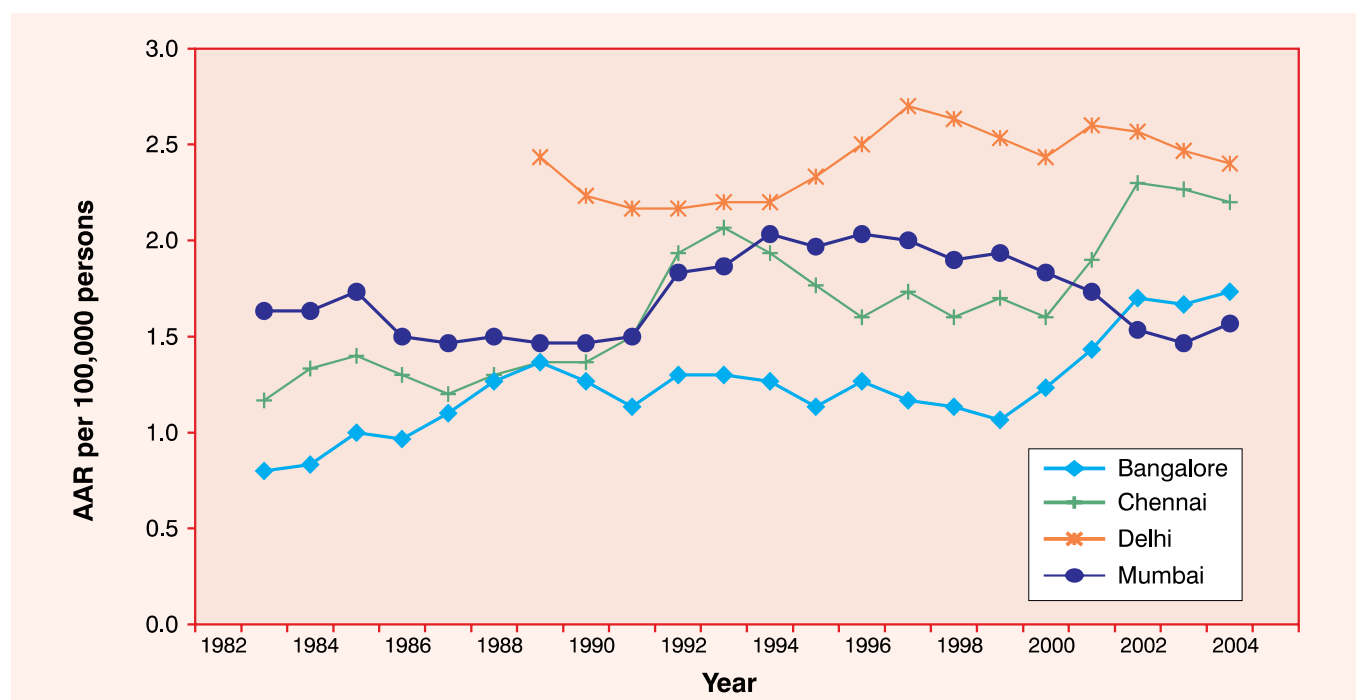


Table 4.27(a): Year wise AARs

Year	Bangalore	Chennai	Delhi	Mumbai
1982	0.8	1.2		1.7
1983	0.7	1.0		1.1
1984	0.9	1.3		2.1
1985	0.9	1.7		1.7
1986	1.2	1.2		1.4
1987	0.8	1.0		1.4
1988	1.3	1.4	2.8	1.6
1989	1.7	1.5	2.5	1.5
1990	1.1	1.2	1.9	1.3
1991	1.0	1.4	2.2	1.6
1992	1.3	1.9	2.3	1.6
1993	1.6	2.5	2.0	2.3
1994	1.0	1.8	2.3	1.7
1995	1.2	1.5	2.3	2.1
1996	1.2	2.0	2.4	2.1
1997	1.4	1.3	2.8	1.9
1998	0.9	1.9	2.9	2.0
1999	1.1	1.6	2.2	1.8
2000	1.2	1.6	2.5	2.0
2001	1.4	1.6	2.6	1.7
2002	1.7	2.5	2.7	1.5
2003	2.0	2.8	2.4	1.4
2004	1.3	1.5	2.3	1.5
2005	1.9	2.3	2.5	1.8
Slope(b)	0.032	0.044	0.010	0.009
p-value	0.001	0.001	0.451	0.316

Fig. 4.27(b): LYMPHOID LEUKAEMIA (ICD-10 : C91) - Males
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

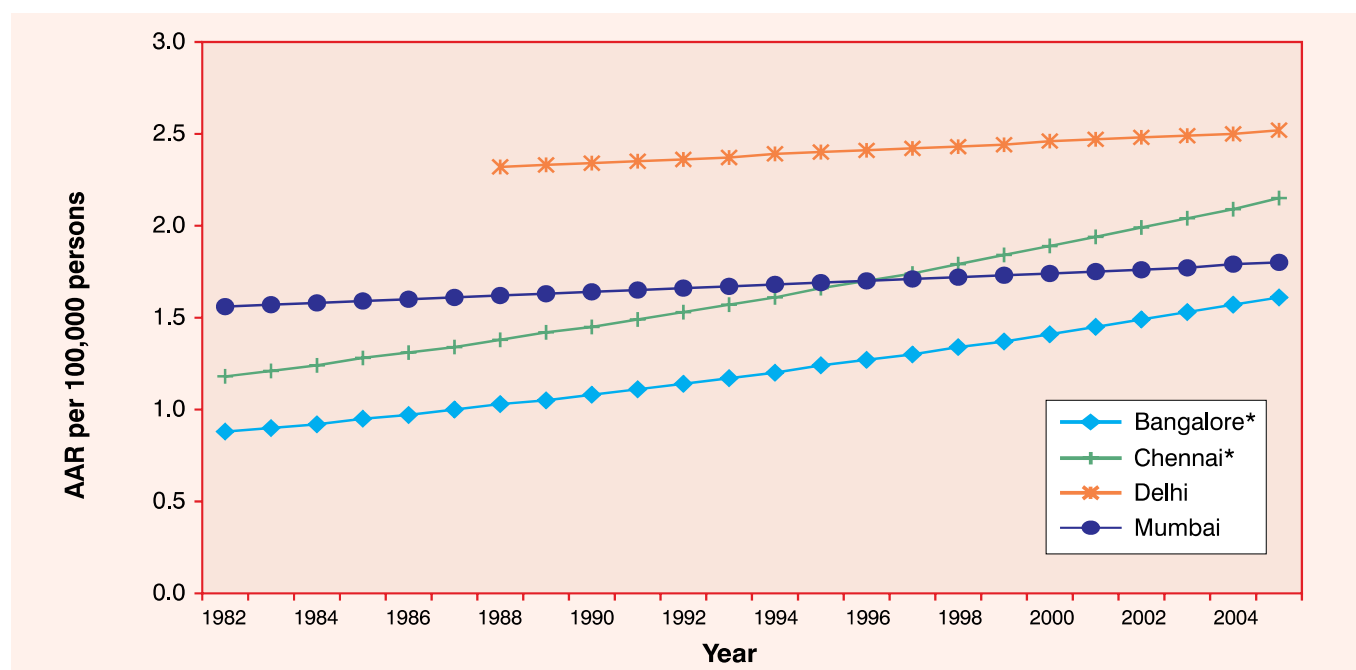


Table 4.27(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP0*	JP0*
1982	0.9	1.2		1.6
1983	0.9	1.2		1.6
1984	0.9	1.2		1.6
1985	1.0	1.3		1.6
1986	1.0	1.3		1.6
1987	1.0	1.3		1.6
1988	1.0	1.4	2.3	1.6
1989	1.1	1.4	2.3	1.6
1990	1.1	1.5	2.3	1.6
1991	1.1	1.5	2.4	1.7
1992	1.1	1.5	2.4	1.7
1993	1.2	1.6	2.4	1.7
1994	1.2	1.6	2.4	1.7
1995	1.2	1.7	2.4	1.7
1996	1.3	1.7	2.4	1.7
1997	1.3	1.7	2.4	1.7
1998	1.3	1.8	2.4	1.7
1999	1.4	1.8	2.4	1.7
2000	1.4	1.9	2.5	1.7
2001	1.5	1.9	2.5	1.8
2002	1.5	2.0	2.5	1.8
2003	1.5	2.0	2.5	1.8
2004	1.6	2.1	2.5	1.8
2005	1.6	2.2	2.5	1.8
APC0	2.68*	2.64*	0.49	0.61
APC1	—	—	—	—
APC2	—	—	—	—

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC ($p < 0.05$) values.

Fig. 4.28(a): MYELOID LEUKAEMIA (ICD-10 : C92-94) - Males
Trends over time (1982-2005) in AAR (Three Year Moving Average)

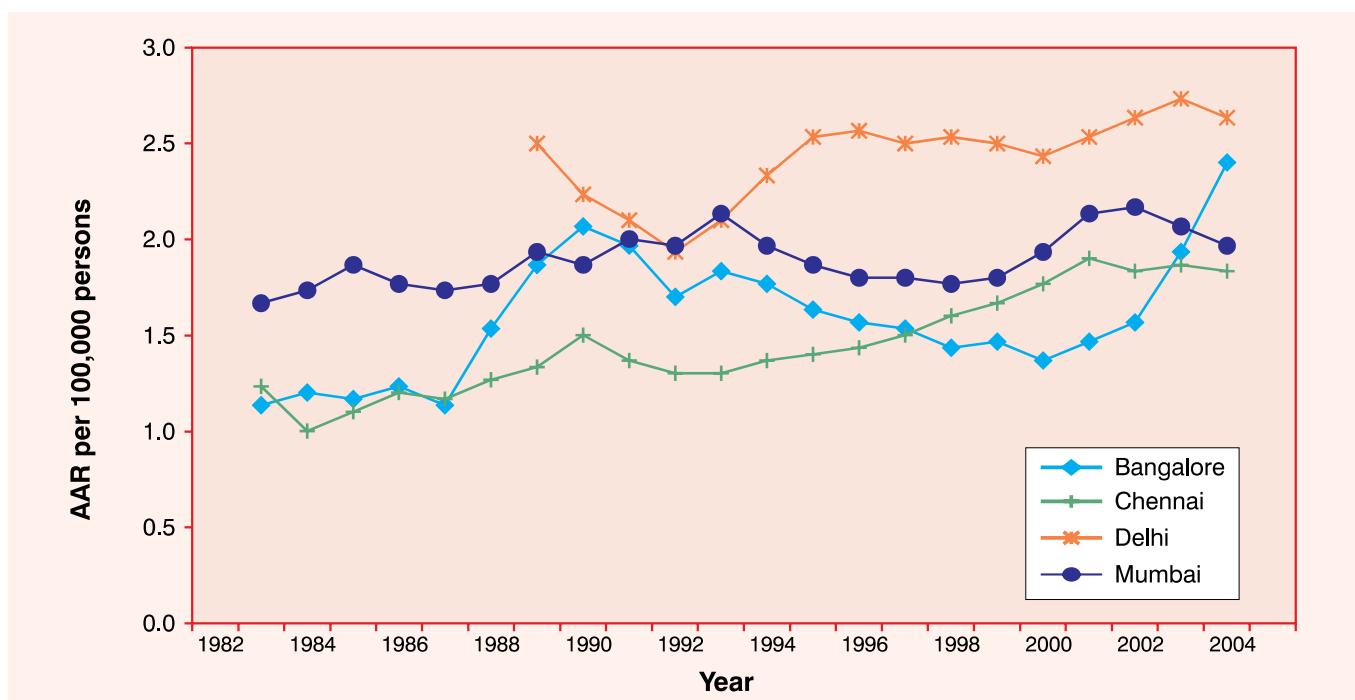


Table 4.28(a): Year wise AARs

Year	Bangalore	Chennai	Delhi	Mumbai
1982	1.0	1.7		1.6
1983	1.1	0.9		1.4
1984	1.3	1.1		2.0
1985	1.2	1.0		1.8
1986	1.0	1.2		1.8
1987	1.5	1.4		1.7
1988	0.9	0.9	2.8	1.7
1989	2.2	1.5	2.4	1.9
1990	2.5	1.6	2.3	2.2
1991	1.5	1.4	2.0	1.5
1992	1.9	1.1	2.0	2.3
1993	1.7	1.4	1.8	2.1
1994	1.9	1.4	2.5	2.0
1995	1.7	1.3	2.7	1.8
1996	1.3	1.5	2.4	1.8
1997	1.7	1.5	2.6	1.8
1998	1.6	1.5	2.5	1.8
1999	1.0	1.8	2.5	1.7
2000	1.8	1.7	2.5	1.9
2001	1.3	1.8	2.3	2.2
2002	1.3	2.2	2.8	2.3
2003	2.1	1.5	2.8	2.0
2004	2.4	1.9	2.6	1.9
2005	2.7	2.1	2.5	2.0
Slope(b)	0.034	0.036	0.021	0.014
p-value	0.018	0.001	0.107	0.034

Fig. 4.28(b): MYELOID LEUKAEMIA (ICD-10 : C92-94) - Males
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

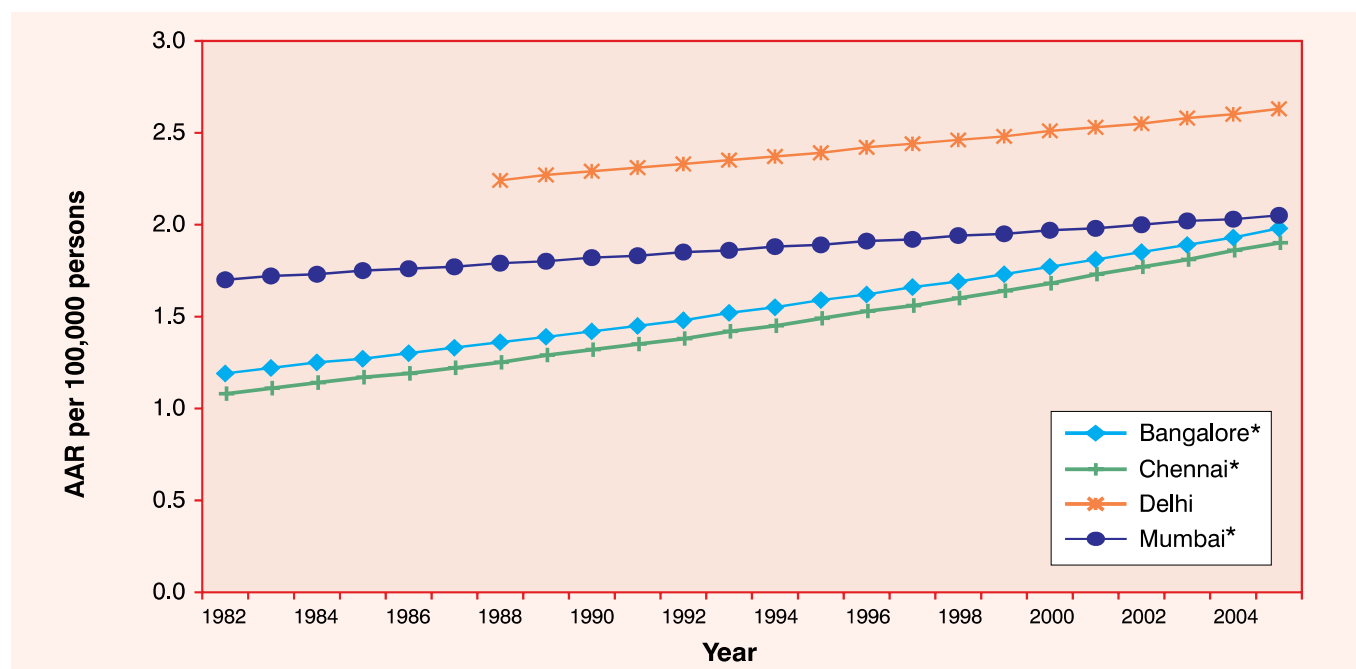


Table 4.28(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP0*	JP0*
1982	1.2	1.1		1.7
1983	1.2	1.1		1.7
1984	1.3	1.1		1.7
1985	1.3	1.2		1.8
1986	1.3	1.2		1.8
1987	1.3	1.2		1.8
1988	1.4	1.3	2.2	1.8
1989	1.4	1.3	2.3	1.8
1990	1.4	1.3	2.3	1.8
1991	1.5	1.4	2.3	1.8
1992	1.5	1.4	2.3	1.9
1993	1.5	1.4	2.4	1.9
1994	1.6	1.5	2.4	1.9
1996	1.6	1.5	2.4	1.9
1997	1.7	1.6	2.4	1.9
1998	1.7	1.6	2.5	1.9
1999	1.7	1.6	2.5	1.9
2000	1.8	1.7	2.5	2.0
2001	1.8	1.7	2.5	2.0
2002	1.9	1.8	2.6	2.0
2003	1.9	1.8	2.6	2.0
2004	1.9	1.9	2.6	2.0
2005	2.0	1.9	2.6	2.1
APC0	2.23*	2.49*	0.93	0.80*
APC1	—	—	—	—
APC2	—	—	—	—

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC ($p < 0.05$) values.

Fig. 4.29(a): MYELOID LEUKAEMIA (ICD-10 : C92-94) - Females
Trends over time (1982-2005) in AAR (Three Year Moving Average)

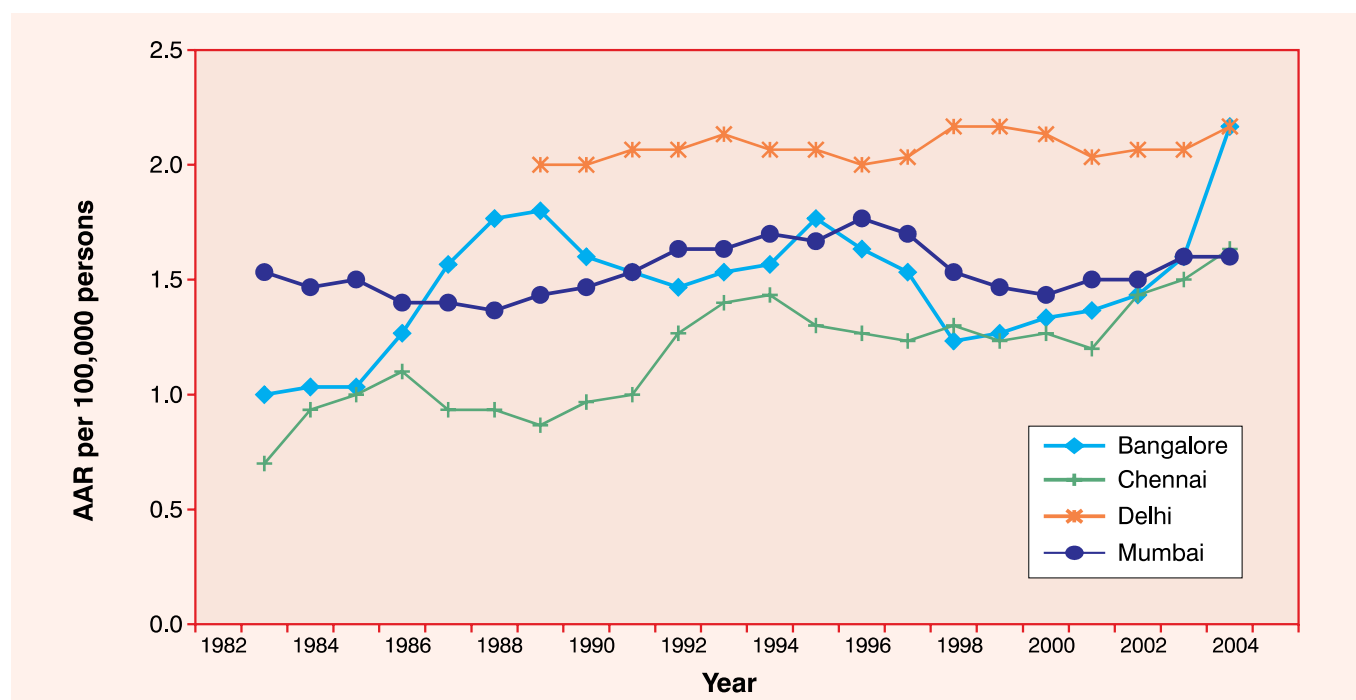


Table 4.29(a): Year wise AARs

Year	Bangalore	Chennai	Delhi	Mumbai
1982	1.0	0.4		1.6
1983	1.2	0.9		1.3
1984	0.8	0.8		1.7
1985	1.1	1.1		1.4
1986	1.2	1.1		1.4
1987	1.5	1.1		1.4
1988	2.0	0.6	2.0	1.4
1989	1.8	1.1	2.0	1.3
1990	1.6	0.9	1.4	1.6
1991	1.4	0.9	1.9	1.5
1992	1.6	1.2	2.2	1.5
1993	1.4	1.7	1.6	1.9
1994	1.6	1.3	2.2	1.5
1995	1.7	1.3	2.0	1.7
1996	2.0	1.3	1.9	1.8
1997	1.2	1.2	1.9	1.8
1998	1.4	1.2	2.1	1.5
1999	1.1	1.5	2.4	1.3
2000	1.3	1.0	1.8	1.6
2001	1.6	1.3	1.7	1.4
2002	1.2	1.3	2.1	1.5
2003	1.5	1.7	2.1	1.6
2004	2.1	1.5	1.7	1.7
2005	2.9	1.7	2.4	1.5
Slope	0.030	0.035	0.012	0.005
p-value	0.020	0.001	0.302	0.285

Fig. 4.29(b): MYELOID LEUKAEMIA (ICD-10 : C92-94) - Females
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

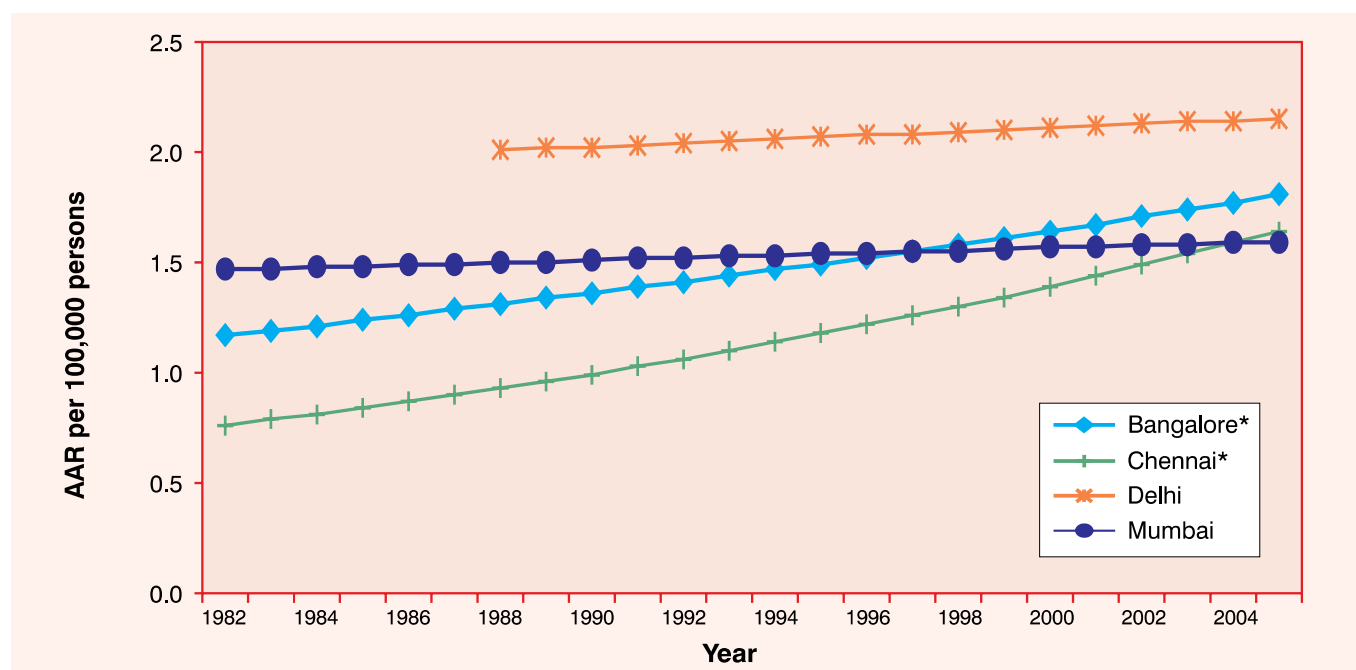


Table 4.29(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP0*	JP0*
1982	1.2	0.8		1.5
1983	1.2	0.8		1.5
1984	1.2	0.8		1.5
1985	1.2	0.8		1.5
1986	1.3	0.9		1.5
1987	1.3	0.9		1.5
1988	1.3	0.9	2.0	1.5
1989	1.3	1.0	2.0	1.5
1990	1.4	1.0	2.0	1.5
1991	1.4	1.0	2.0	1.5
1992	1.4	1.1	2.0	1.5
1993	1.4	1.1	2.1	1.5
1994	1.5	1.1	2.1	1.5
1995	1.5	1.2	2.1	1.5
1996	1.5	1.2	2.1	1.5
1997	1.6	1.3	2.1	1.6
1998	1.6	1.3	2.1	1.6
1999	1.6	1.3	2.1	1.6
2000	1.6	1.4	2.1	1.6
2001	1.7	1.4	2.1	1.6
2002	1.7	1.5	2.1	1.6
2003	1.7	1.5	2.1	1.6
2004	1.8	1.6	2.1	1.6
2005	1.8	1.6	2.2	1.6
APC0	1.90*	3.41*	0.41	0.36
APC1	—	—	—	—
APC2	—	—	—	—

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC ($p < 0.05$) values.

Chapter 5

PROJECTION OF BURDEN OF CANCER

Projection of cancer burden means a systematic way of prediction of number of cancer cases for all anatomical sites or for a specific site and for a specified period of time. This could be based on time trend in incidence rates based on the projected population.

The present chapter projects the cancer cases for the country by sex for selected sites of cancer for the periods 2008-2010, 2015 & 2020 [Table 5(a) and 5(b)]. The incidence data generated by PBCRs at Bangalore, Barshi, Bhopal, Chennai, Delhi and Mumbai for the years 2001-2005 formed the sources of data. The Crude Incidence Rate (CR) was considered suitable for assessing the future load (magnitude) of cancer cases in the country. The CR is preferable to AAR as the latter is more suitable for comparison of rates between areas than for assessing the disease burden for the area. The combination of time trend in pooled crude rates of selected sites for past five years and population estimate by time was used to arrive at the projection for each of the above periods. The Linear Regression method was used to assess the time trend. For whichever sites the trend was not found to be significant, the latest rates were taken into consideration.

The pooled crude rates of the five urban registries (Bangalore, Bhopal, Chennai, Delhi and Mumbai) were taken to represent the estimates for all Indian states excluding states from the North East region. The Crude Rate of various cancer sites provided in the report of 2005-2006 for the North East region were assumed to represent the estimates for the same area. The crude rate of cancers of cervix and breast of the rural registry at Barshi was taken into account to represent the rural areas of India. Accordingly, the weightage of 0.7 and 0.3 for rural and urban areas respectively was used to estimate the projection for Breast and Cervix cancers.

The Percentage change observed in decadal growth rate of 1991-2001 as compared to the decadal growth of 1981-1991 was assumed to continue and correspondingly the growth rate of India is calculated separately for both males and females to calculate the yearly populations for the year 2001-2020.

**Table 5(a): Projected Cases at India level for Selected Sites and Selected time periods
(2008-2010, 2015, 2020) - MALES**

ICD-10	Site Name	2008	2009	2010	2015	2020
C00-C96	All Sites	447399	454842	462408	497081	534354
C01-C02	Tongue	23932	24330	24735	26590	28584
C03-C06	Mouth	28066	29474	30921	38380	46785
C12-C13	Hypopharynx	14131	14366	14605	15700	16878
C15	Oesophagus	23573	23433	23281	22114	20642
C16	Stomach	24993	25408	25831	27768	29850
C18	Colon	11236	11423	11613	12484	13420
C19-C20	Rectum	11738	11933	12132	13041	14019
C22	Liver	14062	14295	14533	15623	16795
C23-C24	Gall Bladder	8396	8536	8678	9329	10028
C32	Larynx	24356	24761	25173	27060	29089
C33-C34	Lung	42863	43576	44301	47623	51194
C61	Prostate	25273	25693	26120	28079	30185
C70-C72	Brain NS	18238	18541	18850	20263	21782
C82-C95, C96	NHL	19835	20165	20501	22038	23690
C91	Lymp. Leuk.	9565	9724	9886	10627	11424
C92-C94	Myeloid Leuk.	11616	11809	12005	12905	13873

**Table 5(b): Projected Cases at India level for Selected Sites and Selected time periods
(2008-2010, 2015, 2020) - FEMALES**

ICD-10	Site Name	2008	2009	2010	2015	2020
C00-C96	All Sites	498773	507990	517378	563808	614404
C01-C02	Tongue	7687	7829	7974	8689	9469
C03-C06	Mouth	14402	14669	14940	16280	17741
C12-C13	Hypopharynx	4620	4706	4793	5223	5691
C15	Oesophagus	17755	18083	18417	20070	21871
C16	Stomach	12458	12689	12923	14083	15347
C18	Colon	10675	11276	11896	15206	19014
C19-C20	Rectum	9005	9172	9341	10180	11093
C22	Liver	7564	7943	8334	10412	12795
C23-C24	Gall Bladder	17839	18169	18505	20166	21975
C32	Larynx	3894	3966	4039	4401	4796
C33-C34	Lung	13009	13250	13494	14705	16025
C50	Breast	84805	87693	90659	106124	123634
C53	Cervix	100088	101938	103821	113138	123291
C54	Corpus Uteri	14314	14579	14848	16181	17633
C56	Ovary	29386	29929	30482	33218	36199
C70-C72	Brain NS	11232	11440	11651	12697	13836
C73	Thyroid Gland	11329	11538	11751	12806	13955
C82-C85, C96	NHL	11696	11913	12133	13222	14408
C91	Lymp. Leuk.	5703	5808	5916	6447	7025
C92-C94	Myeloid Leuk.	11070	11770	12492	16363	20828

References

1. Boyle, P. and Parkin, D.M. Statistical Methods for Registries – Ch. In Cancer Registration – Principles and Methods, Eds. Jensen, O.M., Parkin, D.M., Maclennan, R., Muir C.S. and Skeet R.G., IARC Scientific Publications, No.95, Lyon, 1991.
2. Consolidated Report of the Population Based Cancer Registries 1990-1996 : National Cancer Registry Programme (ICMR), Bangalore, 2001.
3. Consolidated Report of the North East Population Based Cancer Registries 2005-2006 : National Cancer Registry Programme (ICMR), Bangalore, 2008.
4. Kim H.J., Fay M.P., Feuer E.J., Midthune D.N. - Permutation Tests for Joinpoint Regression with Applications to Cancer Rates. Stat Med 2000; 19:335-51 (correction: 2001; 20:655).
5. Muir C.S., Demaret E and Boyle P., The cancer registry in cancer control: an overview. IARC Sc. Pub. 1985, 66, 13-26.
6. Takiar R and Shobana B: Cancer Incidence Rates and Problem of Denominators - A New approach in Indian Cancer Registries: Asian Pacific J Cancer Prev; Vol.10, 2009.

Addresses

Indian Council of Medical Research (Headquarters): V. Ramalingaswami Bhawan, Ansari Nagar, New Delhi – 110 029. *Email: icmrhqds@sansad.nic.in*

Coordinating Unit of National Cancer Registry Programme: No. 557, 'Srinivasa Nilaya', 7th Main, New BEL Road, Dollars Colony, Bangalore – 560 094. *Email: ncrpblr@canceratlasindia.org, ank@ncrpindia.org; Website: <http://www.ncrpindia.org/>, <http://www.canceratlasindia.org/>, <http://www.pbcrindia.org/>*

Monitoring Unit of North Eastern Regional Cancer Registry: Regional Medical Research Centre (N.E), Indian Council of Medical Research, P. B. No. 105, Dibrugarh – 786 001. *Email: icmrrcdi@hub.nic.in*

Cancer Registries

Bangalore (PBCR & HBCR): Kidwai Memorial Institute of Oncology, Dr. M.H.Marigowda Road, Bangalore – 560 029. *Email: kidwai@kar.nic.in; Website: <http://www.kar.nic.in/kidwai>*

Barshi (PBCR): Tata Memorial Centre Rural Cancer Project & Nargis Dutt Memorial Cancer Hospital, Barshi – 413 401 (Solapur), Maharashtra. *Email: barshiexp_registry@rediffmail.com*

Bhopal (PBCR): Department of Pathology, Gandhi Medical College, Bhopal – 462 001. *Email: pbcr_bhopal@yahoo.in*

Chennai (PBCR & HBCR): Cancer Institute (WIA), Annexe, 18, Sardar Patel Road, Chennai - 600 020. *Email: cancer_institute_wia@vsnl.com, iarc survival@yahoo.co.uk*

Delhi (PBCR): Institute of Rotary Cancer Hospital, Department of Pathology, All India Institute of Medical Sciences, Ansari Nagar, New Delhi – 110 029. *Email: btyagi51@yahoo.co.in*

Mumbai (PBCR): Indian Cancer Society, 74, Jerbai Wadia Road, Parel, P.O. Box No. 6033, Mumbai – 400012. *Email: bcrics@vsnl.com; Website: <http://www.indiancancersociety.org/>*

Mumbai (HBCR): Tata Memorial Hospital, Parel, Mumbai – 400 012. *Email: cancer_epid@rediffmail.com.*

Thiruvananthapuram (HBCR & PBCR): Regional Cancer Centre, Medical College Campus, Thiruvananthapuram – 695 011. *Email: rcctvm@md2.vsnl.net.in.*

Dibrugarh District (PBCR & HBCR): Assam Medical College, Dibrugarh – 786 002. (ASSAM). *Email: pbcr_dibrugarh@rediffmail.com*

Kamrup Urban District (PBCR): Dr. Bhubaneswar Borooah Cancer Institute, Guwahati - 781 016 (ASSAM). *Email: dr_j_sarma@rediffmail.com.*

Silchar Town (PBCR): Silchar Medical College, Silchar - 788 014 (ASSAM). *Email: pbcrsmc@rediffmail.com, pbcrsmc@indiatimes.com.*

Imphal west District (PBCR): Regional Institute of Medical Sciences, Imphal - 795 004 (MANIPUR). *Email: pathlabs@yahoo.com.*

Mizoram State (PBCR): Civil Hospital, Aizawl – 796 001, Mizoram. *Email: ezomawia@hotmail.com*

Sikkim State (PBCR): Sir Thutob Namgyal Memorial Referral Hospital, Gangtok - 737 101, Sikkim. *Email: slg_yogi@sancharnet.in*

Ahmedabad (PBCR): The Gujarat Cancer and Research Institute (M.P. Shah Cancer Hospital), New Civil Hospital Compound, Asarwa, Ahmedabad - 380 016. *Email: gcriad1@sancharnet.in; Website: http://www.cancerindia.org*

Kolkata (PBCR): Chittaranjan National Cancer Institute, 37 S.P. Mukherjee Road, Kolkata - 700 026. *Email: cncinst@giasc101.vsnl.net.in*

Pune, Nagpur & Aurangabad (PBCR): Indian Cancer Society, 74, Jerbai Wadia Road, Parel, P.O. Box No. 6033, Mumbai – 400012. *Email: bcrics@vsnl.com; Website: http://www.indiancancersociety.org/*

Kollam: Natural Background Radiation Cancer Registry, Karunagappally, Puthenthura P.O., Neendakara, Kollam - 691 588 (Kerala). *Email: nbrrkply@gmail.com*

Steering / Monitoring Committee /Other Members

Dr G K Rath, In-Charge, Institute Rotary Cancer Hospital, Professor and Head, Department of Radiation Oncology, All India Institute of Medical Sciences, Ansari Nagar, New Delhi – 110 029. *Email: gkrath@rediffmail.com*

Dr Padam Singh, Vice President, EPOS Health (India) Pvt. Ltd, No. 445, Udyog Vihar, Phase-III, Gurgaon – 122 016 (Haryana).

Dr J.P. Muliyl, Principal, Christian Medical College, Vellore – 632 004, Tamil Nadu.

Dr Kusum Verma, Chairman and Senior Consultant, Department of Cytopathology, Sir Ganga Ram Hospital, Rajinder Nagar, New Delhi – 110 060.

Dr A C Katak, Director, Dr. B. Borooah Cancer Institute, (Regional Institute for Treatment and Research), Gopinath Nagar, Guwahati – 781 016 (Assam). *Email: bbci_info@yahoo.co.in*

Dr Usha K. Luthra, Sr. Adviser – Cancer Research – ICMR, J-202 – Somvihar, R.K.Puram, New Delhi – 110 022.

Dr P.C. Gupta, Director, Healis – Sekhsaria Institute of Public Health, 601 Great Eastern Chambers, Plot 28, Sector 11, CBD, Belapur (East), Navi Mumbai – 400 614. *Email: pcgupta@healis.org*

Dr S. Radhakrishna, D-201 High Rise Apartments, Lower Tank Bund Road, Gandhinagar, Hyderabad – 500 080. *Email: radkrsna@hotmail.com*

Dr R.N. Visweswara, Prof. of Pathology, Vydehi Institute of Medical Sciences and Research Centre, No.82, EPIP Area, Whitefield, Bangalore – 560 066.

Mr. P. Gangadharan, Consultant – Oncology Centre, Amrita Institute of Medical Sciences, Elamakkara P.O., Edappally, Kochi - 682 026. *Email: gangadharanp@aims.amrita.edu*

Dr Kusum Joshi, Prof. & Head of Histopathology, PGIMER, Chandigarh – 160 012.

Chairman of North East Region Project: Prof. R.C. Mahajan, SN Bose INSA Research Professor & Emeritus Professor, Department of Parasitology, Postgraduate Institute of Medical Education & Research, Chandigarh – 160 012. *Email: medinst@pgi.chd.nic.in*

Coordinator of Special Cell at Kolkata: Dr. Manas Nath Bandyopadhyay, Consultant Oncologist & In-charge, Research Division, Cancer Centre Welfare Home & Research Institute, Mahatma Gandhi Road, Thakurpukur, Kolkata – 700 063. *Email: ccwhri@cal2.vsnl.net.in*

Other Publications of NCRP

1. Annual Report 1982: National Cancer Registry, Indian Council of Medical Research, New Delhi, 1985
2. Annual Report 1983: National Cancer Registry, Indian Council of Medical Research, New Delhi, 1986
3. Annual Report 1984: National Cancer Registry, Indian Council of Medical Research, New Delhi, 1987
4. Annual Report 1985: National Cancer Registry, Indian Council of Medical Research, New Delhi, 1988
5. Annual Report 1986: National Cancer Registry, Indian Council of Medical Research, New Delhi, 1989
6. Annual Report 1987: National Cancer Registry Programme, Indian Council of Medical Research, New Delhi, 1989
7. Biennial Report 1988-1989: National Cancer Registry Programme, Indian Council of Medical Research, New Delhi, 1992
8. Consolidated Report of the Population Based Cancer Registries 1990-1996: National Cancer Registry Programme (ICMR), Bangalore, 2001
9. Consolidated Report of the Population Based Cancer Registries 1990-1996 Supplement: Year-wise Tabulation of Incident Cancers and Rates by Site and Gender: National Cancer Registry Programme (ICMR), Bangalore, 2001
10. Ten Year Consolidated Report of the Hospital Based Cancer Registries 1984-93: National Cancer Registry Programme (ICMR), Bangalore, 2001
11. NCRP - An Overview 1981-2001: National Cancer Registry Programme (ICMR), Bangalore, 2001
12. Two-Year Report of the Population Based Cancer Registries 1997-1998: National Cancer Registry Programme (ICMR), Bangalore, 2002
13. Five Year Consolidated Report on Hospital Based Cancer Registries : 1994-1998: National Cancer Registry Programme (ICMR), Bangalore, 2002
14. Development of an Atlas of Cancer in India. First All India Report 2001-2002 vol. I and II. [www.canceratlasindia.org]: National Cancer Registry Programme (ICMR), Bangalore, 2004
15. An Overview - Development of an Atlas of Cancer in India. First All India Report 2001-2002 vol. I and II. [www.canceratlasindia.org]: National Cancer Registry Programme (ICMR), Bangalore, 2004
16. Two-Year Report of the Population Based Cancer Registries 1999-2000: National Cancer Registry Programme (ICMR), Bangalore, 2005
17. Two-Year Report of the Hospital Based Cancer Registries 1999-2000: National Cancer Registry Programme (ICMR), Bangalore, 2005
18. First Report of the Population Based Cancer Registries under North Eastern Regional Cancer Registry 2003-2004: National Cancer Registry (ICMR), Bangalore, 2006
19. An Overview - First Report of the North-East Population Based Cancer Registries 2003-2004: National Cancer Registry Programme (ICMR), Bangalore 2006
20. Consolidated Report of Population Based Cancer Registries 2001-2004: National Cancer Registry Programme (ICMR), Bangalore 2006
21. Consolidated report of Hospital Based Cancer Registries 2001-2003: National Cancer Registry Programme (ICMR), Bangalore, 2007
22. Second Report of the North East Population Based Cancer Registries 2005-2006: National Cancer Registry Programme (ICMR), Bangalore, 2008
23. Two-Year Report of the Population Based Cancer Registries 2004-2005: National Cancer Registry Programme (ICMR), Bangalore 2008

Chapter 1

INTRODUCTION

A common question of interest is “Is Cancer on the Rise?”. Cancer is known to be a disease that increases in incidence with increasing age. Control of communicable diseases, has increased life expectancy and therefore exposed more of the population towards the development of cancer. The increase in population due to growth also contributes to the increase in the number of cancer cases. Improved literacy, greater consciousness about health in general and awareness about cancer in particular makes more and more people seek medical advice at an earlier stage. Availability of sophisticated and improved diagnostic techniques aid in detection of tumours that would have been missed at earlier times. The question is whether cancer is on the increase after accounting for these factors and whether that rise is statistically significant.

One measure of determining such an increase would be to examine the age adjusted incidence rates (AAR) over time. This may or may not take into account all of the factors mentioned above. Nonetheless, it would give some indication of the trends in the disease. Cancer being a chronic disease (and unlike infectious diseases) with generally a long latent period and a rather prolonged clinical phase, year to year variations are slight. Therefore, in assessing time trends in AAR, the normal practice in registries across the world is to look at five yearly rates over decades. This would give a more definitive indication of the course of the disease. Nonetheless, the data presented here gives a fair account of the direction in which the incidence rates of the leading sites of cancer are proceeding across the years. Based on this, the report also provides an estimate of the burden of specific sites of cancer for the next decade. Such estimates will greatly facilitate deciding on priorities and planning site specific cancer control activities.

Cancer of the Corpus Uteri showed an increase in incidence rates in the four metros. The Annual Percentage Change (APC) was 5.8 in Bangalore and 3.8 in Delhi.

The Annual percentage of increase in cancer prostate in Chennai was 4.7 and 3.1 in Delhi.

In Chennai and Bangalore both males and females showed an increase in brain tumours. The annual percentage change was highest in Chennai females with an APC of 4.6.

Chapter 2

MATERIALS AND METHODS

The numerator data of all registries has undergone a series of range and consistency checks each year and again before preparing this report. Clarifications were sought wherever required from the respective PBCRs and the data finalised thereafter.

The difference distribution method (*Takiar & Shobana, 2009*) for estimating the calendar year wise denominator population by five year age group has been used. This was based on the census data of 1981, 1991 and 2001.

In determining the significance of trends, the actual value of the AAR rate for each year has been used. The significance of time trend in each PBCR was assessed based on the methods and formula provided by Boyle and Parkin, 1991 in the chapter from the IARC publication on Cancer Registration. In addition, the Joinpoint Regression Program of the NCI of USA has been used (*Kim et al, 2001*).

About Joinpoint Regression Program:

Joinpoint Regression Program, Version 3.0, is statistical software for the analysis of trends using Joinpoint models, that is, where several different regression lines are connected together at the “Joinpoints”. Cancer trends reported in NCI publications are calculated using the Joinpoint Regression Program to analyze rates calculated by the SEER. The software takes trend data (e.g. cancer rates) and fits the simplest Joinpoint model that the data allow. The user supplies the minimum and maximum number of Joinpoints. The program starts with the minimum number of Joinpoint (e.g. 0 Joinpoint, which is a straight line) and tests whether more Joinpoints are statistically significant and must be added to the model (upto that maximum number). This enables the user to test that an apparent change in trend is statistically significant. The tests of significance use a Monte Carlo Permutation method. The models may incorporate estimated variation for each point (e.g. when the responses are age adjusted rates) or use a Poisson model of variation. In addition, the models may also be linear on the log of the response (e.g. for calculating annual percentage rate change). The software also allows viewing one graph for each Joinpoint model, from the model with the minimum number of Joinpoints to the model with the maximum number of Joinpoints (*Kim et al, 2001*). For the report purposes, one Joinpoint model wherever feasible has been fitted to the data. It may be pointed out that whenever a strong linear trend exists in the data the one Joinpoint model results will tally exactly with that of linear regression method.

This report is based on the data of six PBCRs – viz., Bangalore, Barshi, Bhopal, Chennai, Delhi and Mumbai. For the PBCRs at Bangalore, Mumbai and Chennai, the data available is from 1982. Accordingly, the trend in AAR over time is for the 24 year period from 1982 to 2005. The PBCRs at Barshi, Bhopal and Delhi commenced from 1988. Accordingly, the time trend is for the 18 year period from 1988 to 2005.

While depicting the results of specific anatomical sites of cancer in chapter 4, those sites with fewer than 10 cases for any given year have been excluded. This is mostly seen in the case of Barshi and Bhopal PBCRs and in sites of cancer other than the first five or six leading sites.

Among males, cancers of the prostate, colon, rectum and liver, have shown statistically significant increase in incidence. Cancer of the prostate is the leading site of cancer among males in most of the western countries as is cancer of the colon. Among females, cancers of the breast, corpus uteri and lung have shown a rise.

Both males and females have recorded rising incidence rates for cancers of the brain as well as in tumours of the lymphoid and haemopoetic system, especially non-Hodgkin's Lymphoma.

Three other sites of cancer that have shown an increase in incidence rates in women are ovary, thyroid and gallbladder.

Among males in Bangalore, during 1982–83, stomach was the leading site of cancer and it continues to be so twenty four years down the line. In females in Bangalore, cancer of the lung that did not appear among ten leading sites in 1982-83 is the tenth leading site during 2004-05.

In males in Bhopal, cancer of the lung and mouth were the first and third leading sites earlier and have become the first two leading sites in 2004-05.

In males in Chennai, stomach was the leading site of cancer during 1982-83 and this site has been replaced by lung in more recent years.

Chapter 3

INDIVIDUAL REGISTRY - LEADING SITE GRAPHS

The following bar graphs provide the comparison of the leading sites of cancer for the first two years of registry operation and the recent two years data. This will be 1982–83 and 2004–05 for the PBCRs at Bangalore, Mumbai and Chennai and 1988-89 and 2004-05 for the registries at Barshi, Bhopal and Delhi.

Bangalore (Figure 3.1(a) & 3.1(b)) :

Males: Among males, during 1982–83, stomach was the leading site of cancer and it continues to be so twenty four years down the line. Cancer of the prostate was the tenth leading site in the earlier years and is now the fourth leading site. Cancers of the brain and colon that were not, are now among ten leading sites in 2004–05.

Females: Among females, cancer of the breast has replaced cancer of the cervix as the leading site. Cancers of the corpus uteri and ovary have increased in their ranking. Cancer of the lung that did not appear among ten leading sites in 1982-83 is the tenth leading site during 2004-05.

Barshi (Figure 3.2(a) & 3.2(b)) :

Males: Cancers of the hypopharynx and oesophagus continue to be the first two leading sites among males in Barshi. Cancer of the brain has appeared among the leading sites of cancer as also non-Hodgkin's Lymphoma (NHL).

Females: Among females, cancer of the cervix uteri continues to be the leading site. Cancer of the lung has appeared as the fifth leading site during 2004-05.

The data from Barshi is in relatively small numbers because of the smaller geographic area covered. Therefore, caution needs to be observed in interpreting this data.

Bhopal (Figure 3.3(a) & 3.3(b)) :

Males: Cancer of the lung and mouth were the first and third leading sites earlier and have become the first two leading sites in 2004-05. Cancer of the prostate has increased in ranking. The new sites of cancer that have appeared among the ten leading sites during 2004-05 are non-Hodgkin's Lymphoma, liver and myeloid leukaemia.

Females: Among females, as in other urban registries, cancer of the breast has replaced cancer of the cervix as the leading site of cancer and cancer of the ovary has risen in rank as the third leading site.

Chennai (Figure 3.4(a) & 3.4(b)) :

Males: Stomach was the leading site of cancer during 1982-83 and this site has been replaced by lung in more recent years. Cancers of the prostate and rectum have appeared as the seventh and tenth leading site of cancer. These sites were not seen among ten leading sites during 1982-83.

Females: Among females, cancer of the breast has replaced cancer of the cervix as the first leading site of cancer. Cancer of the ovary which was the fifth leading site earlier has gone up in rank. Cancer of the lung with brain and corpus uteri have appeared as the eighth and ninth leading sites of cancer during 2004-05.

Delhi (Figure 3.5(a) & 3.5(b)) :

Males: Cancer of the lung was and is the leading site of cancer among males. Cancer of the prostate which was the eighth leading site during 1988-89 has become the second leading site during 2004-05.

Females: Cancer of the breast has replaced cancer of the cervix as the leading site. Cancer of the ovary and gall bladder continue to be the third and fourth leading sites. Cancer of the corpus-uteri which was the tenth leading site has become fifth leading site of cancer. Cancer of the lung was not among the ten leading sites during 1988-89 has become sixth leading site during 2004-05.

Mumbai (Figure 3.6(a) & 3.6(b)) :

Males: Cancer of the lung continues to be the leading site of cancer. Cancer of the prostate which was the eighth leading site has now become the third leading site of cancer. Cancer of the brain which was not among ten leading sites during 1982-83 has become the tenth leading site of cancer.

Females: Cancer of the breast continues to be the leading site of cancer for almost a quarter of a century. Cancers of the ovary, lung and corpus uteri have gone up in their ranking.

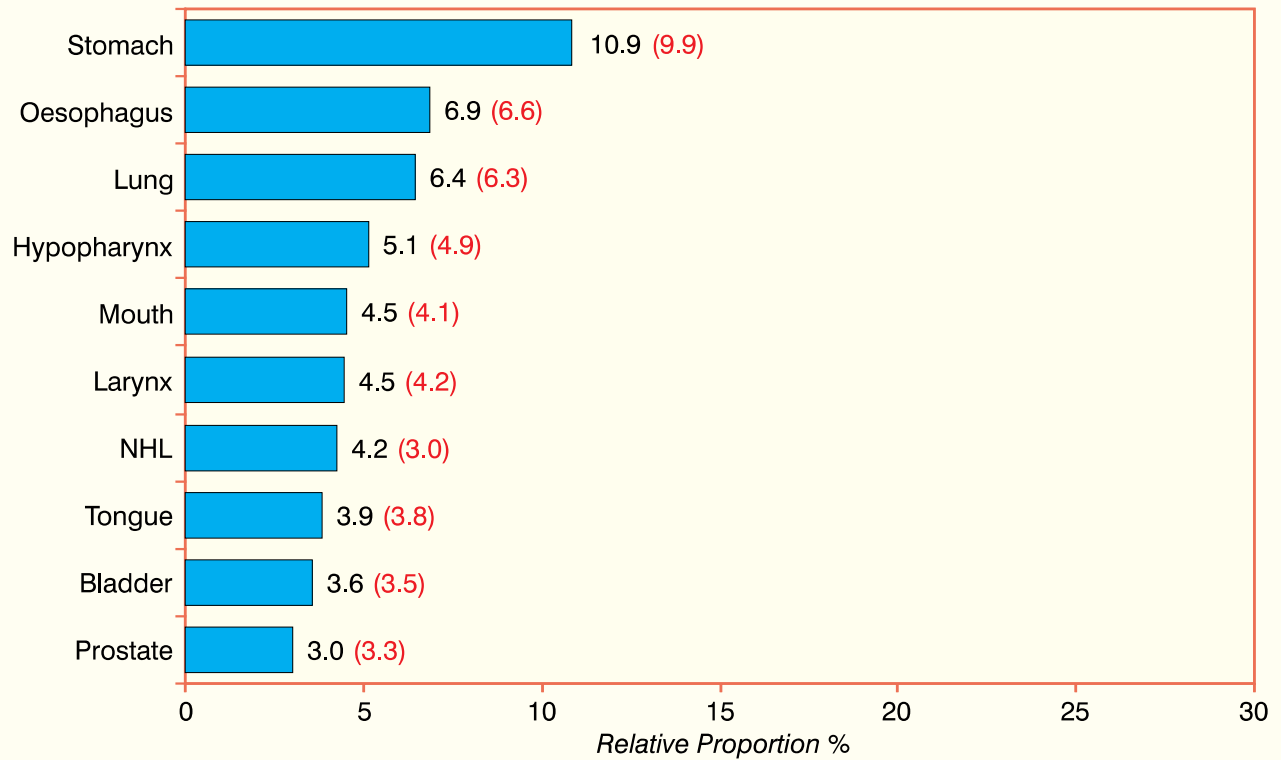
In males in Delhi, cancer of the prostate which was the eighth leading site during 1988-89 has become the second leading site during 2004-05. In females in Delhi, cancer of the breast has replaced cancer of the cervix as the leading site. Cancer of the ovary and gall bladder continue to be the third and fourth leading sites. Cancers of the corpus-uteri which was the tenth leading site has become fifth leading site of cancer. Cancer of the lung was not among the ten leading sites during 1988-89 has become sixth leading site during 2004-05.

In males in Mumbai, cancer of the prostate which was the eighth leading site has now become the third leading site of cancer.

Fig. 3.1(a): Ten Leading Sites of Cancer – Males : Bangalore

Age Adjusted Incidence Rates given in parentheses

1982-1983



2004-2005

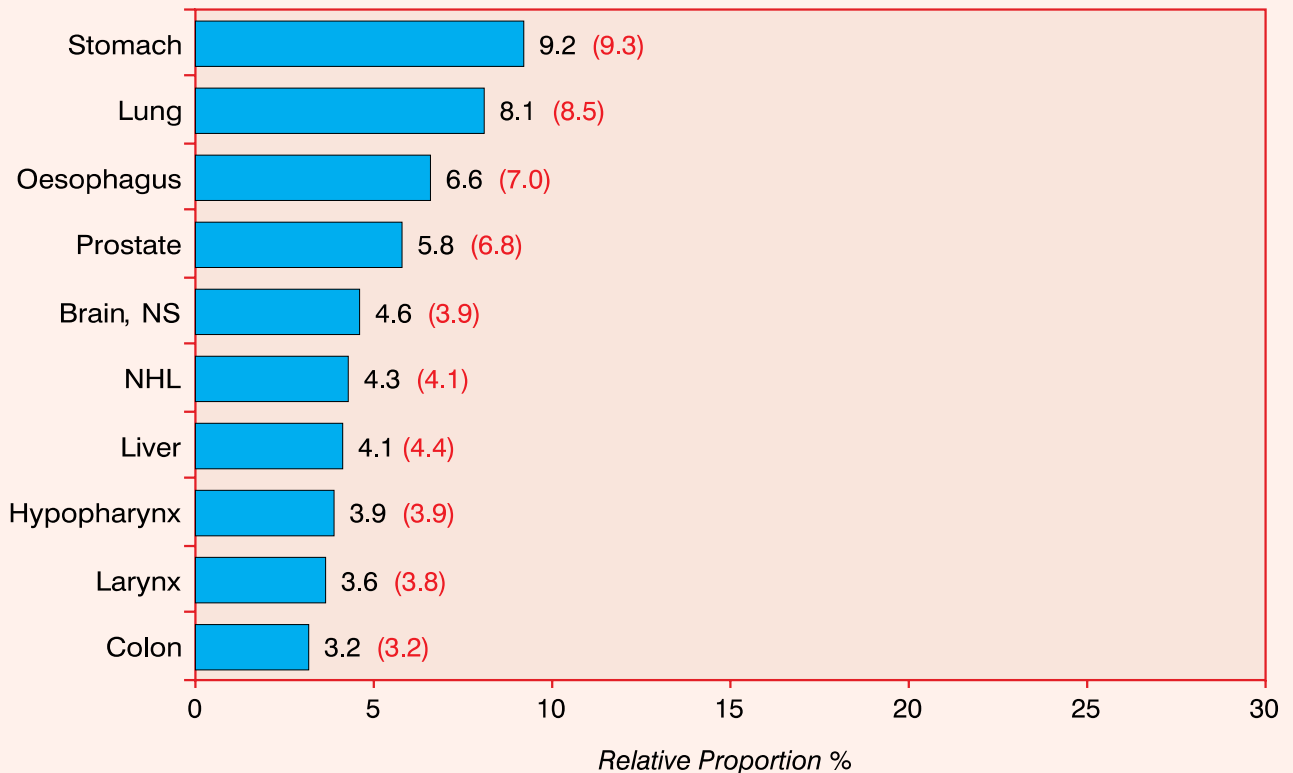
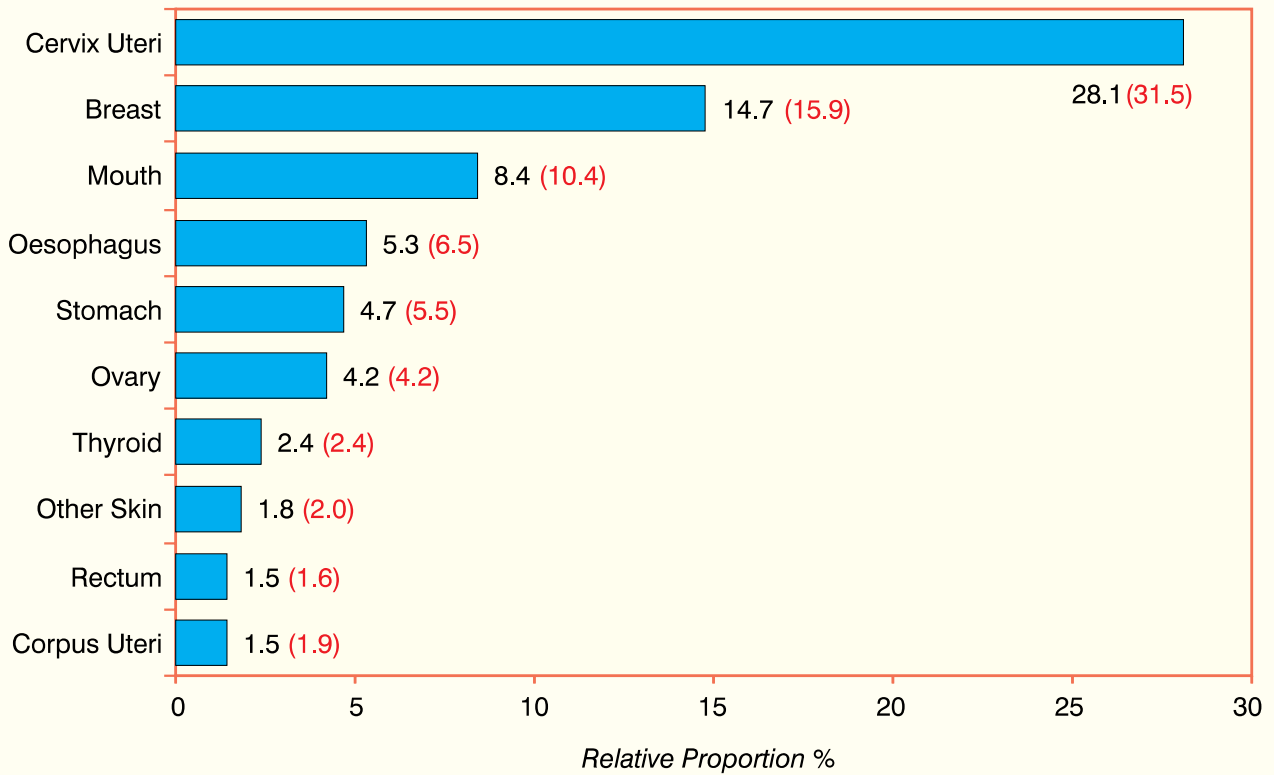


Fig. 3.1(b): Ten Leading Sites of Cancer – Females : Bangalore

Age Adjusted Incidence Rates given in parentheses

1982-1983



2004-2005

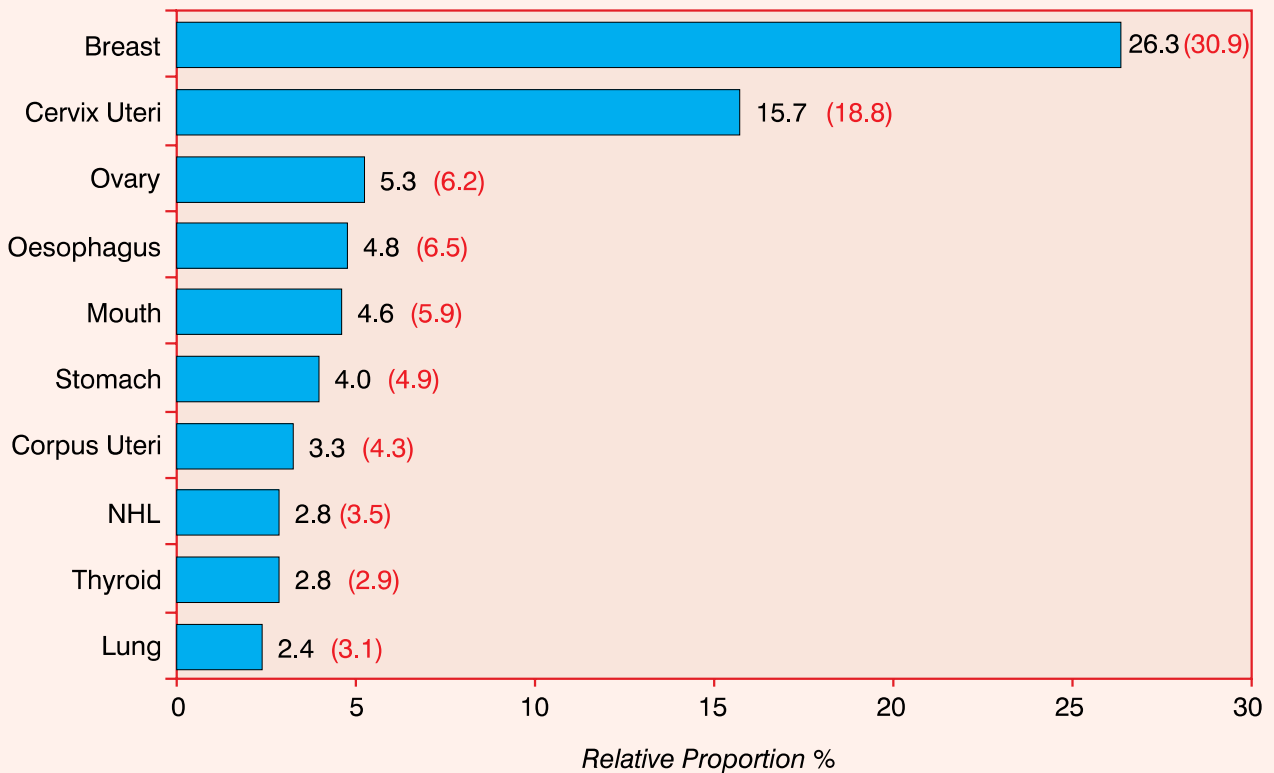
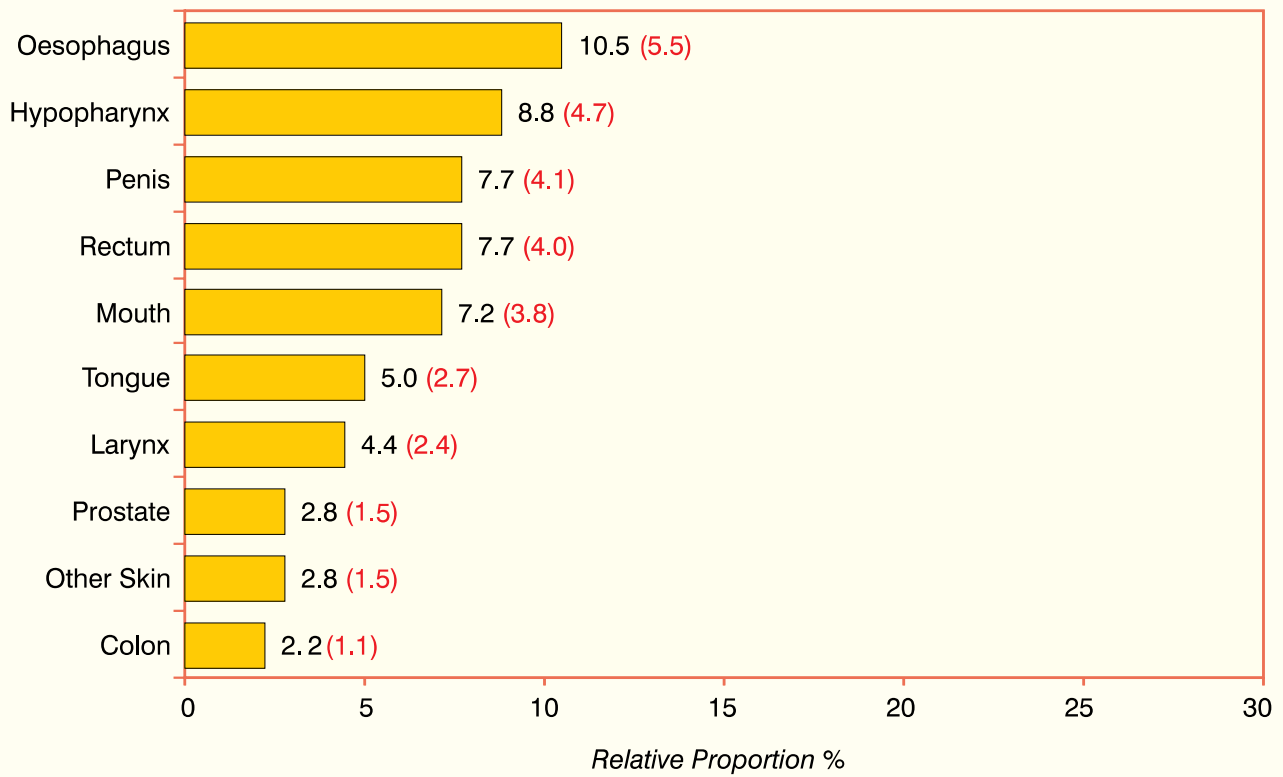


Fig. 3.2(a): Ten Leading Sites of Cancer – Males : Barshi

Age Adjusted Incidence Rates given in parentheses

1988-1989



2004-2005

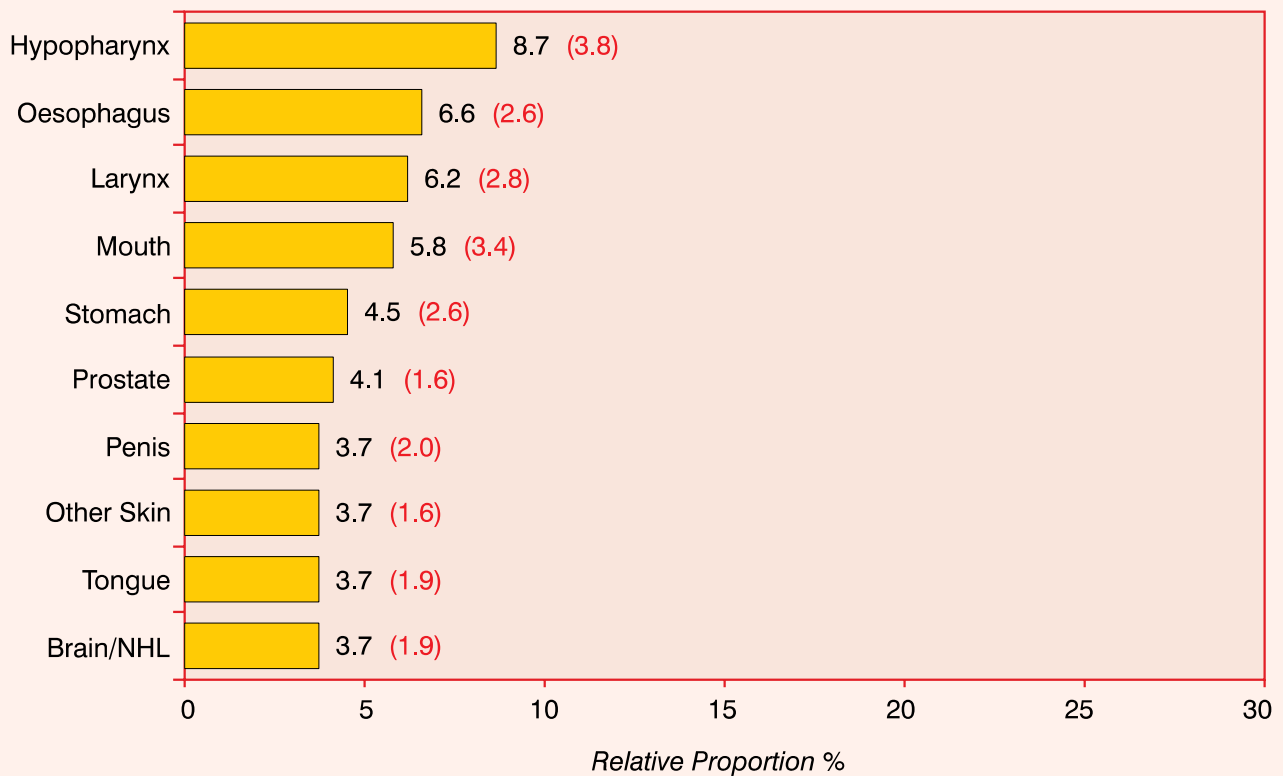
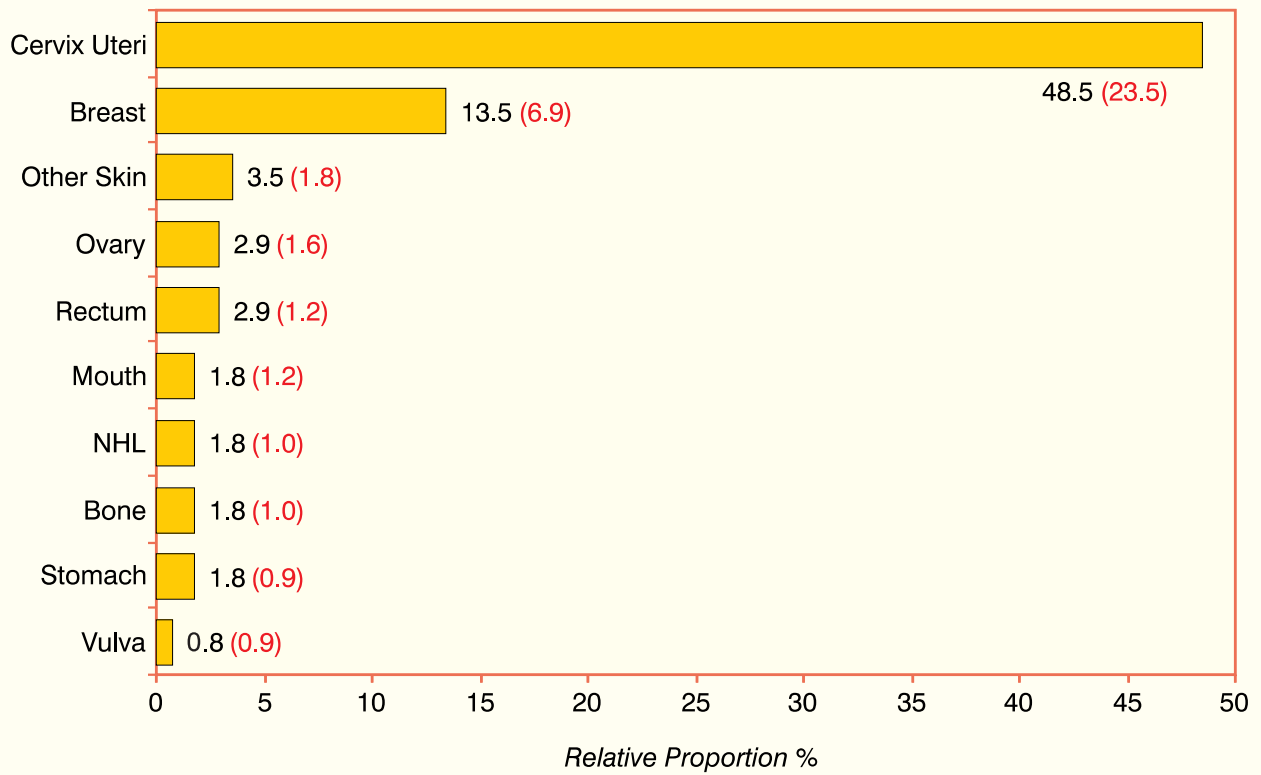


Fig. 3.2(b): Ten Leading Sites of Cancer – Females : Barshi

Age Adjusted Incidence Rates given in parentheses

1988-1989



2004-2005

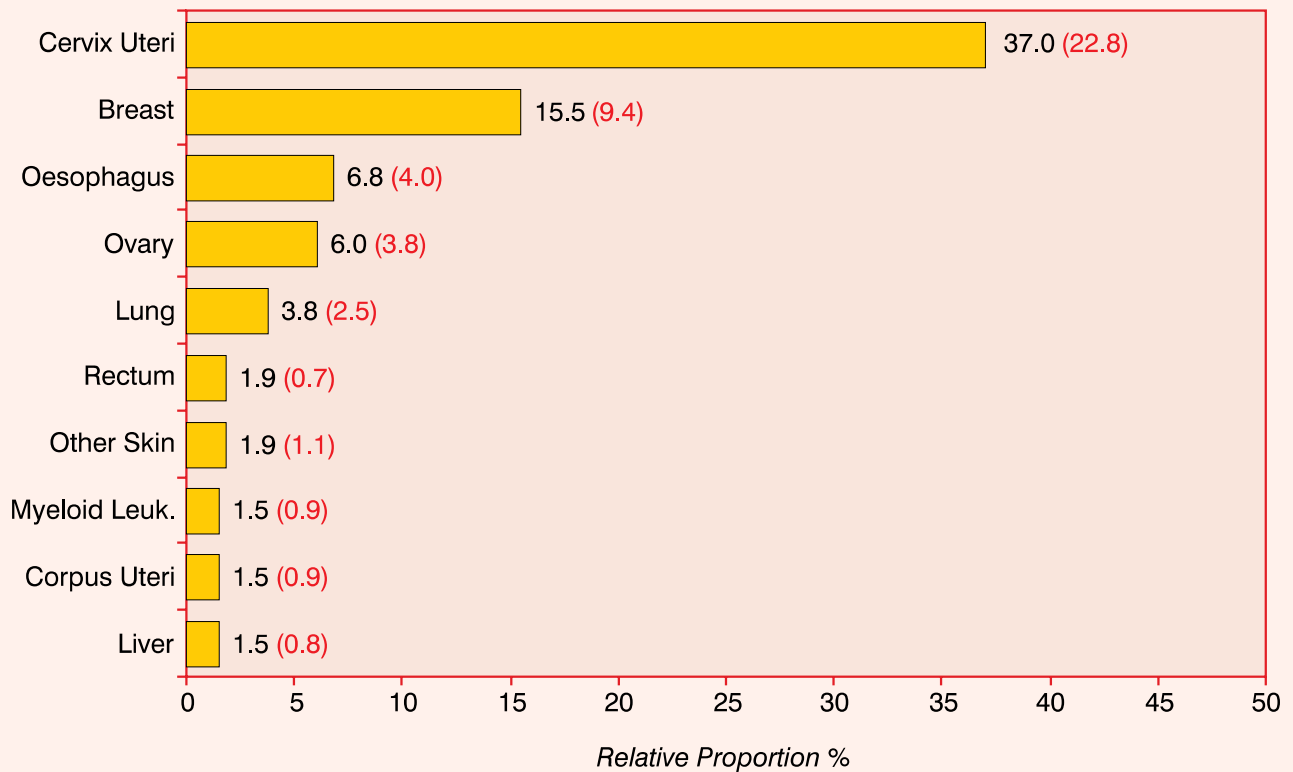
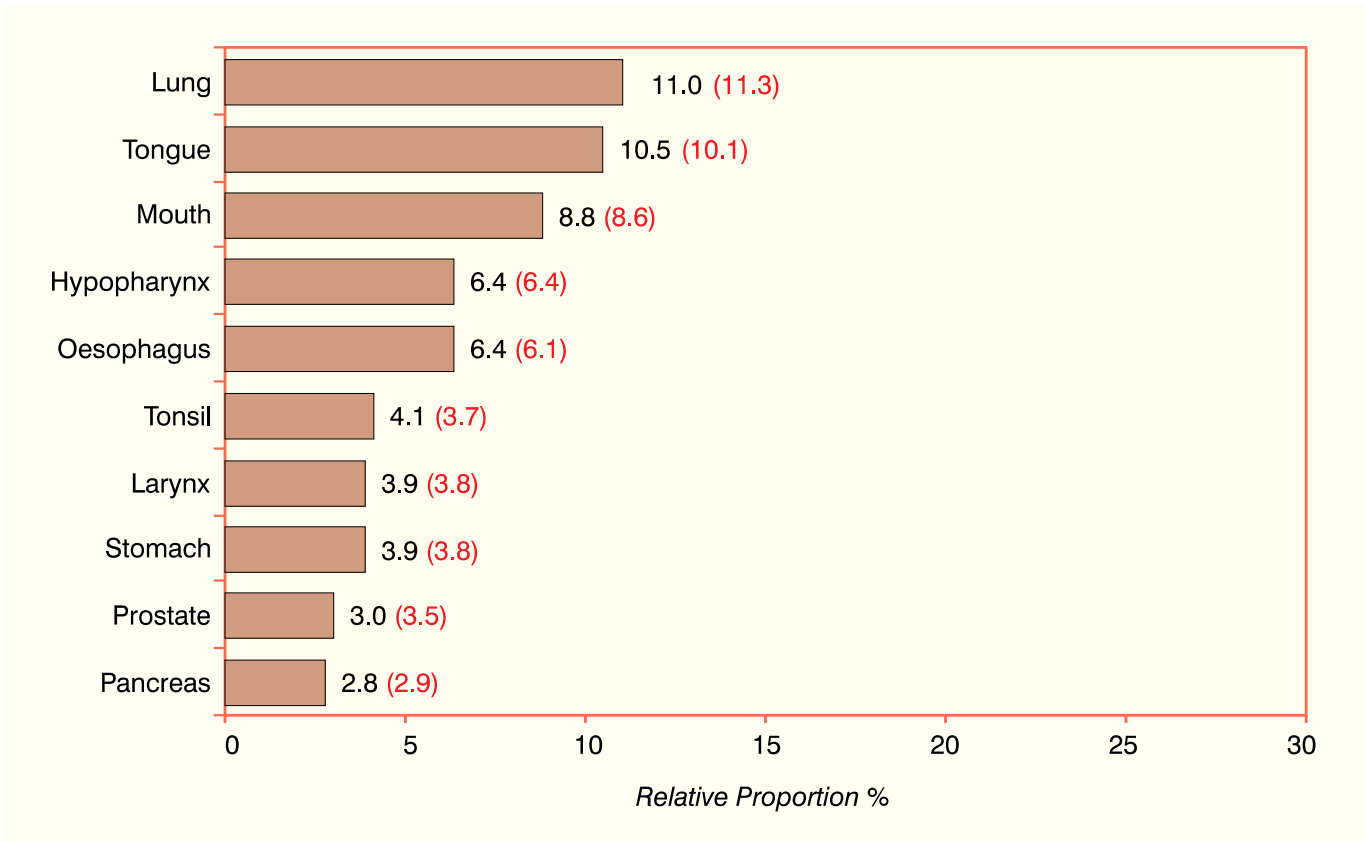


Fig. 3.3(a): Ten Leading Sites of Cancer – Males : Bhopal

Age Adjusted Incidence Rates given in parentheses

1988-1989



2004-2005

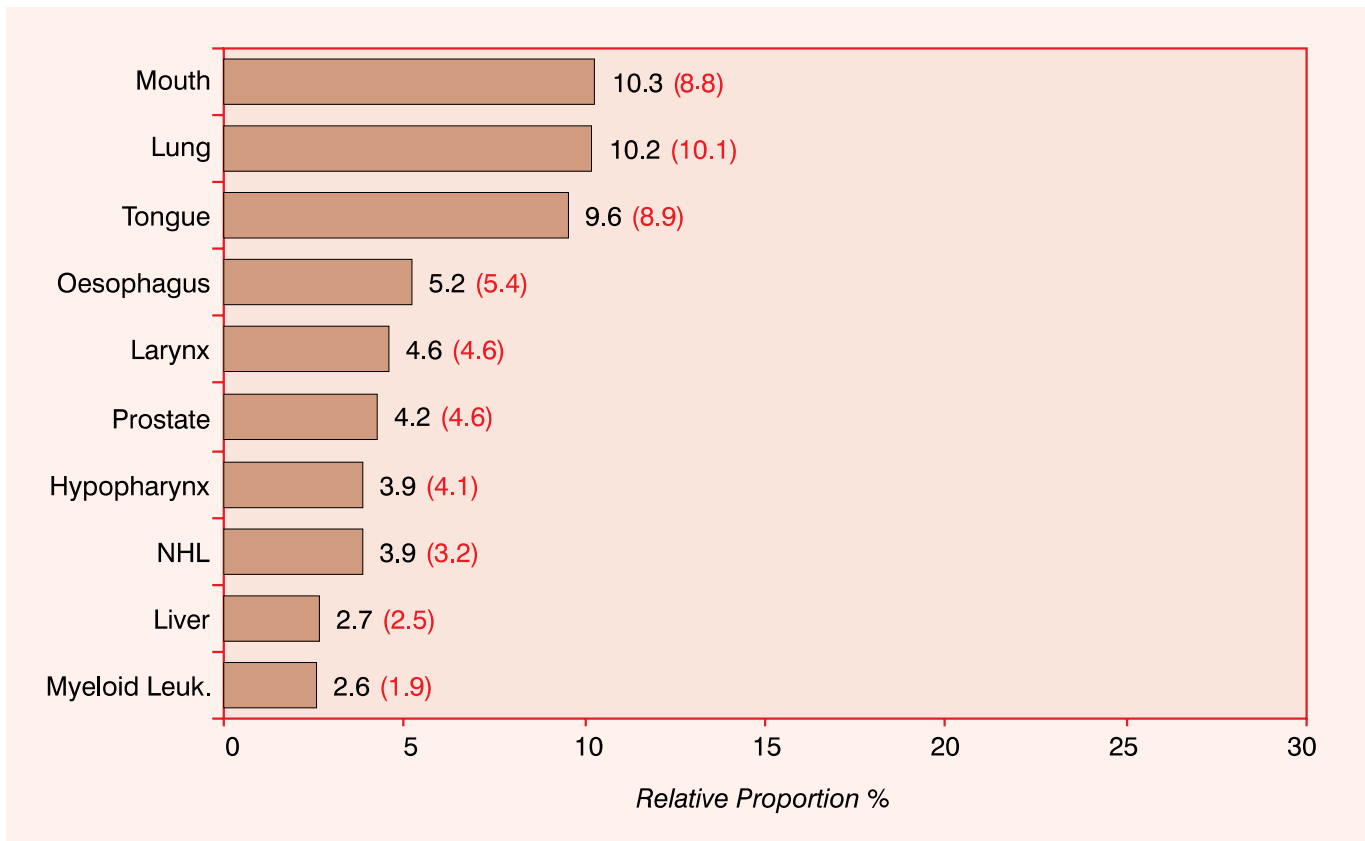
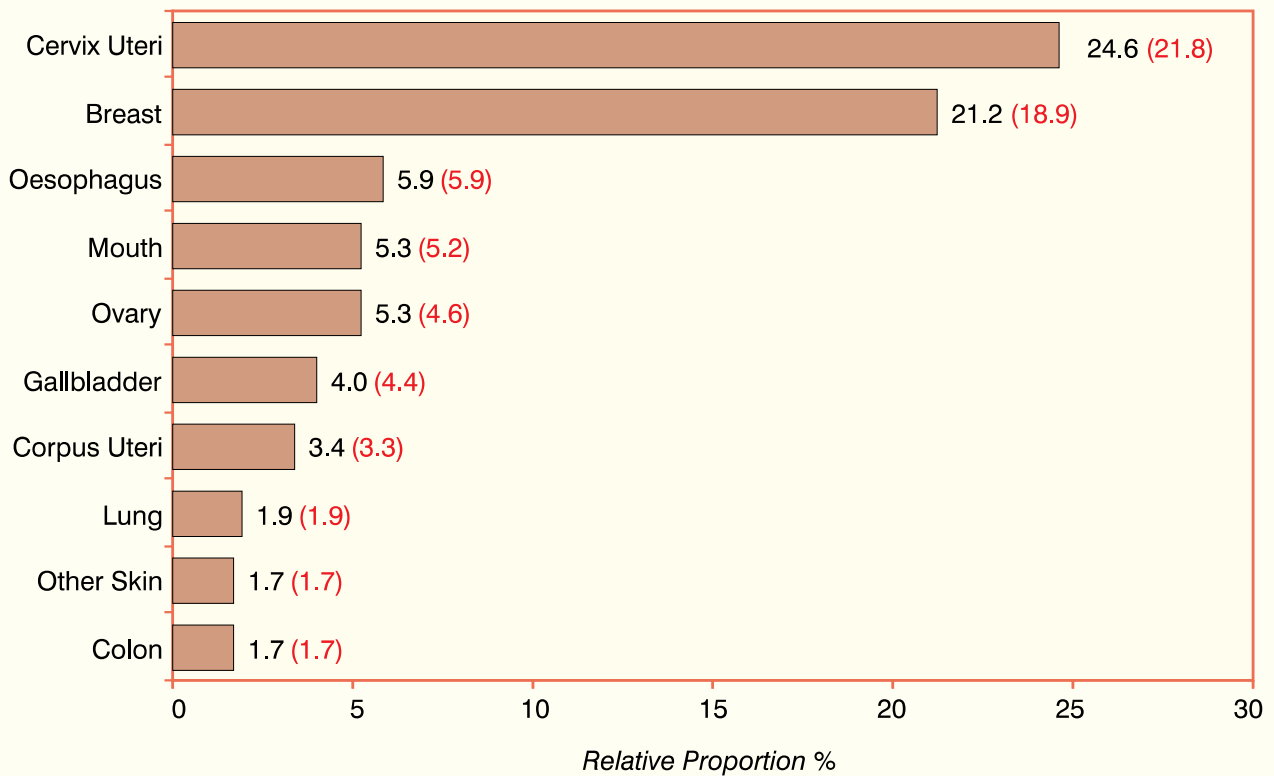


Fig. 3.3(b): Ten Leading Sites of Cancer – Females : Bhopal

Age Adjusted Incidence Rates given in parentheses

1988-1989



2004-2005

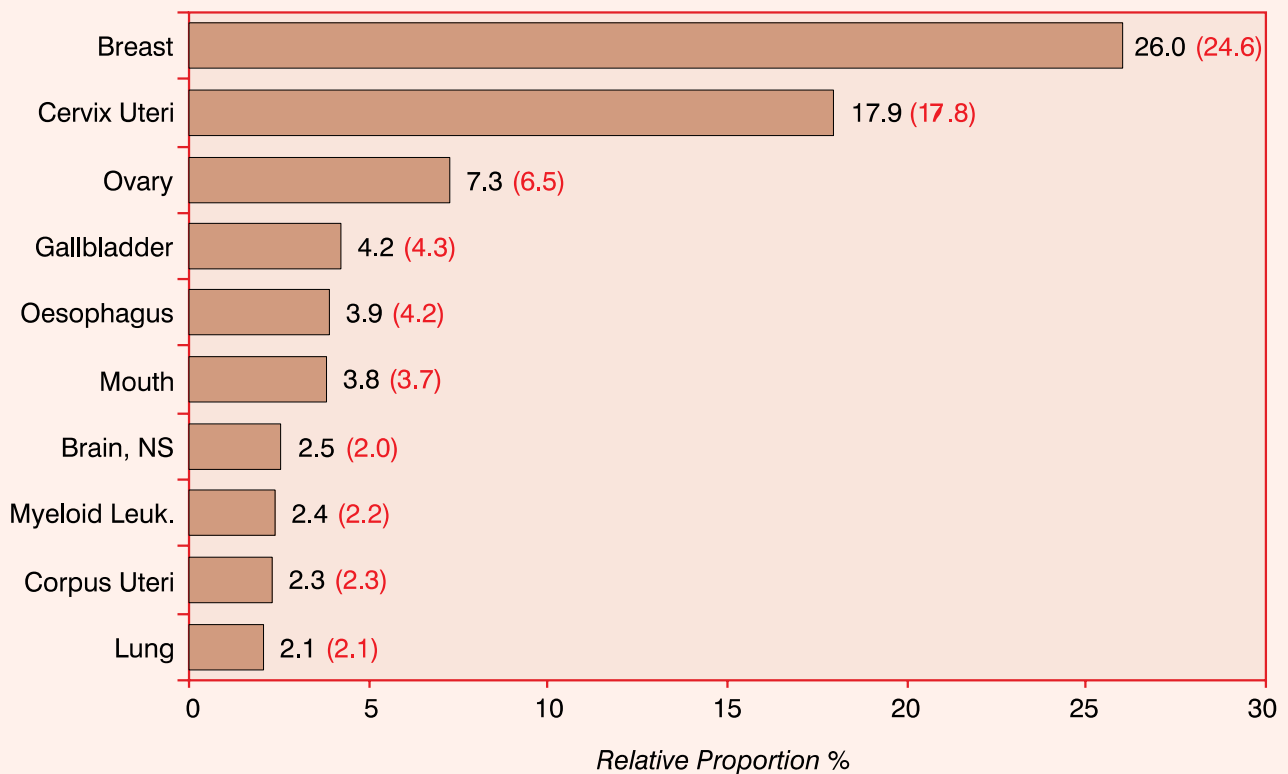
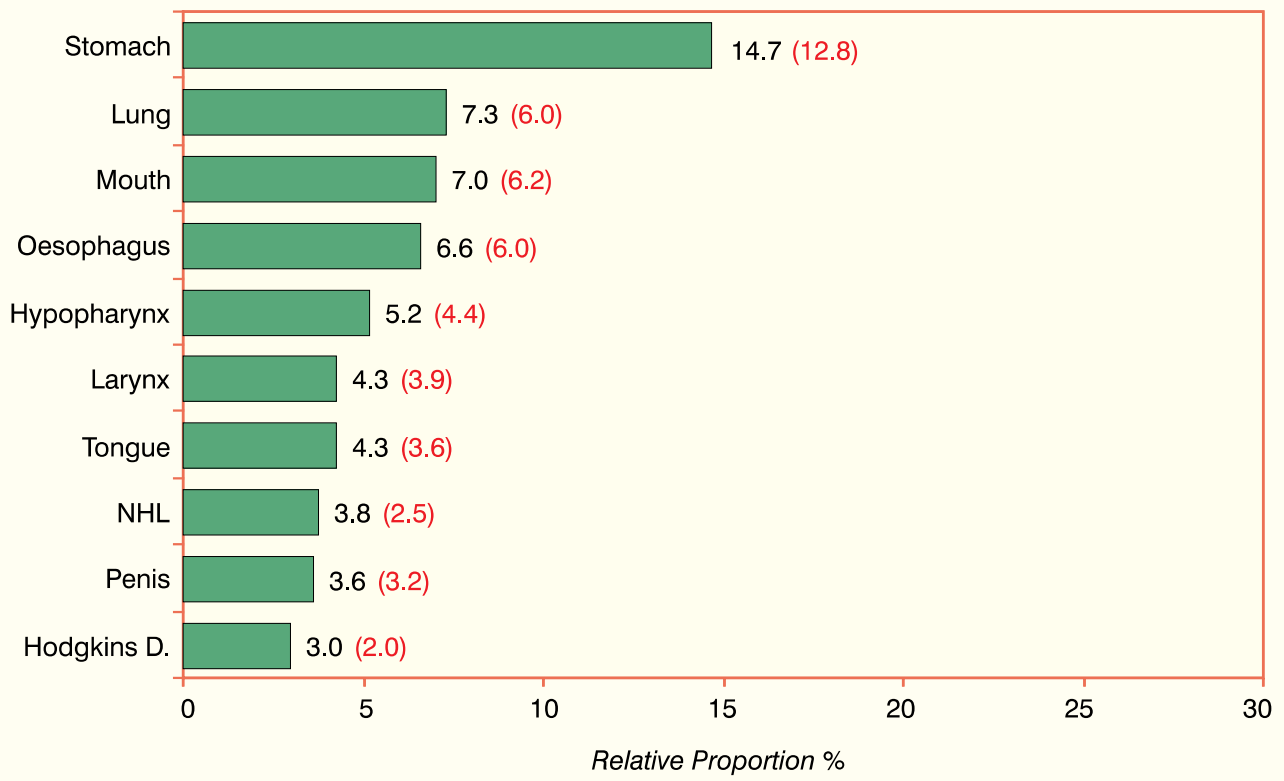


Fig. 3.4(a): Ten Leading Sites of Cancer – Males : Chennai

Age Adjusted Incidence Rates given in parentheses

1982-1983



2004-2005

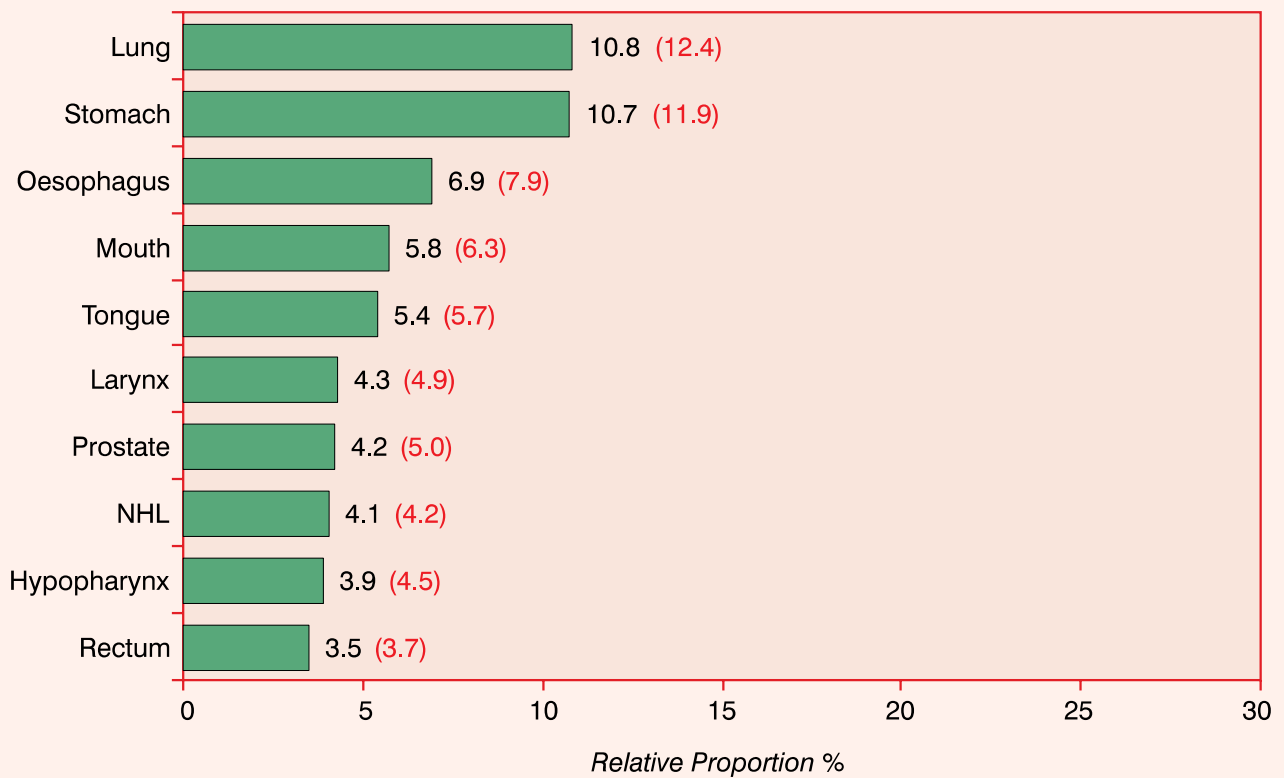
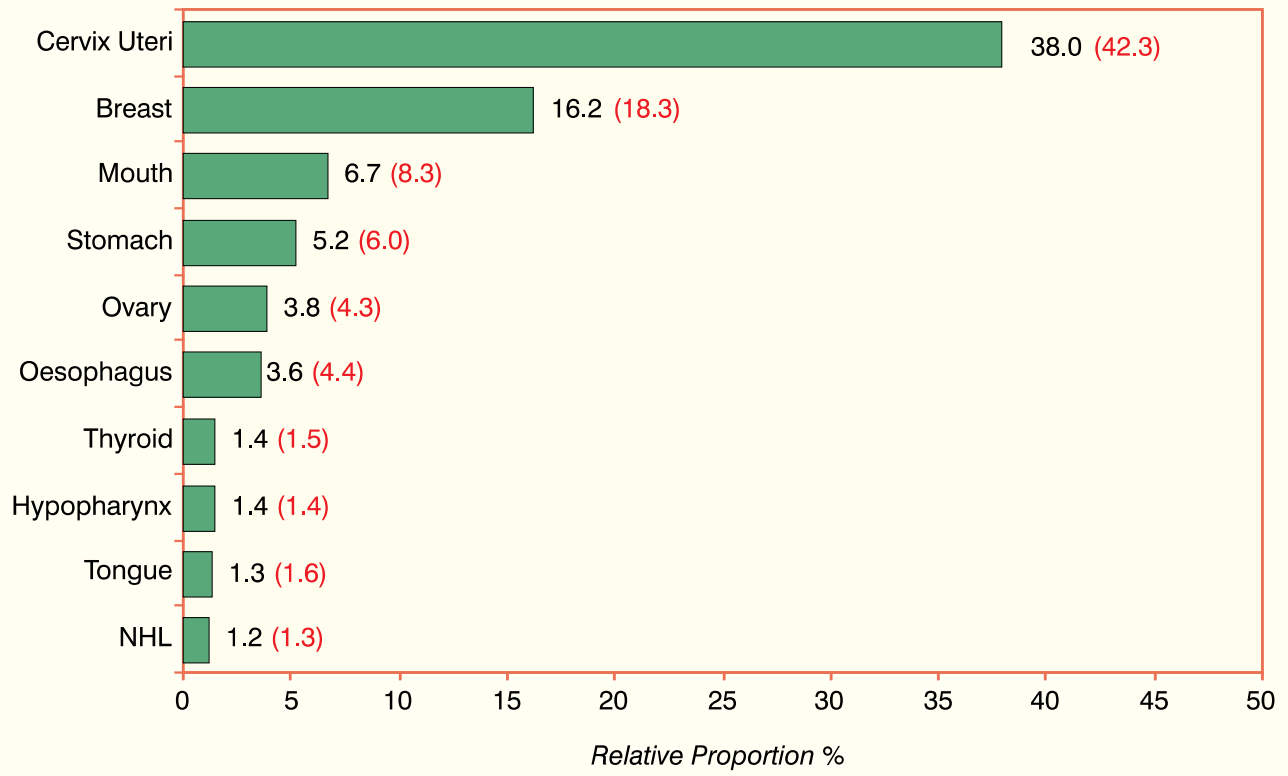


Fig. 3.4(b): Ten Leading Sites of Cancer – Females : Chennai

Age Adjusted Incidence Rates given in parentheses

1982-1983



2004-2005

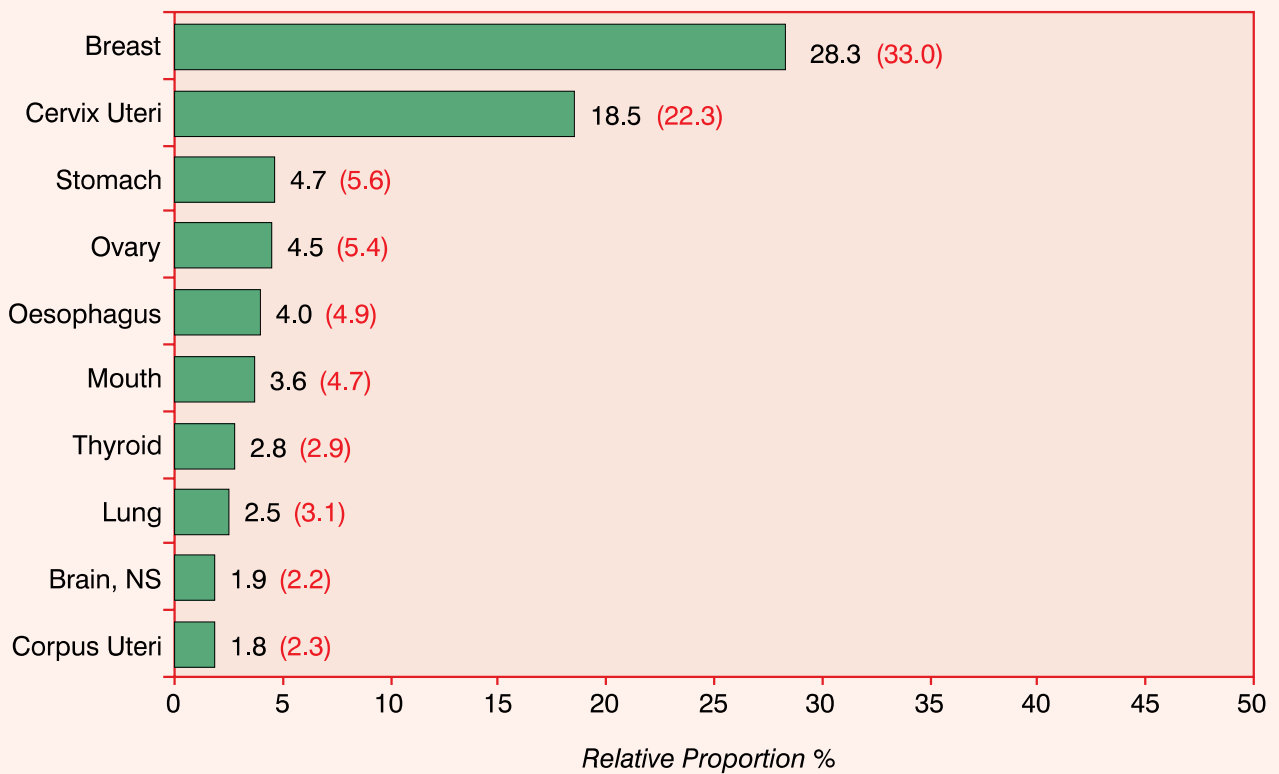
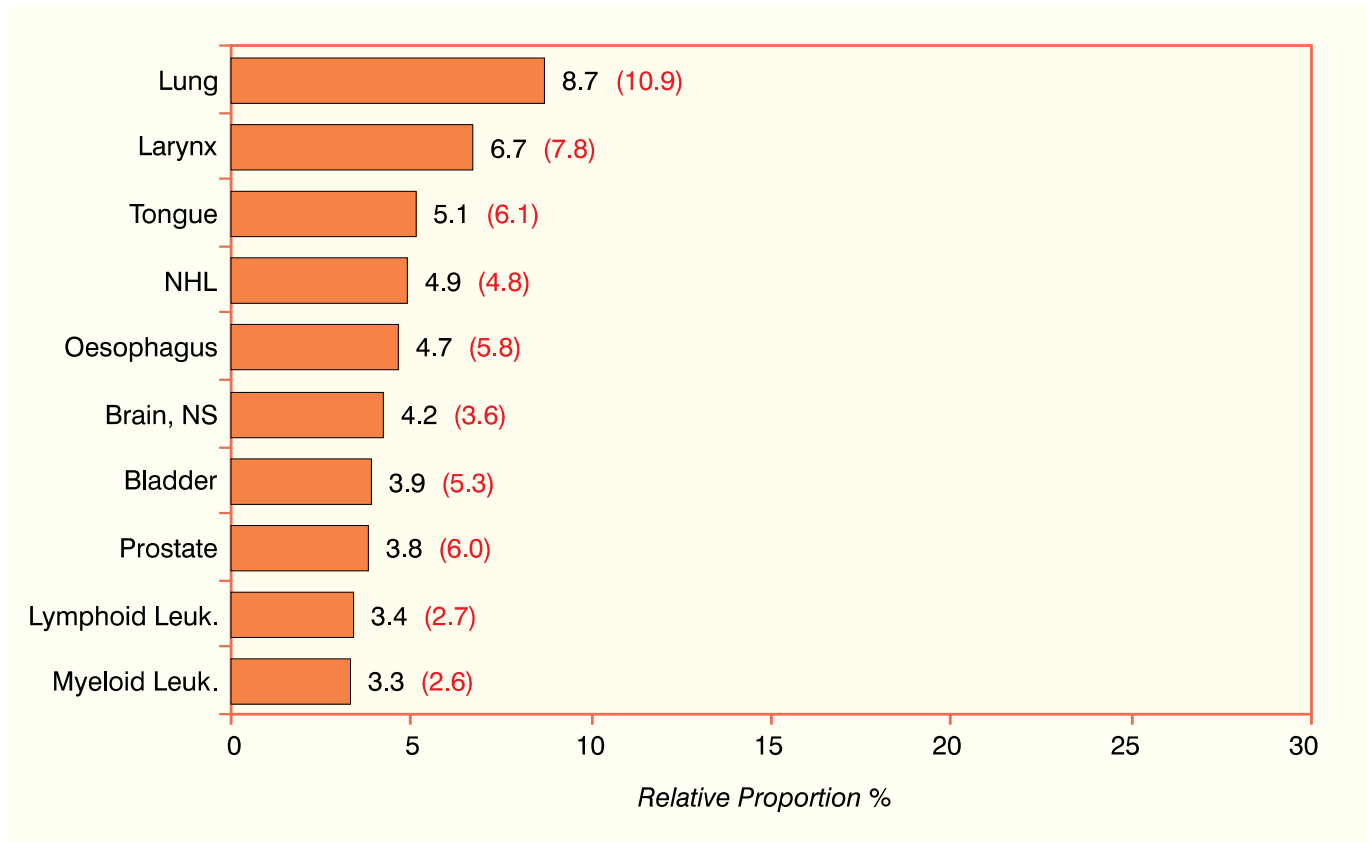


Fig. 3.5(a): Ten Leading Sites of Cancer – Males : Delhi

Age Adjusted Incidence Rates given in parentheses

1988-1989



2004-2005

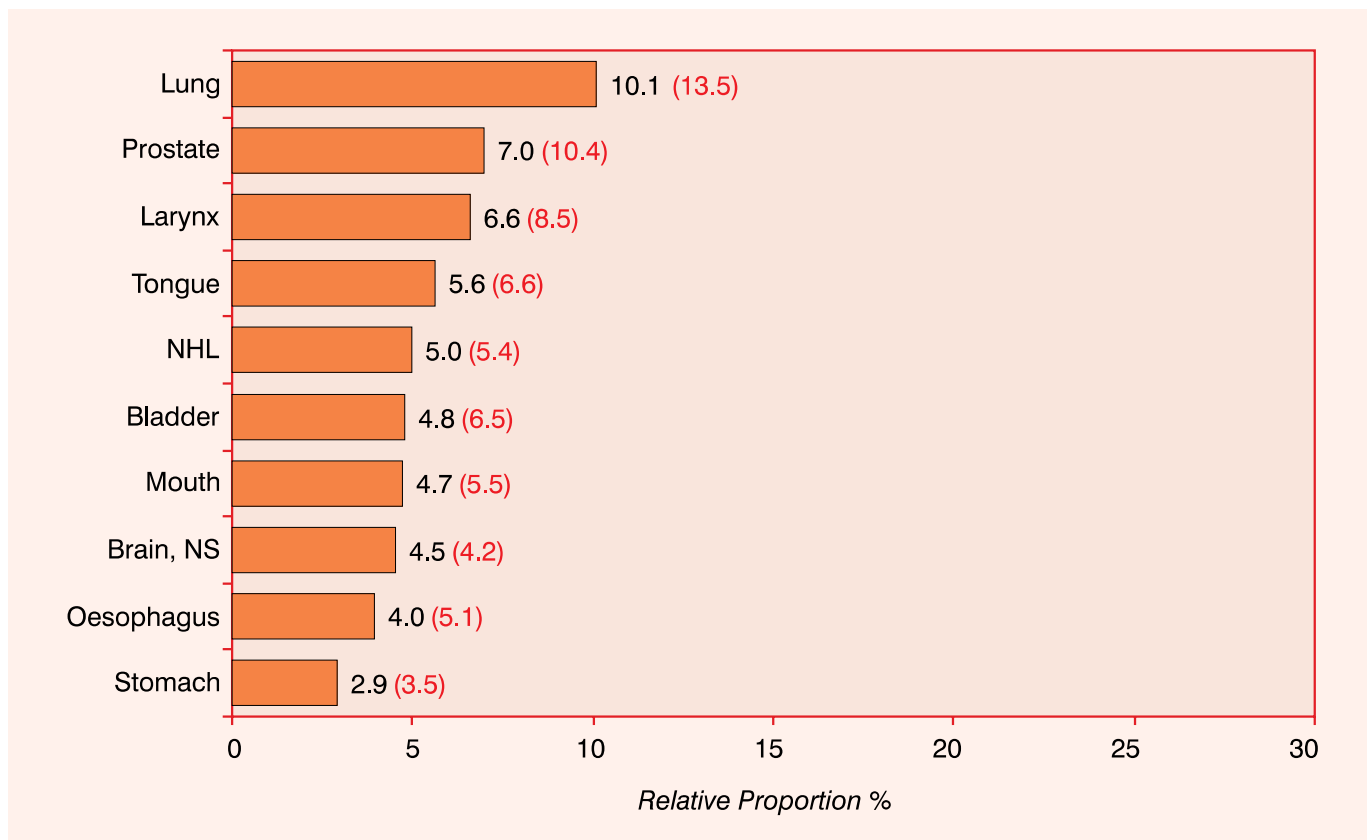
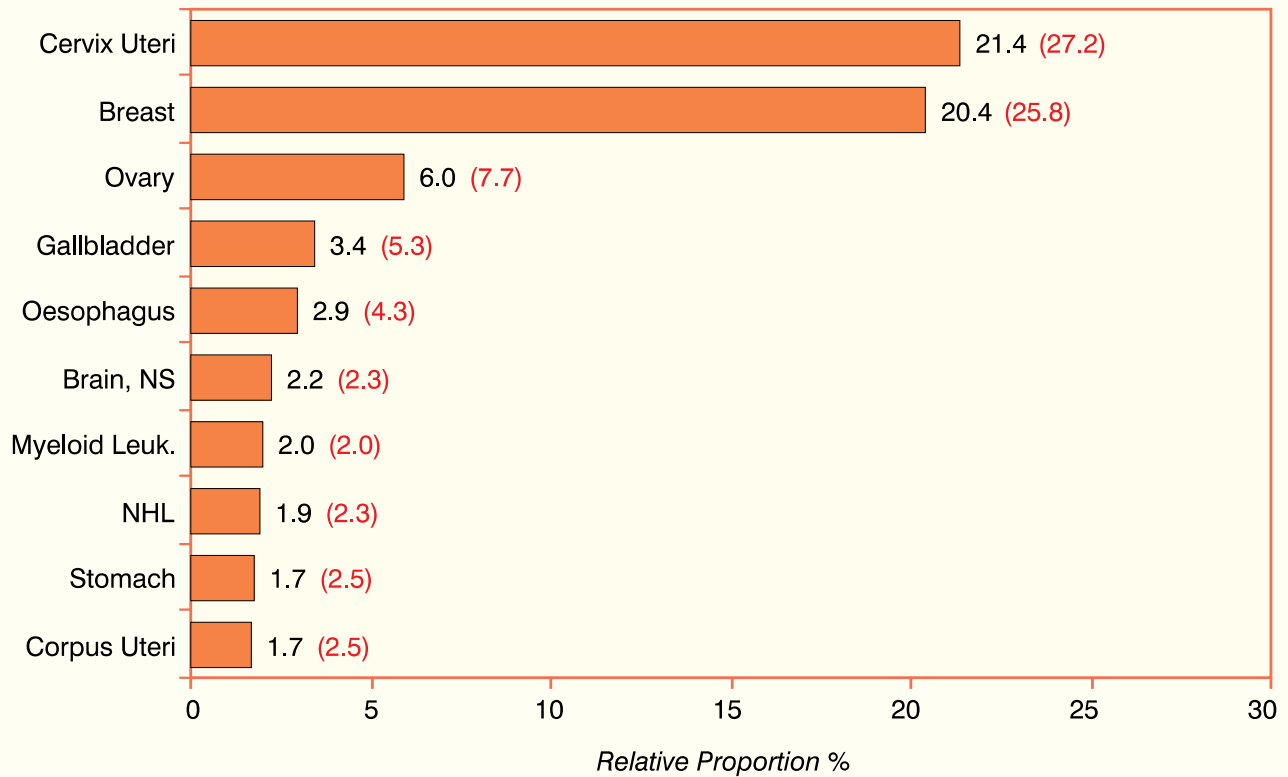


Fig. 3.5(b): Ten Leading Sites of Cancer – Females : Delhi

Age Adjusted Incidence Rates given in parentheses

1988-1989



2004-2005

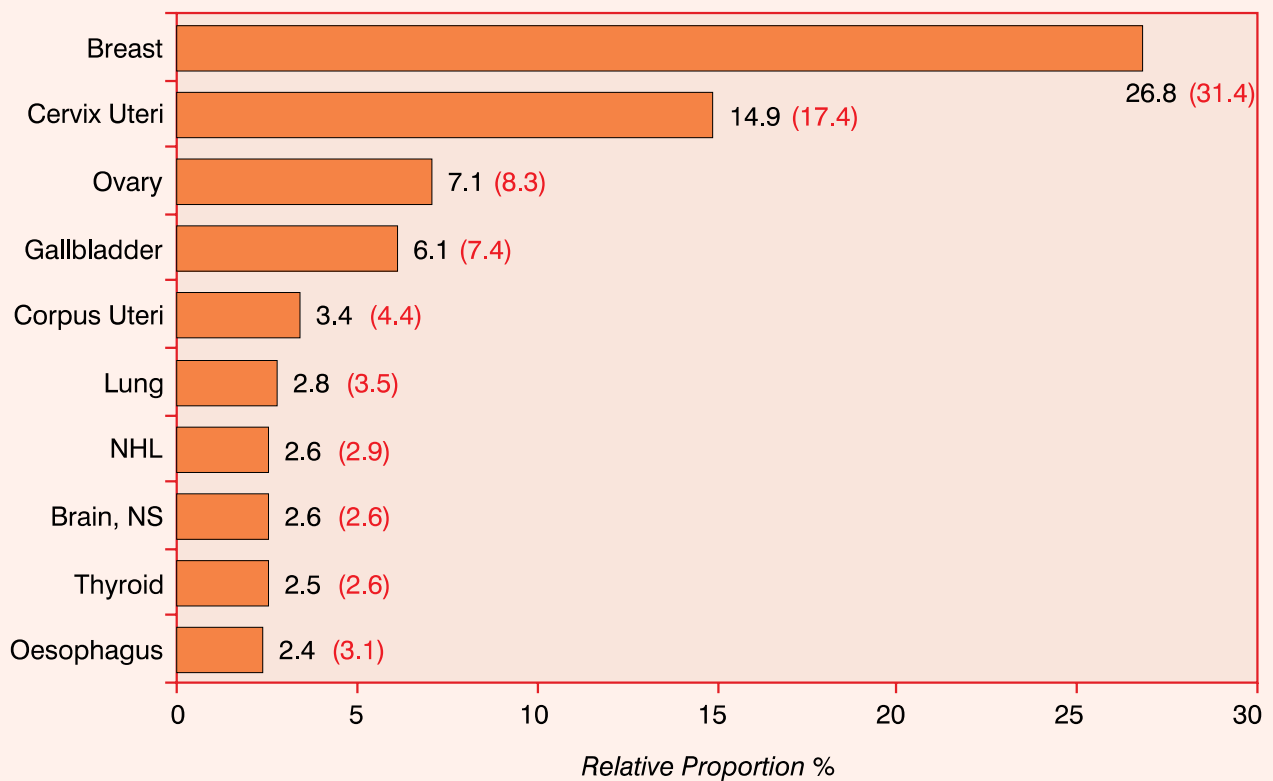
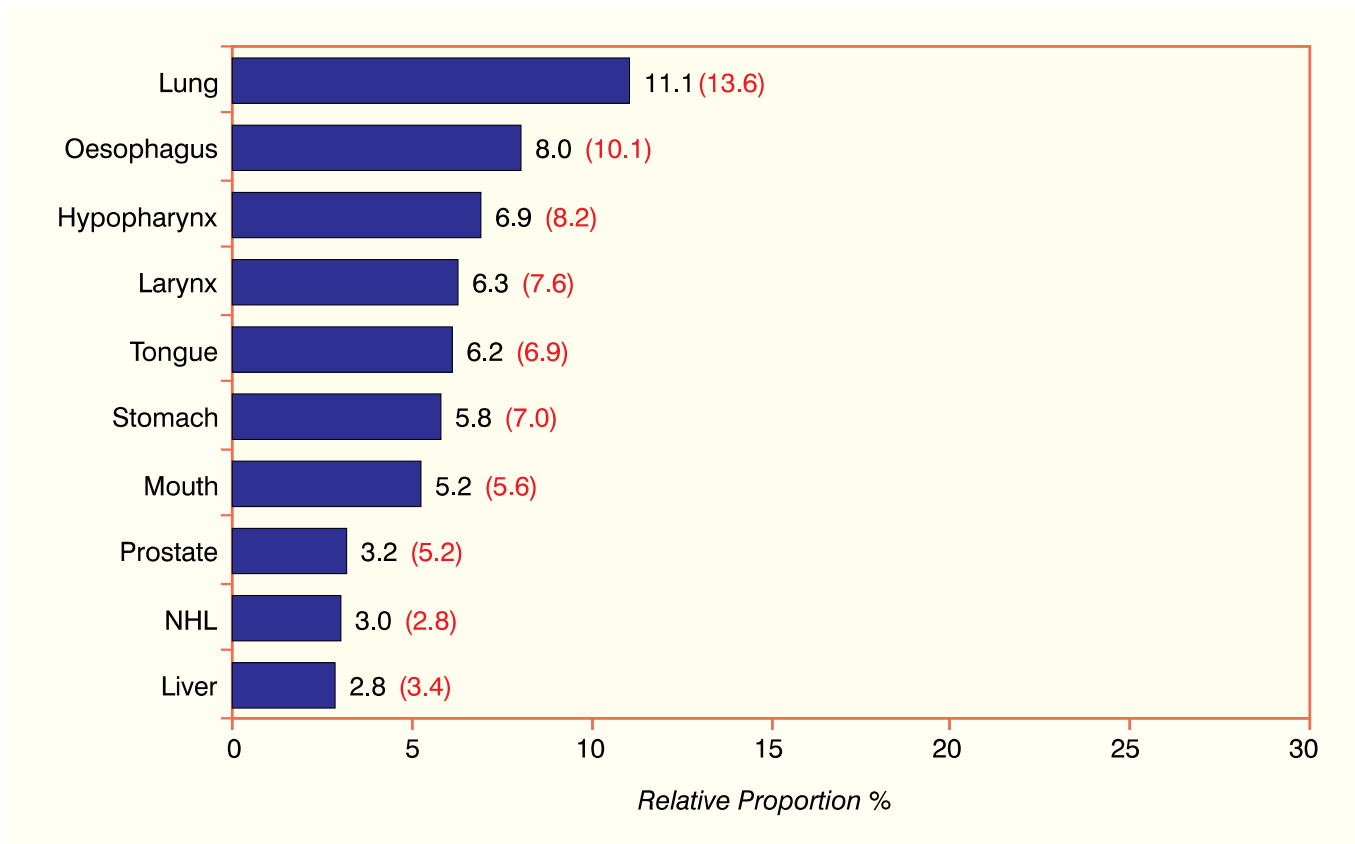


Fig. 3.6(a): Ten Leading Sites of Cancer – Males : Mumbai

Age Adjusted Incidence Rates given in parentheses

1982-1983



2004-2005

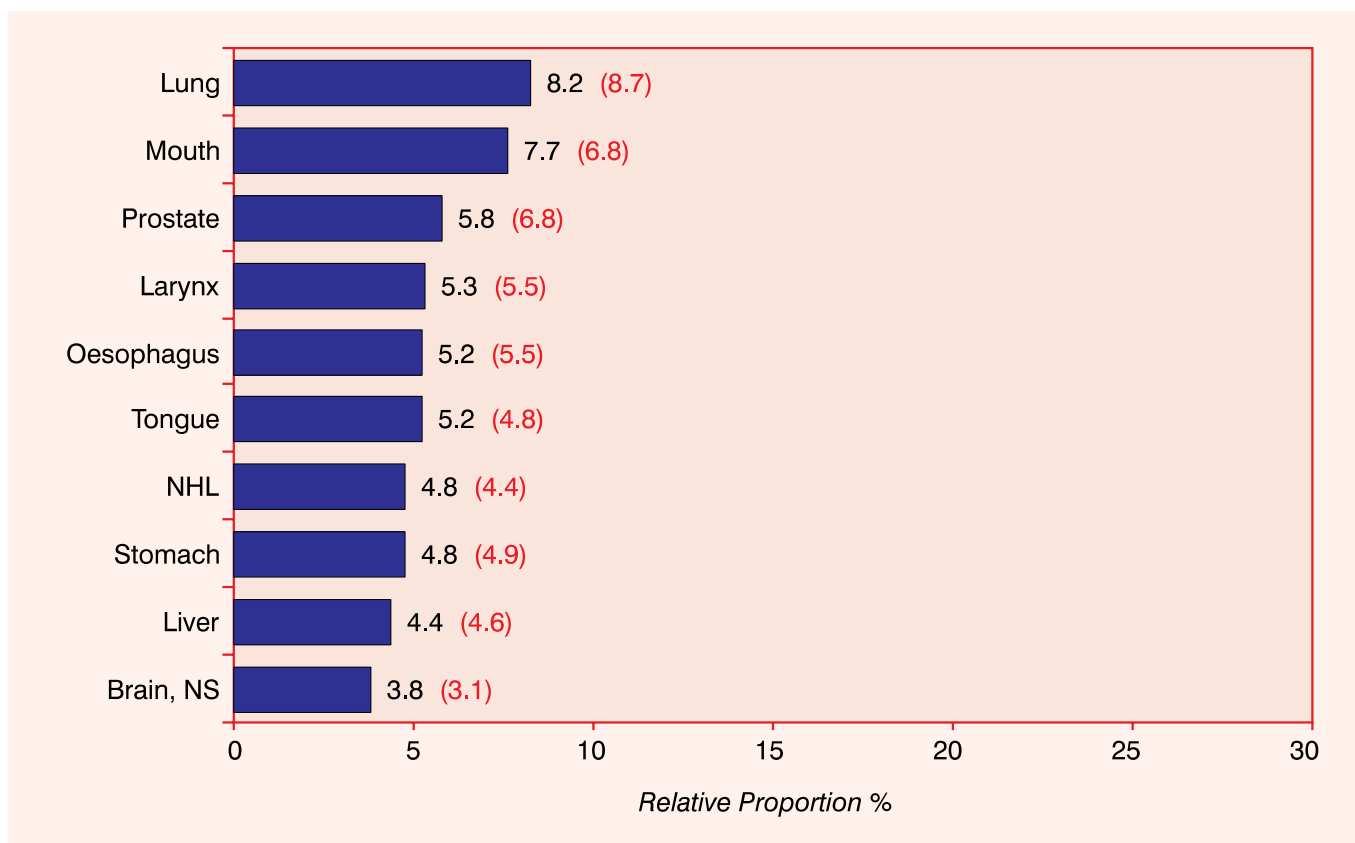
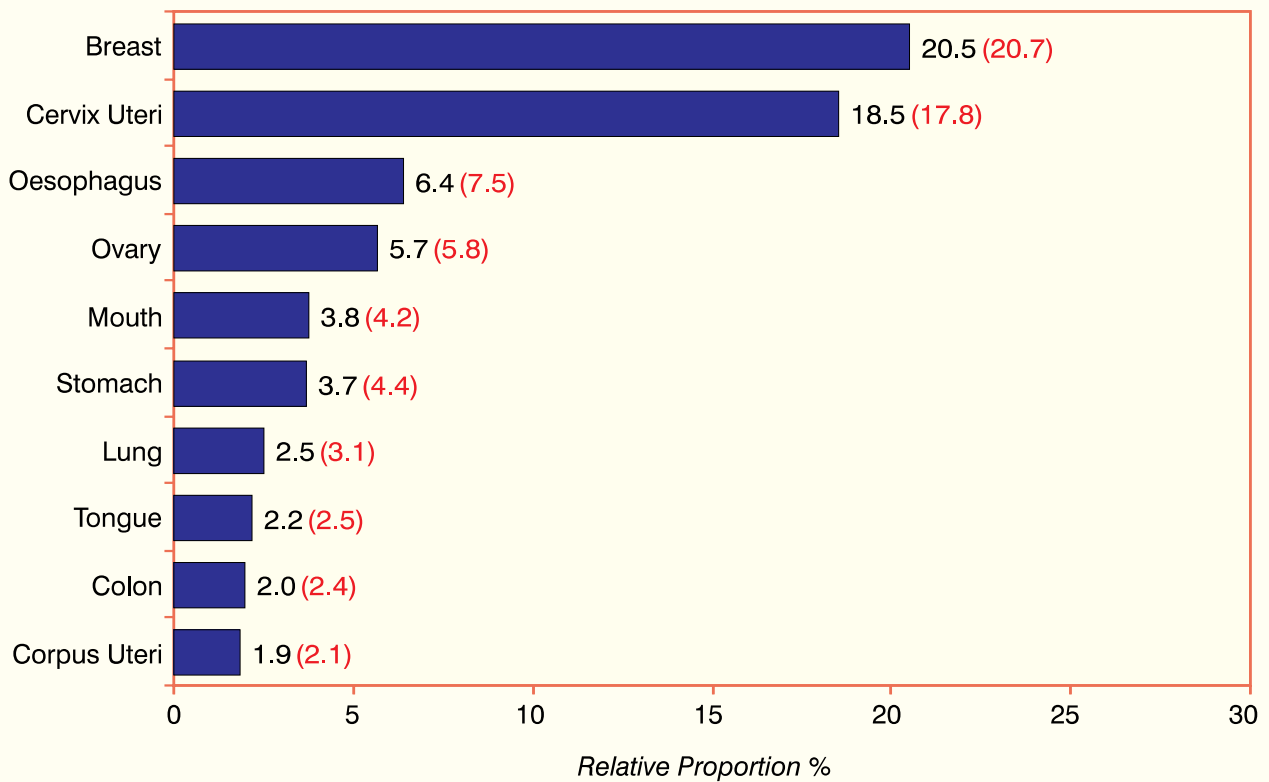


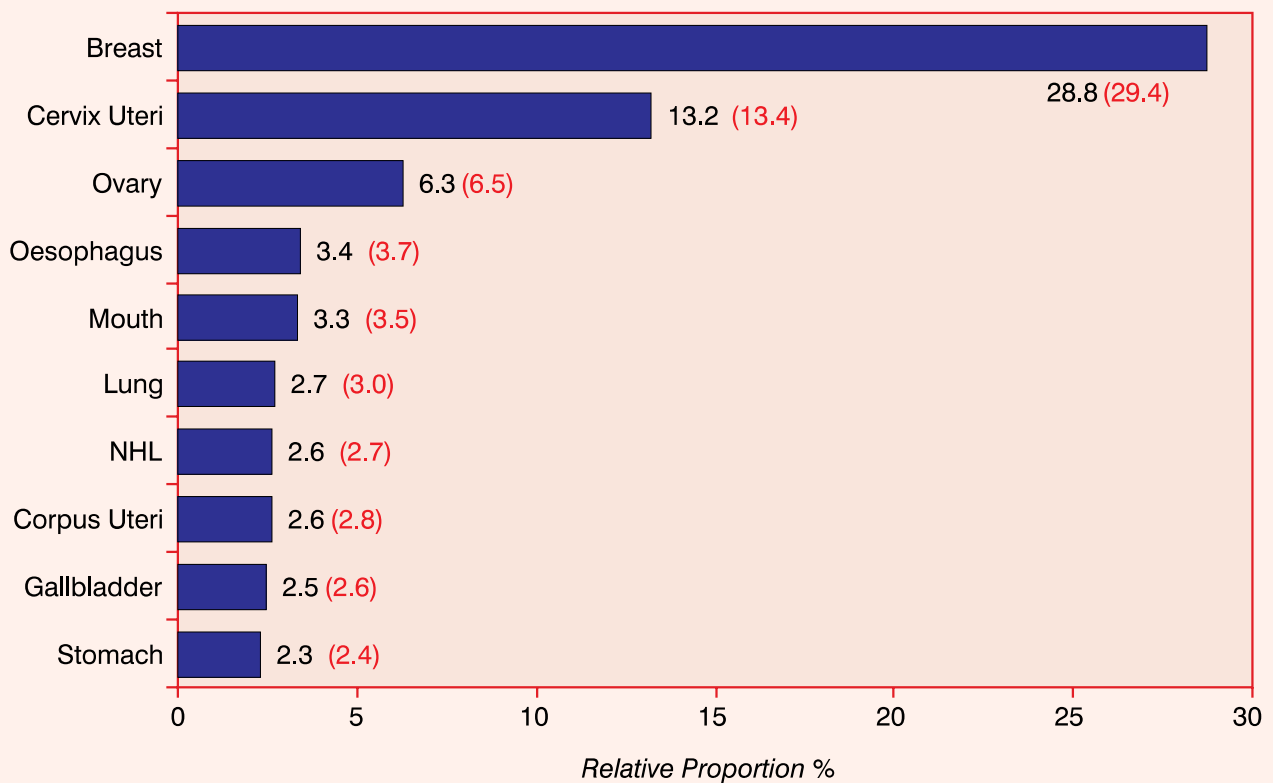
Fig. 3.6(b): Ten Leading Sites of Cancer – Females : Mumbai

Age Adjusted Incidence Rates given in parentheses

1982-1983



2004-2005



Chapter 4

TRENDS OVER TIME FOR ALL SITES AND ON SELECTED LEADING SITES OF CANCER

As mentioned in Chapter 2 the following sites have been included / excluded for the Barshi and Bhopal registries. In principle, anatomical sites with small numbers (less than ten cases per year) have been excluded.

For Barshi registry, only the following have been included:

- (a) All anatomical sites (combined) in both males and females.
- (b) Cancer of the breast and cervix in females.

All other sites have been excluded due to small numbers.

The following anatomical sites were excluded for Bhopal PBCR on account of small numbers. For males, the sites excluded were stomach, colon, rectum, liver, lymphoid and myeloid leukaemia. For females, the sites excluded were lung, corpus uteri, brain, NHL, thyroid gland and myeloid leukaemia. Certain other sites in Bhopal PBCR such as mouth in females, oesophagus in both males & females and Brain-NS in males have numbers in the teens and included. This needs to be kept in mind while interpreting the results.

Besides, in general, the ten leading sites of cancer across all registries have been chosen to depict trends over time.

Format of presentation for all sites and each of the selected anatomical sites :

The line graphs based on three year moving averages with the table below is shown on the left hand page. The facing page on the right shows Joinpoint Regression Model Trend lines with the corresponding table.

The table below the graph on three year Moving Average shows (i) the actual AAR values for each PBCR according to calendar year (ii) value of b (slope) and (iii) p-value with the values based on linear regression. In the facing page, the table below the Joinpoint Regression line gives the expected AAR values with respective Annual Percent Change (APC).

All Sites (Figure 4.1, 4.2 and Table 4.1, 4.2) :

Males: Both linear regression and joinpoint regression model did not show statistically significant increase or decrease in AAR over time in Bangalore, Barshi, Bhopal and Delhi PBCRs. Chennai PBCR showed a

significant rise in AAR over time. For the period 1982-1988, the APC was higher (4.5%) while from 1989–2005 this was 0.28%. Mumbai PBCR showed relative stable rates till 1990 with a decline thereafter.

Females: The PBCRs at Bangalore, Barshi, Bhopal and Chennai did not show a statistically significant change from 1982–2005. A statistically significant decline in AAR was observed for Delhi and Mumbai PBCR. For Mumbai PBCR, there was initial period of rise in AARs from 1982–1992, followed by a decline from 1993–2005.

Tongue (Figure 4.3 and Table 4.3) :

Males: There was no change in incidence rates trend over time for PBCRs of Bangalore, Bhopal and Delhi. Chennai showed an increasing trend whereas Mumbai showed a decline. The APC for Chennai was 1.3 and for Mumbai -2.0.

Mouth (Figure 4.4, 4.5 and Table 4.4, 4.5) :

Males: A rising trend was observed in both Delhi and Mumbai PBCR. The overall APC was 2.0 and 0.9 for Delhi and Mumbai respectively. The APC for Mumbai was higher (APC: 3.98) during later years (1998-2005).

Females: The registries at Bangalore, Delhi, Chennai and Mumbai showed a decline. The APC varied from -0.8 in Mumbai to -3.2 at Bangalore.

Hypopharynx (Figure 4.6 and Table 4.6) :

Males: The three PBCRs at Bangalore, Bhopal and Mumbai showed a decline in the AARs. The APC varied from -1.4 in Bangalore to -4.2 in Mumbai.

Oesophagus (Figure 4.7, 4.8 and Table 4.7, 4.8) :

Males: Only Delhi and Mumbai PBCRs showed a change in the AAR with a decline. The APC was -1.3 in Delhi and -3.1 in Mumbai.

Females: Bangalore, Bhopal, Delhi and Mumbai showed a decline with the APC ranging from -1.2 in Bangalore to -3.5 in Mumbai.

Stomach (Figure 4.9 and Table 4.9) :

Males: The AARs were unchanged over time for Bangalore and Delhi, whereas a decline was seen in Chennai and Mumbai PBCRs. The APC was -0.9 for Chennai and -2.2 for Mumbai. The decrease in Chennai was greater (APC: -1.5) for the later years (1987-2005).

Colon (Figure 4.10 and Table 4.10) :

Males: The PBCRs at Bangalore, Chennai and Delhi showed a statistically significant increase in the incidence of colon cancer. The APC was 1.7 in Delhi and 2.2 at both Bangalore and Chennai PBCRs.

Rectum (Figure 4.11 and Table 4.11) :

Males: Both Bangalore and Chennai showed a statistically significant increase in incidence rate trends over time. The APC was 1.6 for Bangalore and 2.5 for Chennai.

Liver (Figure 4.12 and Table 4.12) :

Males: The four PBCRs at Bangalore, Chennai, Delhi and Mumbai showed a statistically significant increase in the incidence of this cancer. The APC varied from 1.6 in Chennai to 2.0 in Bangalore. In Mumbai the change was higher (APC: 2.6) for later years (1997-2005).

Gallbladder (Figure 4.13 and Table 4.13) :

Females: The PBCRs at Bangalore, Bhopal, Chennai and Mumbai showed a statistically significant increase in the incidence of gallbladder cancer. The APC varied from 2.5 in Mumbai to 5.9 in Bangalore and Chennai. In Delhi PBCR a 15% increase was observed annually from 1988–1993, but thereafter a significant decline was observed. In Mumbai the change (APC: 9.1) was more during the earlier years (1982-1991).

Larynx (Figure 4.14 and Table 4.14) :

Males: Bhopal PBCR showed a significant increase whereas Mumbai PBCR showed a significant decrease in incidence rates over the years. The APC for Bhopal was 2.9 and -1.5 for Mumbai.

Lung (Figure 4.15, 4.16 and Table 4.15, 4.16) :

Males: Chennai and Delhi PBCRs showed a statistically significant increase in AARs of lung cancer with APC being 2.3 in Chennai and 1.0 in Delhi. In Chennai the change was higher (APC: 8.2) during the years 1982-1990.

Females: The three PBCRs at Bangalore, Chennai and Delhi showed an increase in the incidence of lung cancer over time with the APC varying from 2.0 in Delhi to 4.6 in Chennai.

Breast – Females (Figure 4.17 and Table 4.17) :

All the urban registries at Bangalore, Bhopal, Chennai, Delhi and Mumbai showed statistically significant increase in the incidence of breast cancer. The APC varied from 1.0 in Delhi to 2.7 in Bangalore. In Chennai the increase was more (APC: 4.0) during the later years (1995-2005) while in Mumbai the increase was more (APC: 3.1) during earlier years (1982-1991).

Cervix (Figure 4.18 and Table 4.18) :

All the six PBCRs have recorded a statistically significant decline in the incidence rates of cancer cervix. This includes the rural registry at Barshi. The APC varied from -1.4 in Bhopal to -3.4 in Delhi.

Corpus Uteri (Figure 4.19 and Table 4.19) :

The four registries at Bangalore, Chennai, Delhi and Mumbai showed a statistically significant increase in the incidence of cancer of corpus uteri. The APC varied from 1.7 in Mumbai to 5.8 in Bangalore.

Ovary – Females (Figure 4.20 and Table 4.20) :

Bangalore and Mumbai PBCRs showed an increase in the occurrence of incidence rates of this cancer. The APC was 0.8 in Mumbai and 1.7 in Bangalore. The increase in Mumbai was more (APC: 2.64) during earlier years.

Prostate (Figure 4.21 and Table 4.21) :

The four registries at Bangalore, Chennai, Delhi and Mumbai showed a statistically significant increase in the incidence of prostate cancer with the APC varying from 0.8 in Mumbai to 4.7 in Chennai.

Brain (Figure 4.22, 4.23 and Table 4.22, 4.23) :

Males: The PBCRs at Bangalore, Chennai and Mumbai showed an increase in the AARs. The APC was 2.7 in Mumbai PBCR, 3.0 in Chennai PBCR and 3.2 in Bangalore PBCR.

Females: As in males, Bangalore, Chennai and Mumbai showed a statistically significant increase in the occurrence of this cancer. The APC was 2.9 in Mumbai and 3.4 in Bangalore and 4.6 in Chennai.

Thyroid Gland (Figure 4.24 and Table 4.24) :

Females: Chennai and Delhi PBCR recorded an increase with the APC being 2.2 in Delhi and 2.6 in Chennai. The increase in Chennai was more (APC: 8.23) during the years 1996-2005.

NHL (Figure 4.25, 4.26 and Table 4.25, 4.26) :

Males: All the five urban PBCRs showed a statistically significant increase in the incidence of NHL. The APC varied from 1.0 in Delhi to 7.9 in Bhopal.

Females: Bangalore, Chennai, Delhi and Mumbai PBCRs showed as in males, a statistically significant increase in the incidence of this cancer. The APC varied from 1.2 in Delhi to 3.6 in Bangalore. The increase in both Chennai (APC: 5.1) and Mumbai (APC: 4.1) was more during the early years (1982-97).

Lymphoid Leukaemia (Figure 4.27 and Table 4.27) :

Males: Bangalore and Chennai PBCRs recorded an increase in the incidence of this cancer with the APC being 2.6 in Chennai and 2.7 in Bangalore.

Myeloid Leukaemia (Figure 4.28, 4.29 and Table 4.28, 4.29) :

Males: PBCRs at Bangalore, Chennai and Mumbai showed an increase in AARs with the APC being 0.8 in Mumbai to 2.2 in Bangalore and 2.5 in Chennai.

Females: As in males, both Bangalore and Chennai showed an increase in incidence rates with the APC being 1.9 in Bangalore and 3.4 in Chennai.

Lung cancer in Chennai women increased annually at the rate of 4.6%.

Both Chennai and Bangalore recorded an APC of 5.8% increase annually in the incidence of gallbladder cancer.

Cancer of the breast increased at the rate of 4% annually in Chennai females from 1995 to 2005. Likewise Chennai females also recorded an annual percentage increase of 8.2 for Thyroid cancers during 1995-2005.

Fig. 4.1(a): ALL SITES (ICD-10 : C00-C96) - Males
Trends over time (1982-2005) in AAR (Three Year Moving Average)

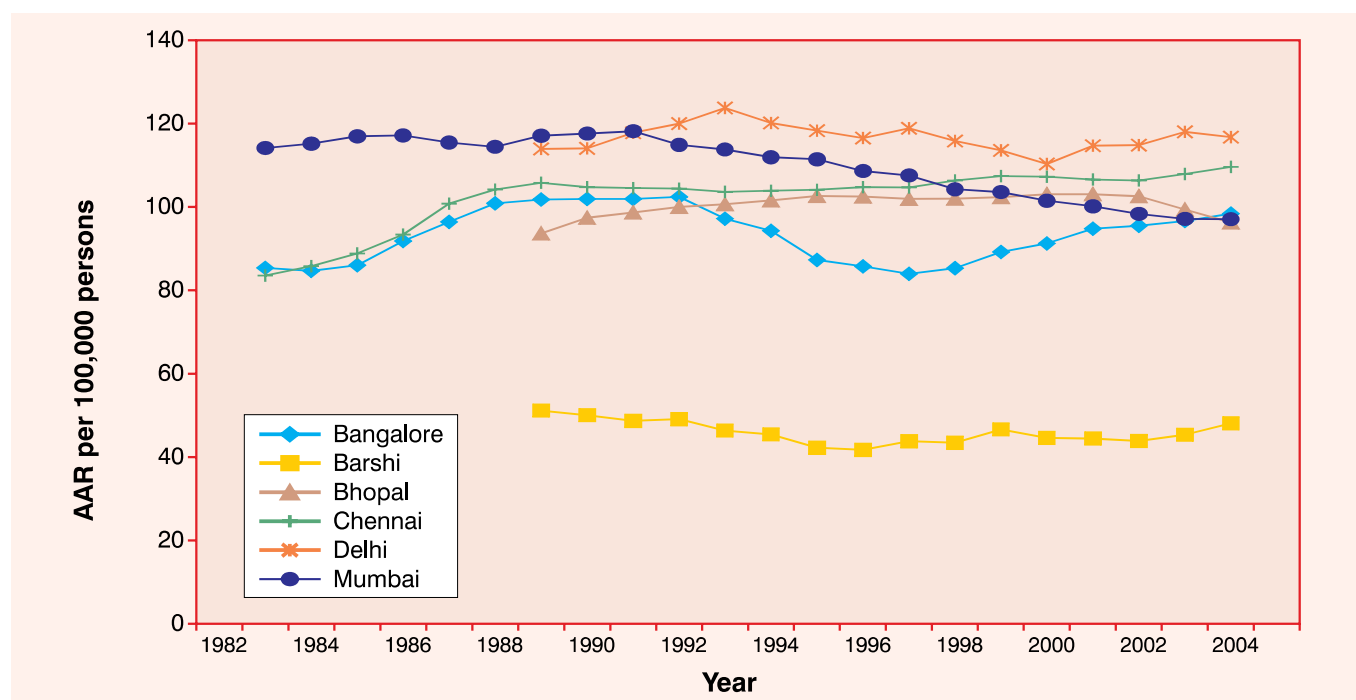


Table 4.1(a): Year wise AARs

Year	Bangalore	Barshi	Bhopal	Chennai	Delhi	Mumbai
1982	90.7			80.2		115.9
1983	83.5			85.9		110.9
1984	81.8			84.6		115.7
1985	88.7			87.0		119.0
1986	87.4			94.9		116.3
1987	99.3			98.3		116.2
1988	102.5	51.2	88.9	109.1	111.3	113.9
1989	100.8	51.4	95.9	105.2	112.5	113.1
1990	101.9	50.9	96.1	103.2	117.9	124.3
1991	103.0	47.8	100.3	105.9	111.8	115.2
1992	100.8	47.4	99.7	104.6	123.6	115.0
1993	103.4	52.1	100.0	102.6	124.5	114.5
1994	87.3	39.6	102.2	103.6	123.0	111.9
1995	92.2	44.7	102.4	105.5	112.9	109.4
1996	82.3	42.5	103.2	103.3	119.0	113.0
1997	82.7	38.2	101.8	105.4	117.8	103.6
1998	87.0	50.8	100.8	105.4	120.0	106.2
1999	86.1	41.4	103.4	108.3	109.8	103.0
2000	94.4	47.7	102.7	108.7	110.9	101.4
2001	93.3	44.7	103.0	104.8	110.3	100.1
2002	96.7	40.8	103.3	106.2	123.0	99.0
2003	96.5	46.0	101.4	108.2	111.3	95.8
2004	96.7	49.3	93.3	109.4	119.8	96.6
2005	102.0	49.1	94.1	111.3	119.2	98.6
Slope(b)	0.169	-0.247	0.208	0.986	0.019	-0.961
p-value	0.451	0.228	0.287	0.001	0.938	0.001

Fig. 4.1(b): ALL SITES (ICD-10 : C00-C96) - Males
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

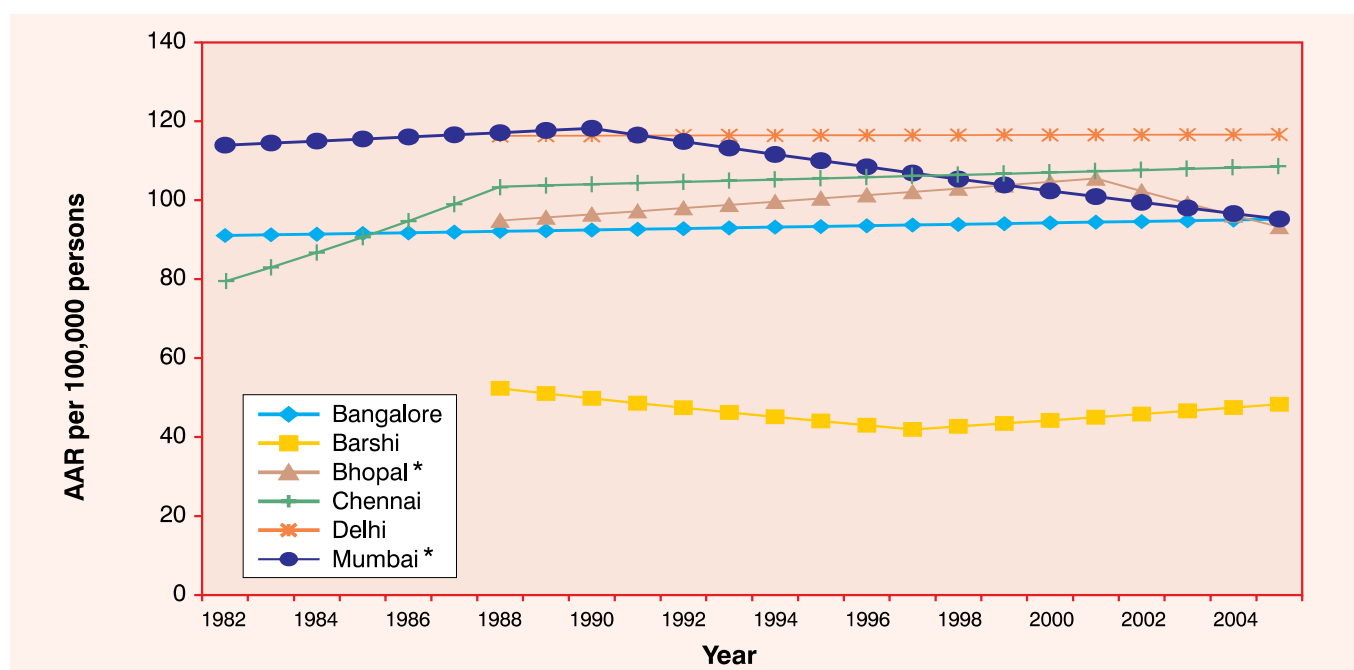


Table 4.1(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Barshi	Bhopal	Chennai	Delhi	Mumbai
	JP0*	JP1*	JP1*	JP1*	JP0*	JP1*
1982	91.1			79.4		113.9
1983	91.2			83.0		114.5
1984	91.4			86.7		115.0
1985	91.6			90.6		115.5
1986	91.8			94.7		116.1
1987	91.9			99.0		116.6
1988	92.1	52.3	94.9	103.4	116.3	117.1
1989	92.3	51.1	95.6	103.7	116.3	117.7
1990	92.5	49.8	96.4	104.0	116.4	118.2
1991	92.7	48.6	97.2	104.3	116.4	116.5
1992	92.8	47.4	98.0	104.6	116.4	114.9
1993	93.0	46.3	98.8	104.9	116.4	113.2
1994	93.2	45.2	99.6	105.2	116.4	111.6
1995	93.4	44.1	100.4	105.5	116.5	110.0
1996	93.5	43.0	101.3	105.8	116.5	108.4
1997	93.7	42.0	102.1	106.1	116.5	106.9
1998	93.9	42.7	102.9	106.4	116.5	105.4
1999	94.1	43.5	103.8	106.7	116.5	103.8
2000	94.3	44.3	104.6	107.0	116.6	102.4
2001	94.4	45.0	105.5	107.3	116.6	100.9
2002	94.6	45.8	102.3	107.6	116.6	99.5
2003	94.8	46.7	99.2	107.9	116.6	98.0
2004	95.0	47.5	96.2	108.2	116.6	96.6
2005	95.2	48.3	93.3	108.5	116.7	95.3
APC0	0.19	-0.52	0.21	1.03*	0.02	-0.89*
APC1	-	-2.42*	0.82*	4.50*	-	0.46
APC2	-	1.78	-3.04*	0.28*	-	-1.43*

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC ($p < 0.05$) values.

Fig. 4.2(a): ALL SITES (ICD-10 : C00-C96) - Females
Trends over time (1982-2005) in AAR (Three Year Moving Average)

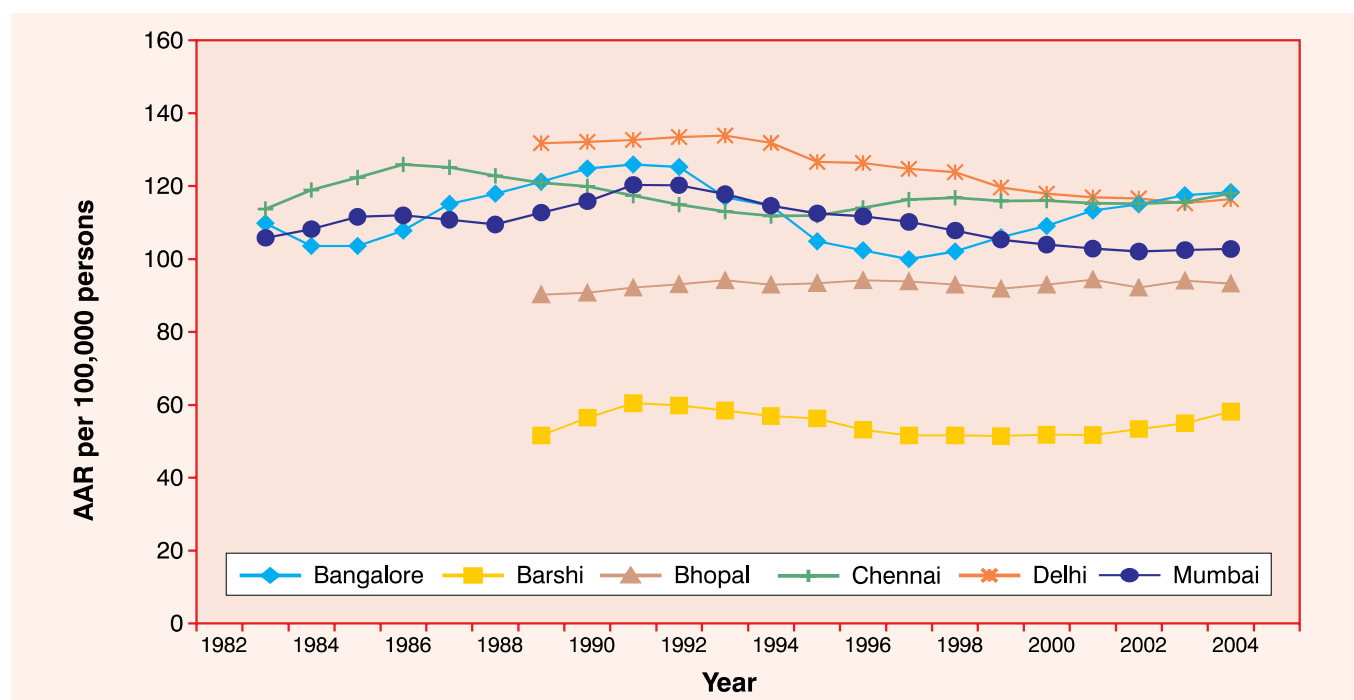


Table 4.2(a): Year wise AARs

Year	Bangalore	Barshi	Bhopal	Chennai	Delhi	Mumbai
1982	117.5			106.2		107.7
1983	105.8			118.6		101.8
1984	105.9			116.4		107.8
1985	98.9			121.9		115.0
1986	105.9			128.8		112.0
1987	118.4			127.1		109.0
1988	121.0	48.9	89.5	119.4	127.0	111.2
1989	114.2	49.7	90.1	121.8	133.1	108.4
1990	128.4	56.3	90.9	121.6	135.3	118.6
1991	131.9	63.3	91.3	116.4	128.0	120.6
1992	117.6	61.8	94.1	114.2	134.5	121.8
1993	126.3	54.4	93.6	114.0	137.7	118.1
1994	106.8	59.2	94.6	110.9	129.2	113.5
1995	110.8	57.4	90.6	110.6	128.7	112.0
1996	97.2	52.1	94.7	114.1	122.0	111.9
1997	99.3	50.0	97.2	117.3	128.4	111.2
1998	103.4	52.9	89.6	117.6	123.9	107.3
1999	103.5	51.9	92.0	115.5	119.1	104.7
2000	110.9	49.7	93.8	114.7	116.0	103.8
2001	112.9	54.0	93.1	117.9	118.7	103.3
2002	116.1	51.7	96.3	113.3	116.1	101.6
2003	116.1	54.5	87.2	114.5	114.9	101.2
2004	120.2	58.7	98.8	119.0	114.8	104.6
2005	118.6	61.2	93.7	120.4	119.4	102.4
Slope(b)	0.049	0.037	0.192	-0.134	-1.190	-0.358
p-value	0.865	0.861	0.161	0.378	0.001	0.046

Fig. 4.2(b): ALL SITES (ICD-10 : C00-C96) - Females
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

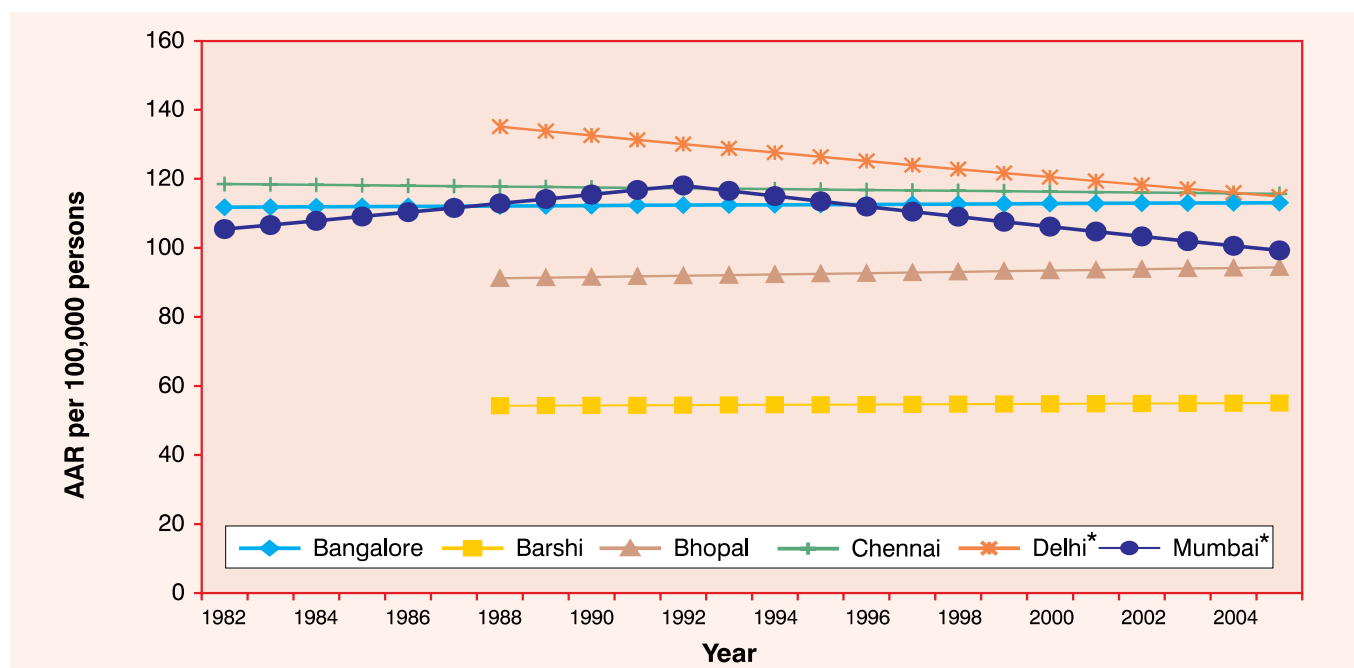


Table 4.2(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Barshi	Bhopal	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP0*	JP0*	JP0*	JP1*
1982	111.8			118.5		105.4
1983	111.8			118.4		106.6
1984	111.9			118.2		107.9
1985	112.0			118.1		109.1
1986	112.0			118.0		110.3
1987	112.1			117.9		111.6
1988	112.1	54.3	91.2	117.7	135.2	112.9
1989	112.2	54.3	91.4	117.6	133.9	114.2
1990	112.2	54.4	91.6	117.5	132.6	115.5
1991	112.3	54.4	91.8	117.4	131.3	116.8
1992	112.4	54.5	92.0	117.2	130.1	118.1
1993	112.4	54.5	92.1	117.1	128.8	116.5
1994	112.5	54.6	92.3	117.0	127.6	115.0
1995	112.5	54.6	92.5	116.9	126.4	113.5
1996	112.6	54.7	92.7	116.8	125.2	112.0
1997	112.6	54.7	92.9	116.6	124.0	110.5
1998	112.7	54.8	93.1	116.5	122.8	109.0
1999	112.8	54.8	93.3	116.4	121.7	107.6
2000	112.8	54.9	93.5	116.3	120.5	106.1
2001	112.9	54.9	93.6	116.1	119.4	104.7
2002	112.9	55.0	93.8	116.0	118.2	103.4
2003	113.0	55.0	94.0	115.9	117.1	102.0
2004	113.0	55.1	94.2	115.8	116.0	100.6
2005	113.1	55.1	94.4	115.7	114.9	99.3
APC0	0.05	0.09	0.20	-0.10	-0.95*	-0.33*
APC1	-	-	-	-	-	1.14*
APC2	-	-	-	-	-	-1.33*

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC ($p < 0.05$) values.

Fig. 4.3(a): TONGUE (ICD-10 : C01-C02) - Males
Trends over time (1982-2005) in AAR (Three Year Moving Average)

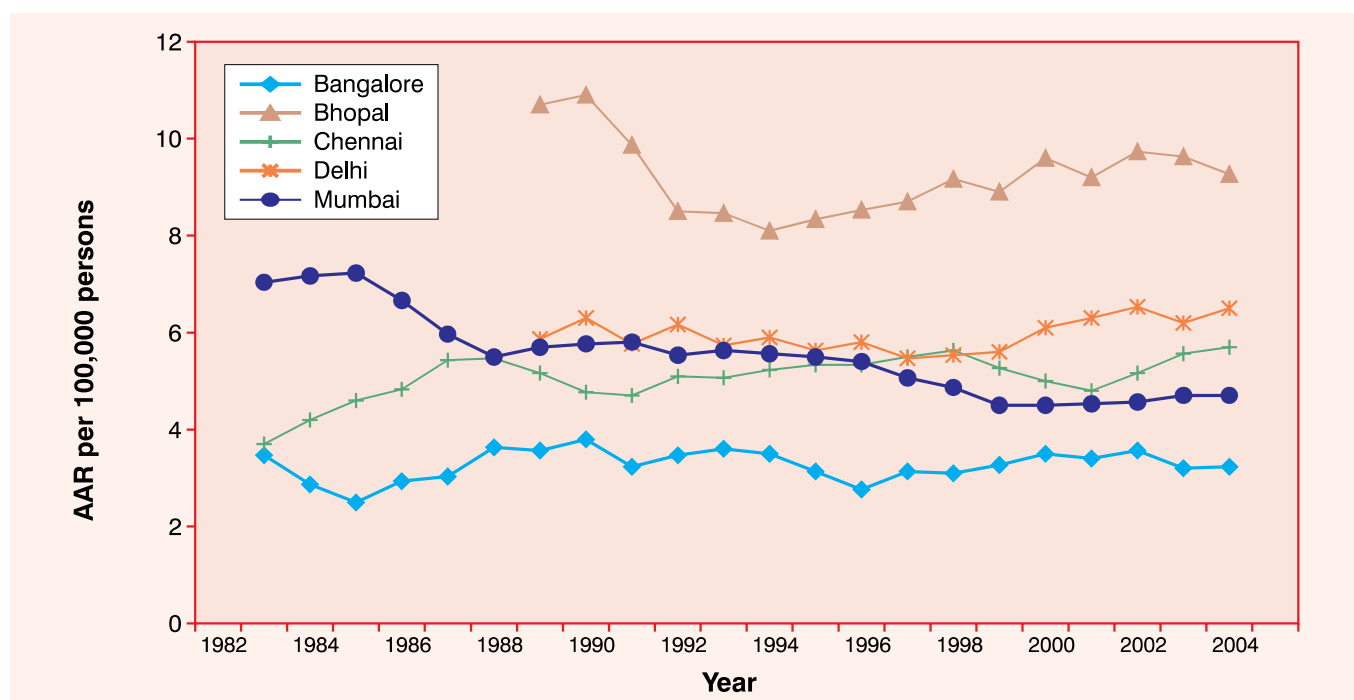


Table 4.3(a): Year wise AARs

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
1982	4.1		3.7		6.9
1983	3.6		3.4		6.9
1984	2.7		4.0		7.3
1985	2.3		5.2		7.3
1986	2.5		4.6		7.1
1987	4.0		4.7		5.6
1988	2.6	8.1	7.0	4.9	5.2
1989	4.3	11.9	4.7	7.3	5.7
1990	3.8	12.1	3.8	5.4	6.2
1991	3.3	8.7	5.8	6.2	5.4
1992	2.6	8.8	4.5	5.7	5.8
1993	4.5	8.0	5.0	6.6	5.4
1994	3.7	8.6	5.7	4.9	5.7
1995	2.3	7.7	5.0	6.2	5.6
1996	3.4	8.7	5.3	5.8	5.2
1997	2.6	9.2	5.7	5.4	5.4
1998	3.4	8.2	5.5	5.2	4.6
1999	3.3	10.1	5.7	6.0	4.6
2000	3.1	8.4	4.6	5.6	4.3
2001	4.1	10.3	4.7	6.7	4.6
2002	3.0	8.9	5.1	6.6	4.7
2003	3.6	10.0	5.7	6.3	4.4
2004	3.0	10.0	5.9	5.7	5.0
2005	3.1	7.8	5.5	7.5	4.7
Slope(b)	0.001	-0.035	0.056	0.043	-0.116
p-value	0.988	0.567	0.018	0.218	0.001

Fig. 4.3(b): TONGUE (ICD-10 : C01-C02) - Males
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

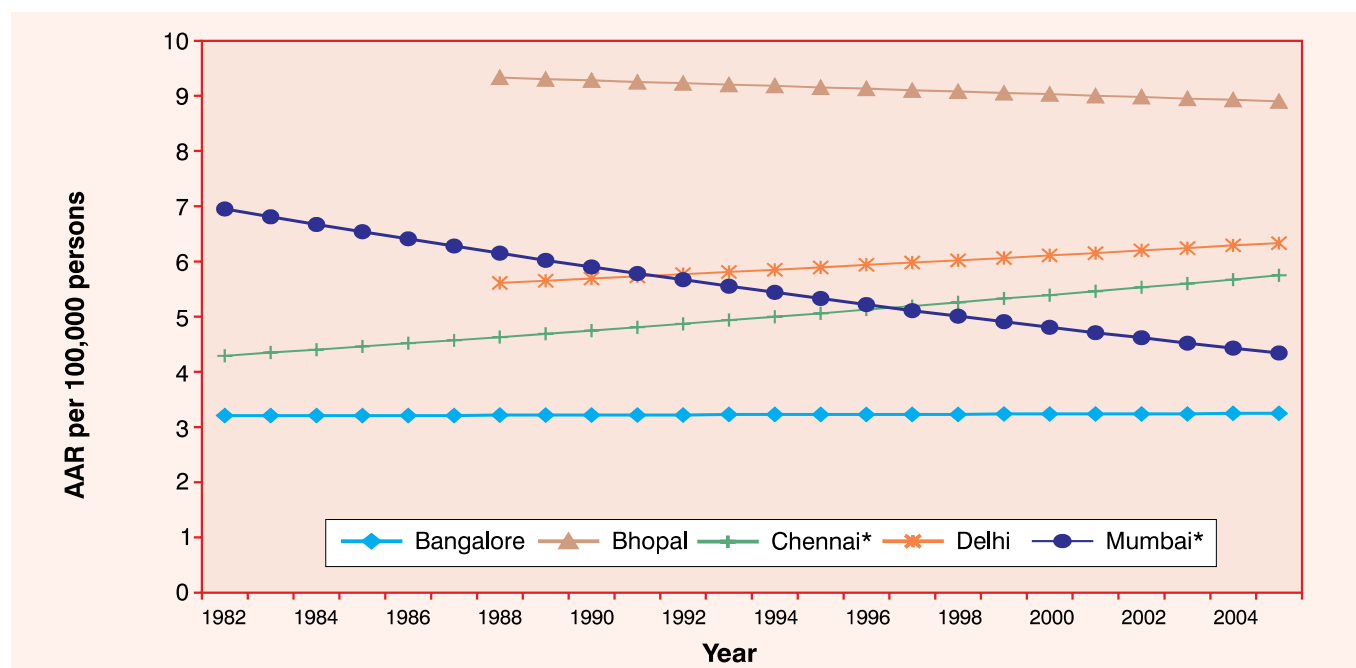


Table 4.3(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP0*	JP0*	JP0*
1982	3.2		4.3		7.0
1983	3.2		4.4		6.8
1984	3.2		4.4		6.7
1985	3.2		4.5		6.5
1986	3.2		4.5		6.4
1987	3.2		4.6		6.3
1988	3.2	9.3	4.6	5.6	6.2
1989	3.2	9.3	4.7	5.7	6.0
1990	3.2	9.3	4.8	5.7	5.9
1991	3.2	9.3	4.8	5.7	5.8
1992	3.2	9.2	4.9	5.8	5.7
1993	3.2	9.2	4.9	5.8	5.6
1994	3.2	9.2	5.0	5.9	5.4
1995	3.2	9.2	5.1	5.9	5.3
1996	3.2	9.1	5.1	5.9	5.2
1997	3.2	9.1	5.2	6.0	5.1
1998	3.2	9.1	5.3	6.0	5.0
1999	3.2	9.1	5.3	6.1	4.9
2000	3.2	9.0	5.4	6.1	4.8
2001	3.2	9.0	5.5	6.2	4.7
2002	3.2	9.0	5.5	6.2	4.6
2003	3.2	9.0	5.6	6.2	4.5
2004	3.3	8.9	5.7	6.3	4.4
2005	3.3	8.9	5.8	6.3	4.3
APC0	0.06	-0.28	1.27*	0.72	-2.03*
APC1	-	-	-	-	-
APC2	-	-	-	-	-

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC ($p < 0.05$) values.

Fig. 4.4(a): MOUTH (ICD-10 : C03-C06) - Males
Trends over time (1982-2005) in AAR (Three Year Moving Average)

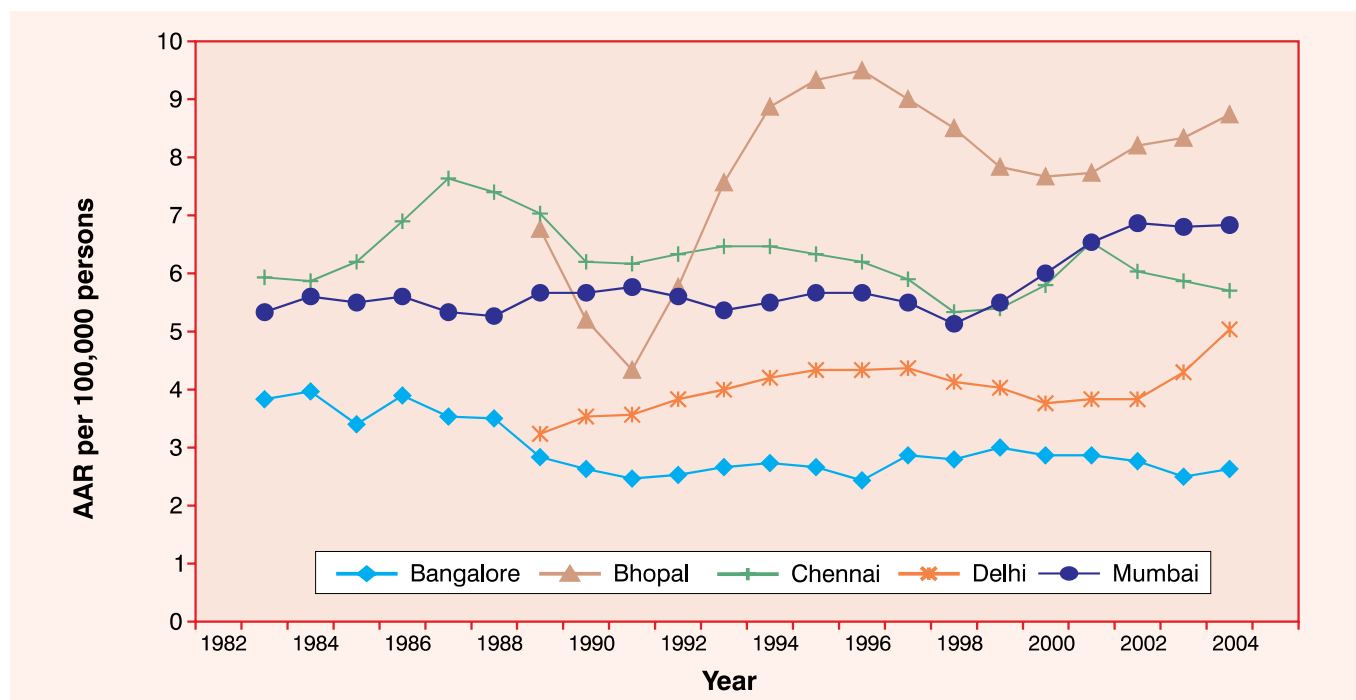


Table 4.4(a): Year wise AARs

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
1982	3.7		6.4		5.6
1983	4.5		6.0		5.7
1984	3.3		5.4		4.7
1985	4.1		6.2		6.4
1986	2.8		7.0		5.4
1987	4.8		7.5		5.0
1988	3.0	8.0	8.4	3.0	5.6
1989	2.7	9.1	6.3	3.5	5.2
1990	2.8	3.2	6.4	3.2	6.2
1991	2.4	3.3	5.9	3.9	5.6
1992	2.2	6.5	6.2	3.6	5.5
1993	3.0	7.5	6.9	4.0	5.7
1994	2.8	8.7	6.3	4.4	4.9
1995	2.4	10.4	6.2	4.2	5.9
1996	2.8	8.9	6.5	4.4	6.2
1997	2.1	9.2	5.9	4.4	4.9
1998	3.7	8.9	5.3	4.3	5.4
1999	2.6	7.4	4.8	3.7	5.1
2000	2.7	7.2	6.1	4.1	6.0
2001	3.3	8.4	6.5	3.5	6.9
2002	2.6	7.6	7.0	3.9	6.7
2003	2.4	8.6	4.6	4.1	7.0
2004	2.5	8.8	6.0	4.9	6.7
2005	3.0	8.8	6.5	6.1	6.8
Slope(b)	-0.052	0.135	-0.032	0.085	0.054
p-value	0.008	0.118	0.175	0.003	0.005

Fig. 4.4(b): MOUTH (ICD-10 : C03-C06) - Males
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

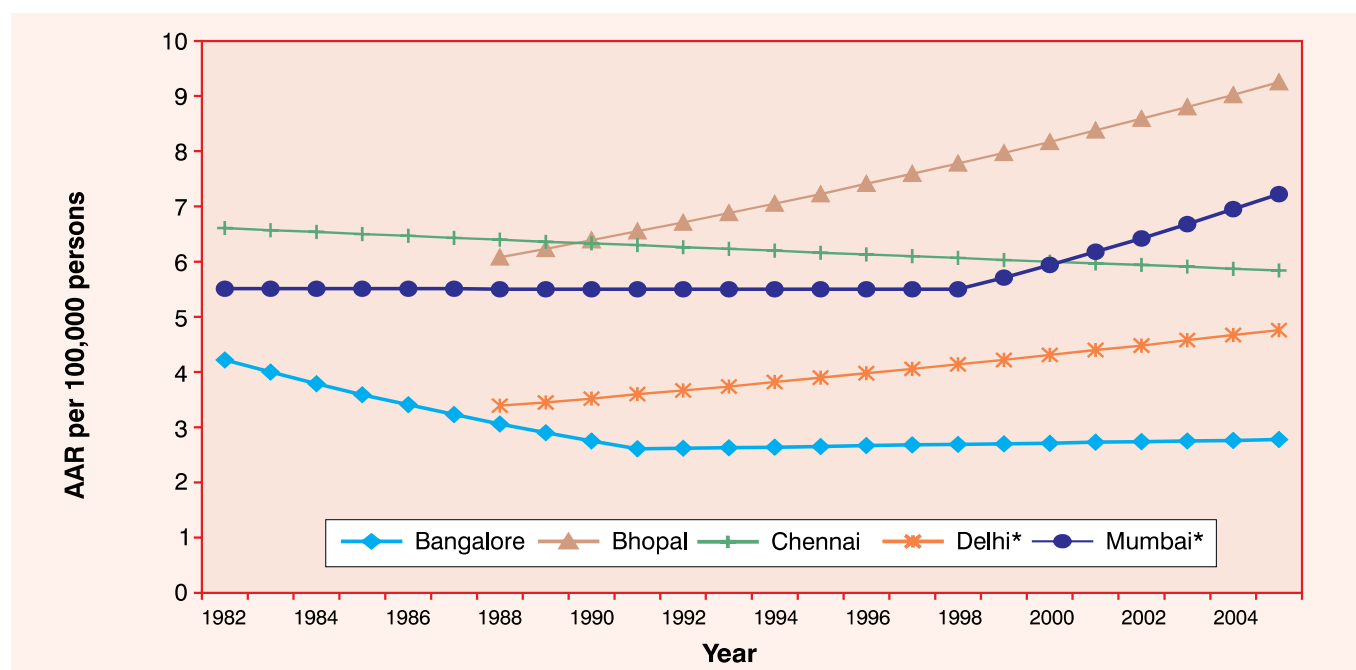


Table 4.4(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
	JP1*	JP0*	JP0*	JP0*	JP1*
1982	4.2		6.6		5.5
1983	4.0		6.6		5.5
1984	3.8		6.5		5.5
1985	3.6		6.5		5.5
1986	3.4		6.5		5.5
1987	3.2		6.4		5.5
1988	3.1	6.1	6.4	3.4	5.5
1989	2.9	6.2	6.4	3.5	5.5
1990	2.8	6.4	6.3	3.5	5.5
1991	2.6	6.6	6.3	3.6	5.5
1992	2.6	6.7	6.3	3.7	5.5
1993	2.6	6.9	6.2	3.7	5.5
1994	2.6	7.1	6.2	3.8	5.5
1995	2.7	7.2	6.2	3.9	5.5
1996	2.7	7.4	6.1	4.0	5.5
1997	2.7	7.6	6.1	4.1	5.5
1998	2.7	7.8	6.1	4.1	5.5
1999	2.7	8.0	6.0	4.2	5.7
2000	2.7	8.2	6.0	4.3	5.9
2001	2.7	8.4	6.0	4.4	6.2
2002	2.7	8.6	5.9	4.5	6.4
2003	2.8	8.8	5.9	4.6	6.7
2004	2.8	9.0	5.9	4.7	7.0
2005	2.8	9.3	5.8	4.8	7.2
APC0	-1.54*	2.5	-0.53	2.03*	0.89*
APC1	-5.21*	-	-	-	-0.02
APC2	0.45	-	-	-	3.98*

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC ($p < 0.05$) values.

Fig. 4.5(a): MOUTH (ICD-10 : C03-C06) - Females
Trends over time (1982-2005) in AAR (Three Year Moving Average)

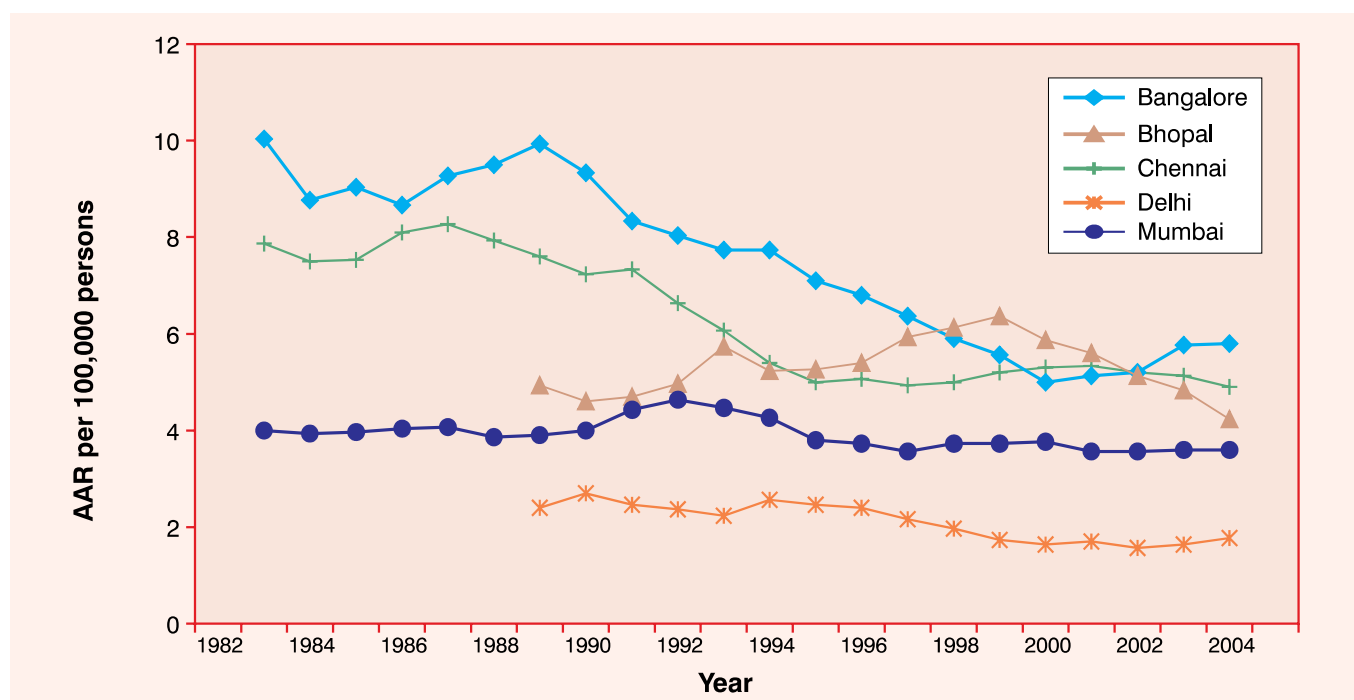


Table 4.5(a): Year wise AARs

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
1982	12.2		8.4		4.3
1983	8.7		8.1		4.0
1984	9.2		7.1		3.7
1985	8.4		7.3		4.1
1986	9.5		8.2		4.1
1987	8.1		8.8		3.9
1988	10.2	4.3	7.8	2.2	4.2
1989	10.2	6.0	7.2	2.3	3.5
1990	9.4	4.5	7.8	2.7	4.0
1991	8.4	3.3	6.7	3.1	4.5
1992	7.2	6.3	7.5	1.6	4.8
1993	8.5	5.3	5.7	2.4	4.6
1994	7.5	5.6	5.0	2.7	4.0
1995	7.2	4.8	5.5	2.6	4.2
1996	6.6	5.4	4.5	2.1	3.2
1997	6.6	6.0	5.2	2.5	3.8
1998	5.9	6.4	5.1	1.9	3.7
1999	5.2	6.0	4.7	1.5	3.7
2000	5.6	6.7	5.8	1.8	3.8
2001	4.2	4.9	5.4	1.6	3.8
2002	5.6	5.2	4.8	1.7	3.1
2003	5.8	5.3	5.4	1.4	3.8
2004	5.9	4.0	5.2	1.8	3.9
2005	5.7	3.4	4.1	2.1	3.1
Slope(b)	-0.242	-0.008	-0.176	-0.056	-0.028
p-value	0.001	0.87	0.001	0.006	0.022

Fig. 4.5(b): MOUTH (ICD-10 : C03-C06) - Females
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

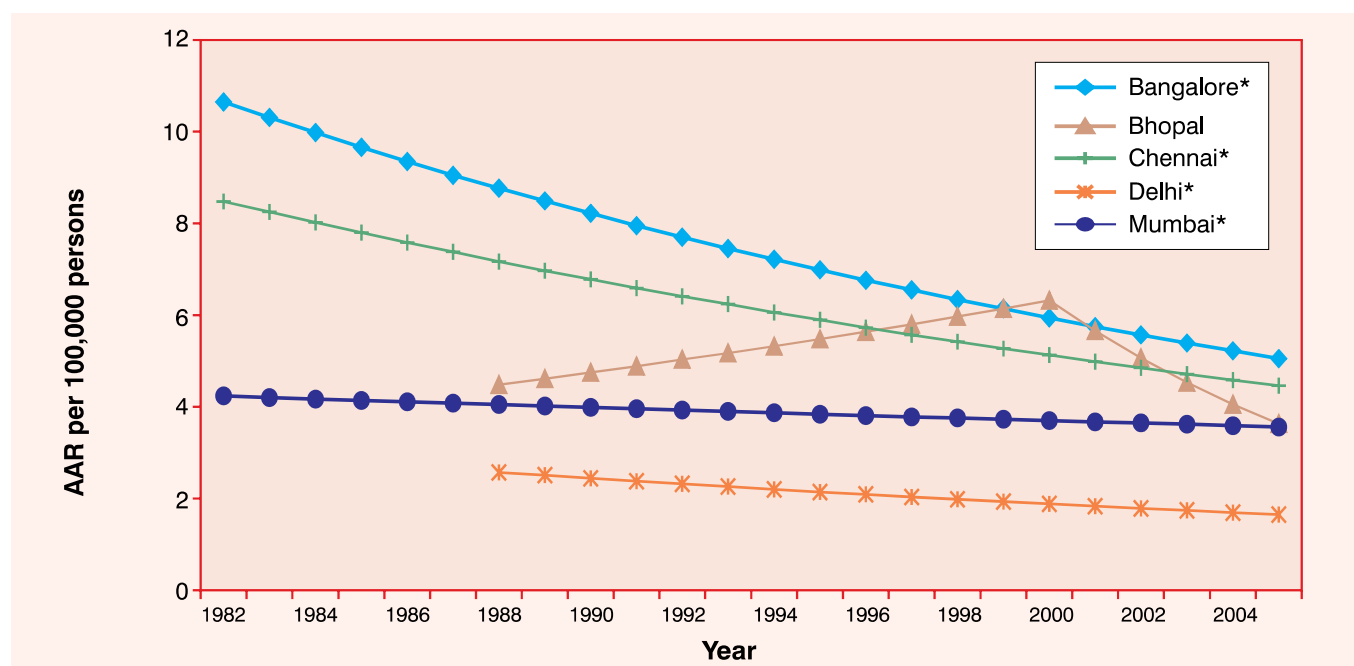


Table 4.5(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
	JP0*	JP1*	JP0*	JP0*	JP0*
1982	10.7		8.5		4.2
1983	10.3		8.3		4.2
1984	10.0		8.0		4.2
1985	9.7		7.8		4.1
1986	9.4		7.6		4.1
1987	9.1		7.4		4.1
1988	8.8	4.5	7.2	2.6	4.1
1989	8.5	4.6	7.0	2.5	4.0
1990	8.2	4.8	6.8	2.4	4.0
1991	8.0	4.9	6.6	2.4	4.0
1992	7.7	5.0	6.4	2.3	3.9
1993	7.5	5.2	6.2	2.3	3.9
1994	7.2	5.3	6.1	2.2	3.9
1995	7.0	5.5	5.9	2.1	3.8
1996	6.8	5.6	5.7	2.1	3.8
1997	6.6	5.8	5.6	2.0	3.8
1998	6.3	6.0	5.4	2.0	3.8
1999	6.1	6.1	5.3	1.9	3.7
2000	5.9	6.3	5.1	1.9	3.7
2001	5.8	5.7	5.0	1.8	3.7
2002	5.6	5.1	4.9	1.8	3.7
2003	5.4	4.5	4.7	1.7	3.6
2004	5.2	4.1	4.6	1.7	3.6
2005	5.1	3.6	4.5	1.7	3.6
APC0	-3.19*	-0.23	-2.76*	-2.58*	-0.75*
APC1	—	2.91	—	—	—
APC2	—	-10.51	—	—	—

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC ($p < 0.05$) values.

Fig. 4.6(a): HYPOPHARYNX (ICD-10 : C12-C13) - Males
Trends over time (1982-2005) in AAR (Three Year Moving Average)

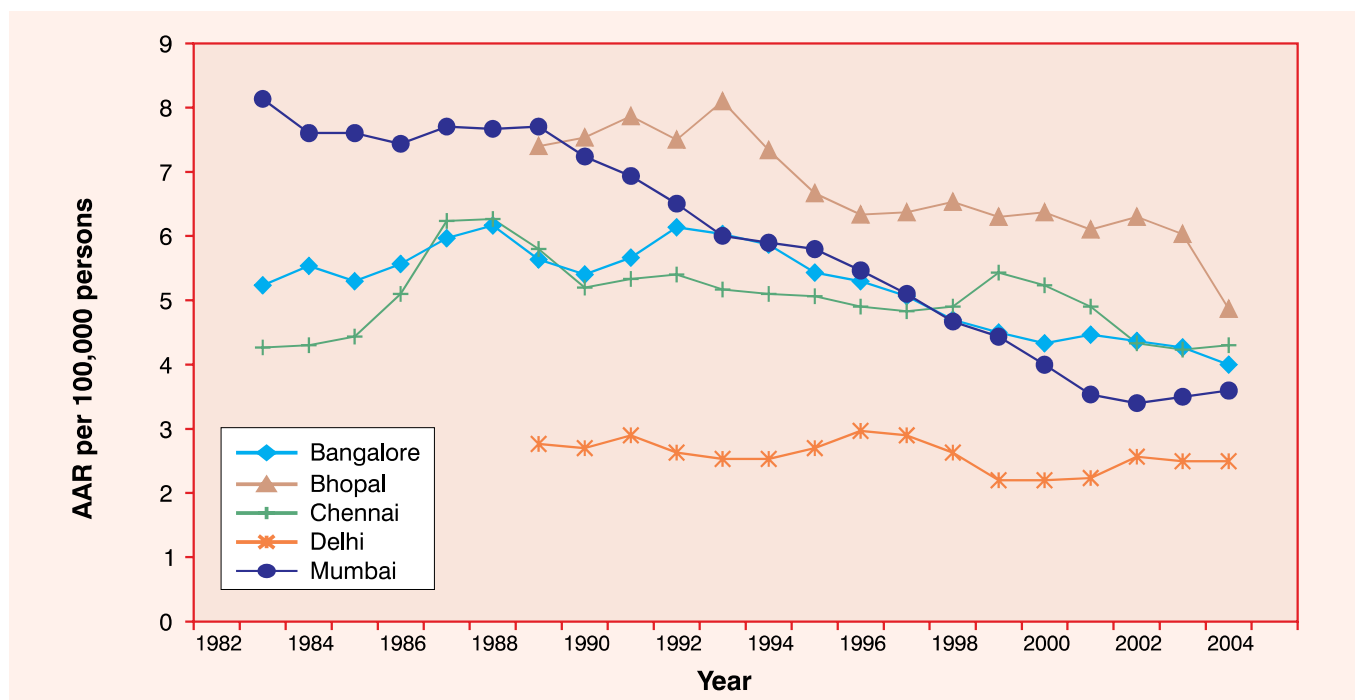


Table 4.6(a): Year wise AARs

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
1982	4.4		3.5		9.1
1983	5.4		5.2		7.3
1984	5.9		4.1		8.0
1985	5.3		3.6		7.5
1986	4.7		5.6		7.3
1987	6.7		6.1		7.5
1988	6.5	5.2	7.0	2.9	8.3
1989	5.3	7.6	5.7	2.1	7.2
1990	5.1	9.4	4.7	3.3	7.6
1991	5.8	5.6	5.2	2.7	6.9
1992	6.1	8.6	6.1	2.7	6.3
1993	6.5	8.3	4.9	2.5	6.3
1994	5.5	7.4	4.5	2.4	5.4
1995	5.6	6.3	5.9	2.7	6.0
1996	5.2	6.3	4.8	3.0	6.0
1997	5.1	6.4	4.0	3.2	4.4
1998	4.9	6.4	5.7	2.5	4.9
1999	4.1	6.8	5.0	2.2	4.7
2000	4.5	5.7	5.6	1.9	3.7
2001	4.4	6.6	5.1	2.5	3.6
2002	4.5	6.0	4.0	2.3	3.3
2003	4.2	6.3	3.9	2.9	3.3
2004	4.1	5.8	4.8	2.3	3.9
2005	3.7	2.5	4.2	2.3	3.6
Slope(b)	-0.068	-0.152	-0.015	-0.024	-0.240
p-value	0.003	0.020	0.586	0.177	0.001

Fig. 4.6(b): HYPOPHARYNX (ICD-10 : C12-C13) - Males
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

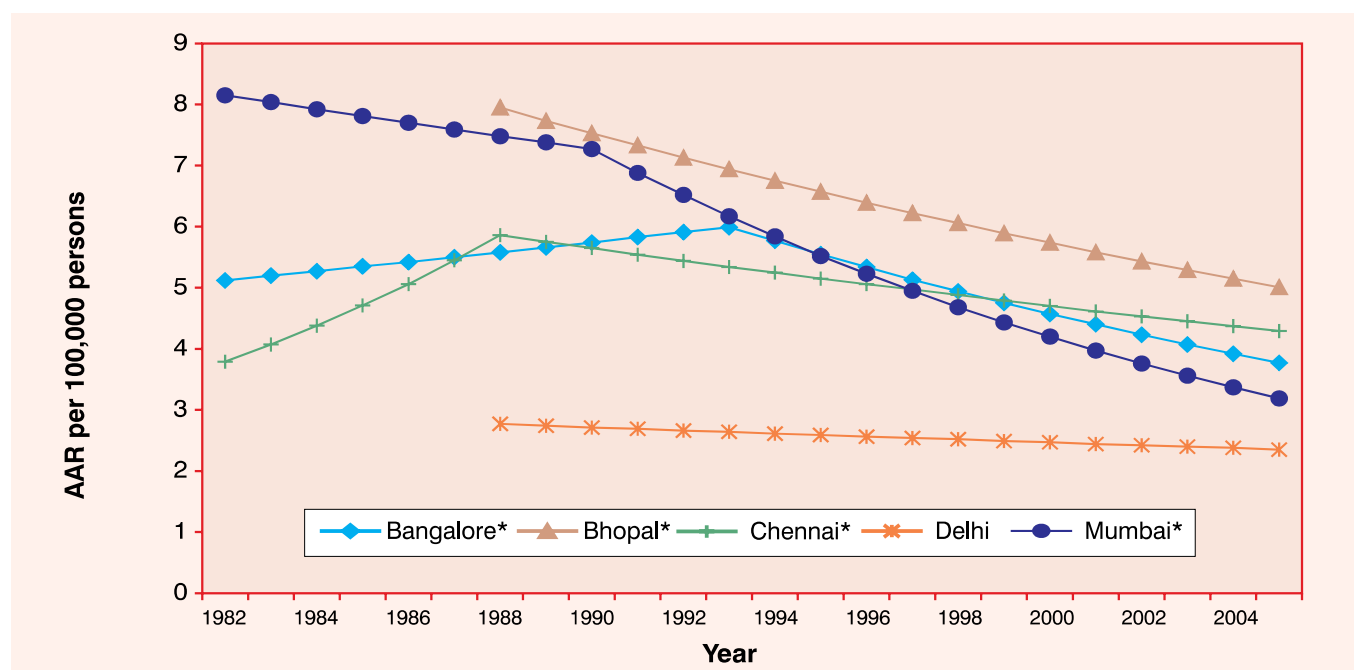


Table 4.6(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
	JP1*	JP0*	JP1*	JP0*	JP1*
1982	5.1		3.8		8.2
1983	5.2		4.1		8.0
1984	5.3		4.4		7.9
1985	5.4		4.7		7.8
1986	5.4		5.1		7.7
1987	5.5		5.5		7.6
1988	5.6	8.0	5.9	2.8	7.5
1989	5.7	7.7	5.8	2.7	7.4
1990	5.7	7.5	5.7	2.7	7.3
1991	5.8	7.3	5.5	2.7	6.9
1992	5.9	7.1	5.4	2.7	6.5
1993	6.0	6.9	5.3	2.6	6.2
1994	5.8	6.8	5.3	2.6	5.8
1995	5.6	6.6	5.2	2.6	5.5
1996	5.3	6.4	5.1	2.6	5.2
1997	5.1	6.2	5.0	2.5	5.0
1998	4.9	6.1	4.9	2.5	4.7
1999	4.8	5.9	4.8	2.5	4.4
2000	4.6	5.7	4.7	2.5	4.2
2001	4.4	5.6	4.6	2.4	4.0
2002	4.2	5.4	4.5	2.4	3.8
2003	4.1	5.3	4.5	2.4	3.6
2004	3.9	5.2	4.4	2.4	3.4
2005	3.8	5.0	4.3	2.4	3.2
APC0	-1.38*	-2.68*	-0.20	-0.95	-4.24*
APC1	1.44	-	7.55	-	-1.41
APC2	-3.80*	-	-1.82*	-	-5.35*

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC ($p < 0.05$) values.

Fig. 4.7(a): OESOPHAGUS (ICD-10 : C15) - Males
Trends over time (1982-2005) in AAR (Three Year Moving Average)

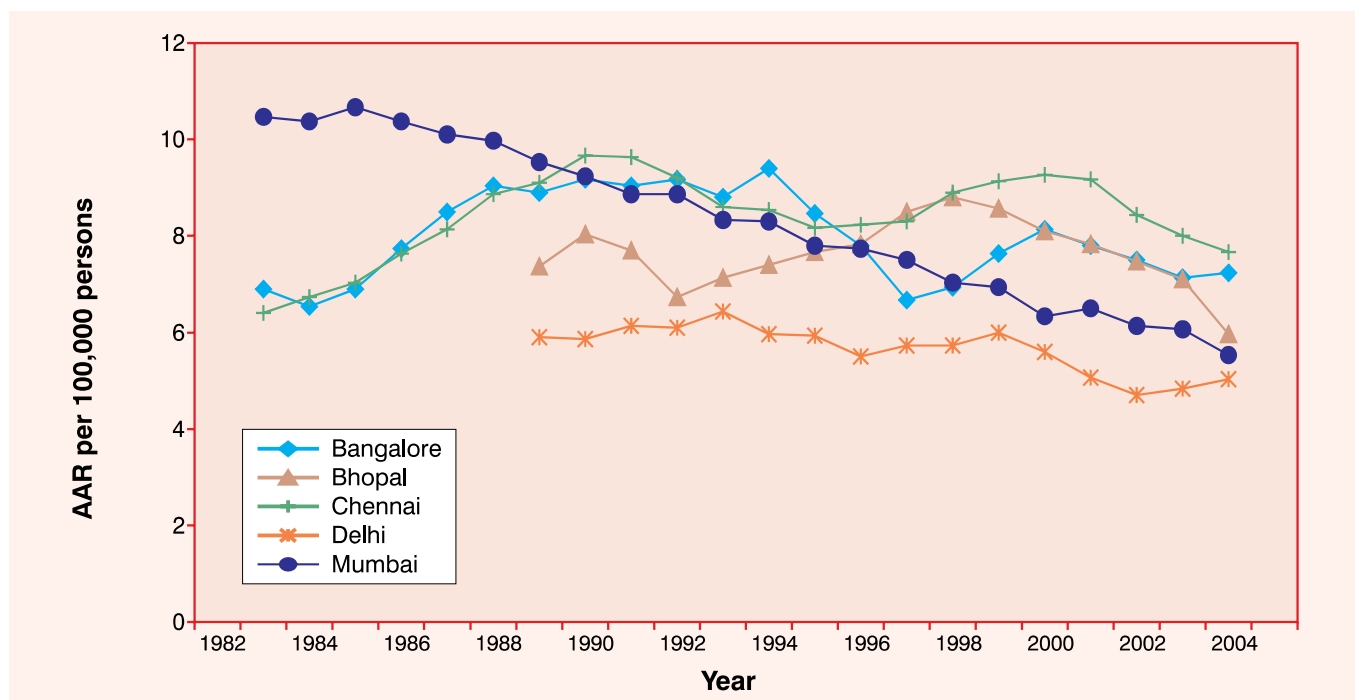


Table 4.7(a): Year wise AARs

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
1982	7.6		6.2		10.9
1983	5.7		5.8		9.3
1984	7.4		7.2		11.2
1985	6.5		7.2		10.6
1986	6.8		6.7		10.2
1987	9.9		9.0		10.3
1988	8.8	5.2	8.7	5.5	9.8
1989	8.4	7.0	8.9	6.0	9.8
1990	9.5	9.9	9.7	6.2	9.0
1991	9.6	7.2	10.4	5.4	8.9
1992	8.0	6.0	8.8	6.8	8.7
1993	9.9	7.0	8.4	6.1	9.0
1994	8.5	8.4	8.6	6.4	7.3
1995	9.8	6.8	8.6	5.4	8.6
1996	7.1	7.8	7.3	6.0	7.5
1997	6.5	8.9	8.8	5.1	7.1
1998	6.4	8.8	8.8	6.1	7.9
1999	7.9	8.7	9.1	6.0	6.1
2000	8.6	8.2	9.5	5.9	6.8
2001	7.9	7.4	9.2	4.9	6.1
2002	6.9	7.9	8.8	4.4	6.6
2003	7.7	7.1	7.3	4.8	5.7
2004	6.8	6.3	7.9	5.3	5.9
2005	7.2	4.5	7.8	5.0	5.0
Slope(b)	-0.014	-0.021	0.060	-0.070	-0.246
p-value	0.718	0.740	0.068	0.011	0.001

Fig. 4.7(b): OESOPHAGUS (ICD-10 : C15) - Males
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

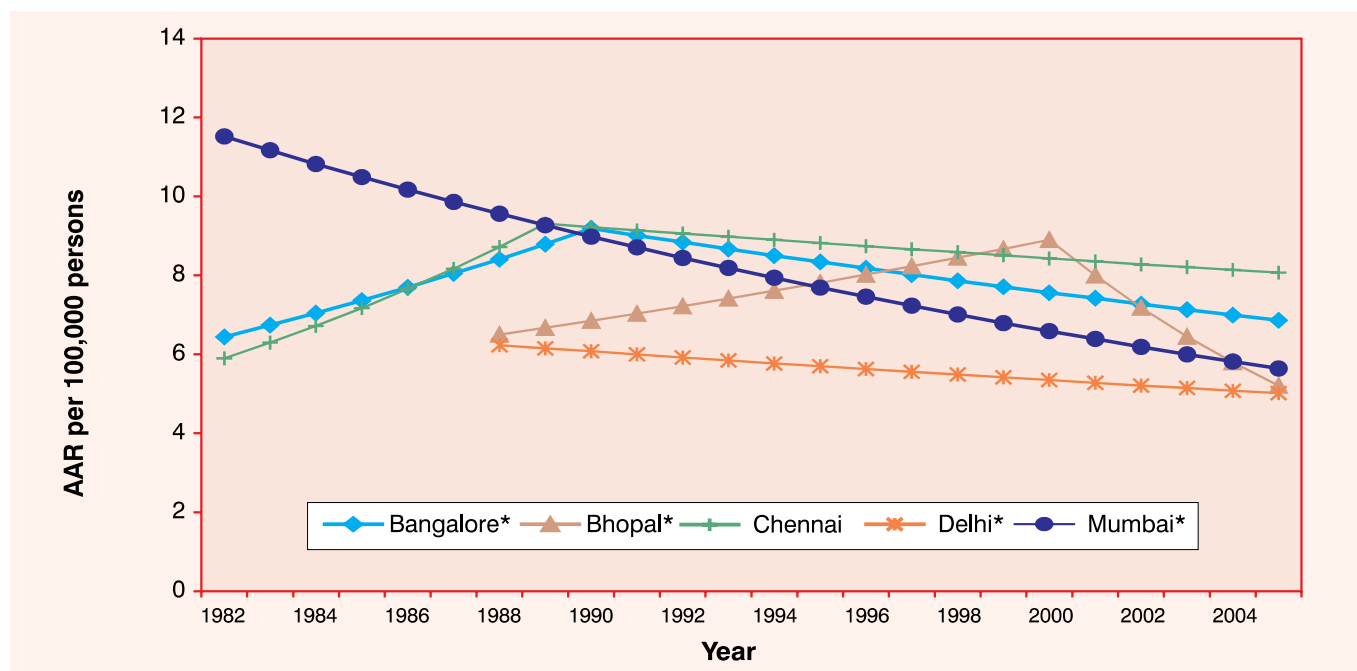


Table 4.7(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
	JP1*	JP1*	JP1*	JP0*	JP0*
1982	6.4		5.9		11.5
1983	6.7		6.3		11.2
1984	7.0		6.7		10.8
1985	7.4		7.2		10.5
1986	7.7		7.7		10.2
1987	8.1		8.2		9.9
1988	8.4	6.5	8.7	6.2	9.6
1989	8.8	6.7	9.3	6.2	9.3
1990	9.2	6.9	9.2	6.1	9.0
1991	9.0	7.0	9.1	6.0	8.7
1992	8.8	7.2	9.1	5.9	8.4
1993	8.7	7.4	9.0	5.9	8.2
1994	8.5	7.6	8.9	5.8	7.9
1995	8.3	7.8	8.8	5.7	7.7
1996	8.2	8.0	8.7	5.6	7.5
1997	8.0	8.2	8.7	5.6	7.2
1998	7.9	8.5	8.6	5.5	7.0
1999	7.7	8.7	8.5	5.4	6.8
2000	7.6	8.9	8.4	5.4	6.6
2001	7.4	8.0	8.4	5.3	6.4
2002	7.3	7.2	8.3	5.2	6.2
2003	7.1	6.5	8.2	5.2	6.0
2004	7.0	5.8	8.1	5.1	5.8
2005	6.9	5.2	8.1	5.0	5.6
APC0	-0.12	-0.34	0.82	-1.27*	-3.06*
APC1	4.54*	2.66	6.73*	—	—
APC2	-1.93*	-10.17*	-0.89	—	—

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC (p<0.05) values.

Fig. 4.8(a): OESOPHAGUS (ICD-10 : C15) - Females
Trends over time (1982-2005) in AAR (Three Year Moving Average)

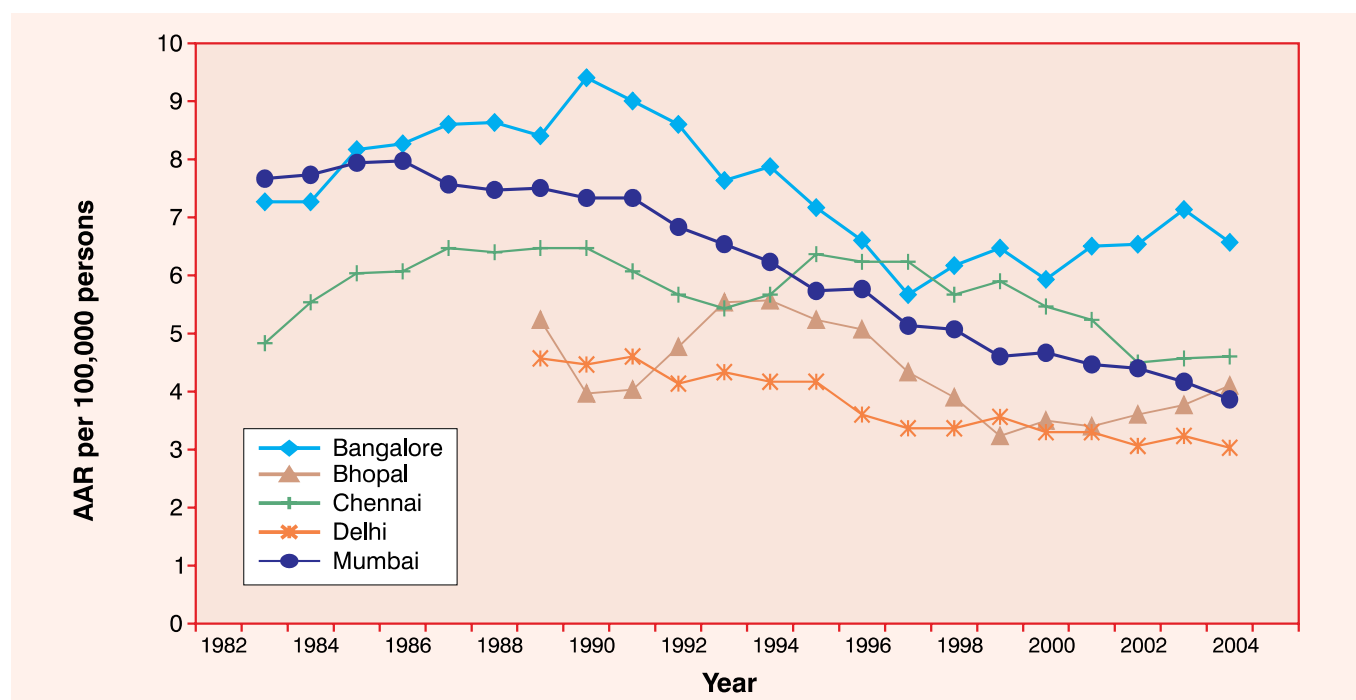


Table 4.8(a): Year wise AARs

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
1982	6.5		3.2		8.1
1983	6.6		5.6		7.0
1984	8.7		5.7		7.9
1985	6.5		5.3		8.3
1986	9.3		7.1		7.6
1987	9.0		5.8		8.0
1988	7.5	7.2	6.5	4.3	7.1
1989	9.4	4.7	6.9	4.3	7.3
1990	8.3	3.8	6.0	5.1	8.1
1991	10.5	3.4	6.5	4.0	6.6
1992	8.2	4.9	5.7	4.7	7.3
1993	7.1	6.0	4.8	3.7	6.6
1994	7.6	5.7	5.8	4.6	5.7
1995	8.9	5.0	6.4	4.2	6.4
1996	5.0	5.0	6.9	3.7	5.1
1997	5.9	5.2	5.4	2.9	5.8
1998	6.1	2.8	6.4	3.5	4.5
1999	6.5	3.7	5.2	3.7	4.9
2000	6.8	3.2	6.1	3.5	4.4
2001	4.5	3.6	5.1	2.7	4.7
2002	8.2	3.4	4.5	3.7	4.3
2003	6.9	3.8	3.9	2.8	4.2
2004	6.3	4.1	5.3	3.2	4.0
2005	6.5	4.4	4.6	3.1	3.4
Slope(b)	-0.084	-0.108	-0.029	-0.101	-0.021
p-value	0.051	0.029	0.315	0.001	0.001

Fig. 4.8(b): OESOPHAGUS (ICD-10 : C15) - Females
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

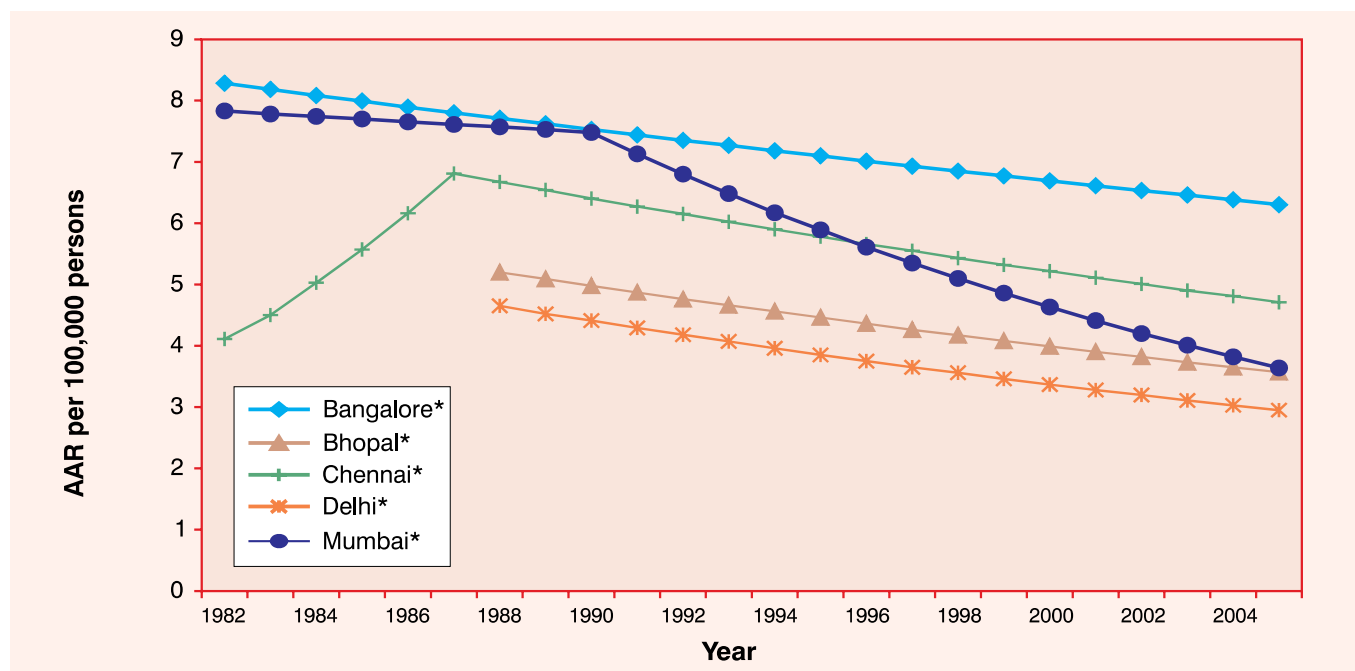


Table 4.8(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP1*	JP0*	JP1*
1982	8.3		4.1		7.8
1983	8.2		4.5		7.8
1984	8.1		5.0		7.7
1985	8.0		5.6		7.7
1986	7.9		6.2		7.7
1987	7.8		6.8		7.6
1988	7.7	5.2	6.7	4.7	7.6
1989	7.6	5.1	6.5	4.5	7.5
1990	7.5	5.0	6.4	4.4	7.5
1991	7.4	4.9	6.3	4.3	7.1
1992	7.4	4.8	6.2	4.2	6.8
1993	7.3	4.7	6.0	4.1	6.5
1994	7.2	4.6	5.9	4.0	6.2
1995	7.1	4.5	5.8	3.9	5.9
1996	7.0	4.4	5.7	3.8	5.6
1997	6.9	4.3	5.6	3.7	5.4
1998	6.9	4.2	5.4	3.6	5.1
1999	6.8	4.1	5.3	3.5	4.9
2000	6.7	4.0	5.2	3.4	4.6
2001	6.6	3.9	5.1	3.3	4.4
2002	6.5	3.8	5.0	3.2	4.2
2003	6.5	3.7	4.9	3.1	4.0
2004	6.4	3.7	4.8	3.0	3.8
2005	6.3	3.6	4.7	3.0	3.6
APC0	-1.18*	-2.19*	-0.44	-2.64*	-3.52*
APC1	-	-	10.63*	-	-0.56
APC2	-	-	-2.03*	-	-4.69*

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC (p<0.05) values.

Fig. 4.9(a): STOMACH (ICD-10 : C16) - Males
Trends over time (1982-2005) in AAR (Three Year Moving Average)

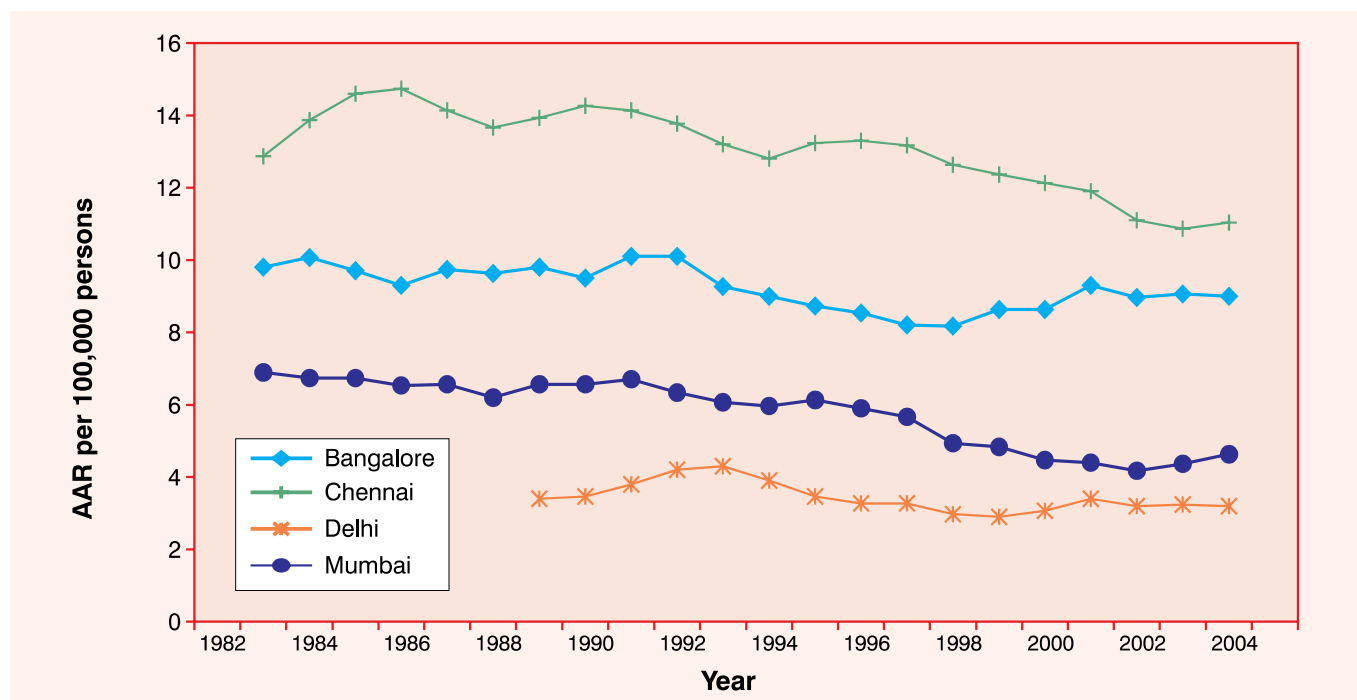


Table 4.9(a): Year wise AARs

Year	Bangalore	Chennai	Delhi	Mumbai
1982	10.0	11.8		7.1
1983	9.9	13.7		7.0
1984	9.5	13.1		6.6
1985	10.8	14.8		6.6
1986	8.8	15.9		7.0
1987	8.3	13.5		6.0
1988	12.1	13.0	3.4	6.7
1989	8.5	14.5	3.2	5.9
1990	8.8	14.3	3.6	7.1
1991	11.2	14.0	3.6	6.7
1992	10.3	14.1	4.2	6.3
1993	8.8	13.2	4.8	6.0
1994	8.7	12.3	3.9	5.9
1995	9.5	12.9	3.0	6.0
1996	8.0	14.5	3.5	6.5
1997	8.1	12.5	3.3	5.2
1998	8.5	12.5	3.0	5.3
1999	7.9	12.9	2.6	4.3
2000	9.5	11.7	3.1	4.9
2001	8.5	11.8	3.5	4.2
2002	9.9	12.2	3.6	4.1
2003	8.5	9.3	2.5	4.2
2004	8.8	11.1	3.6	4.8
2005	9.7	12.7	3.5	4.9
Slope(b)	-0.054	-0.117	-0.034	-0.125
p-value	0.089	0.002	0.178	0.001

Fig. 4.9(b): STOMACH (ICD-10 : C16) - Males
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

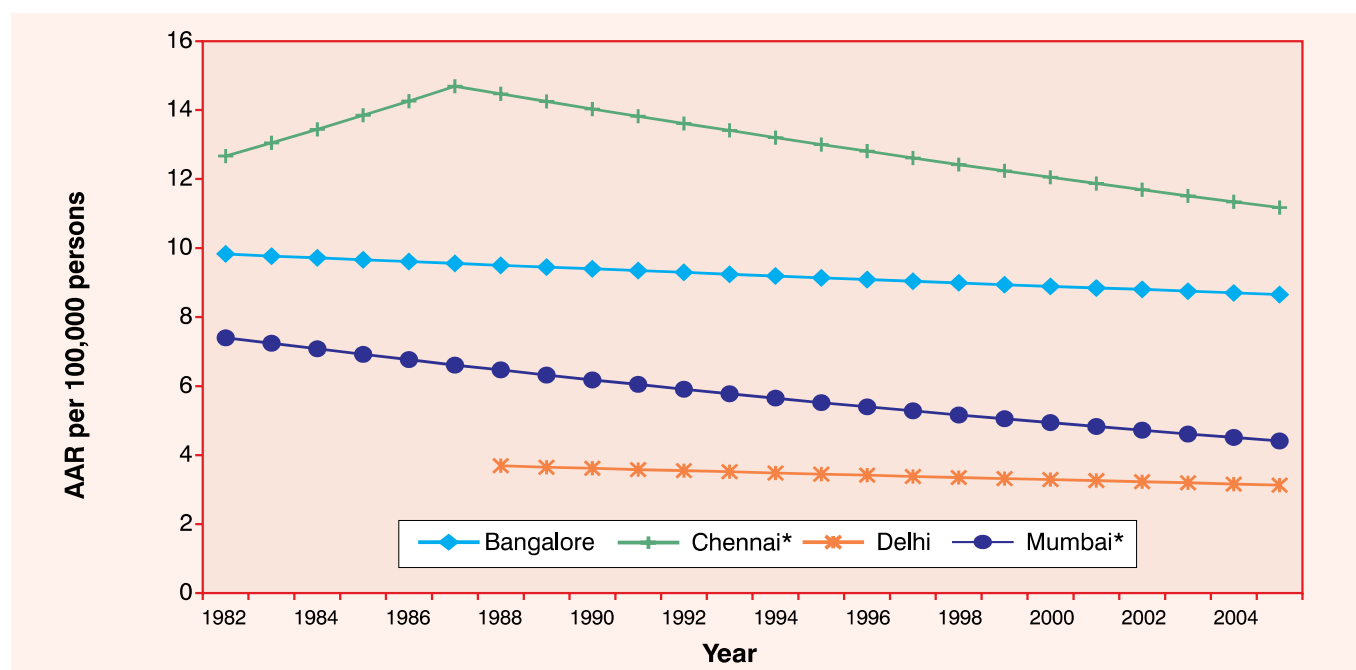


Table 4.9(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Chennai	Delhi	Mumbai
	JP0*	JP1*	JP0*	JP0*
1982	9.8	12.7		7.4
1983	9.8	13.1		7.2
1984	9.7	13.4		7.1
1985	9.7	13.9		6.9
1986	9.6	14.3		6.8
1987	9.6	14.7		6.6
1988	9.5	14.5	3.7	6.5
1989	9.5	14.3	3.7	6.3
1990	9.4	14.0	3.6	6.2
1991	9.4	13.8	3.6	6.1
1992	9.3	13.6	3.6	5.9
1993	9.2	13.4	3.5	5.8
1994	9.2	13.2	3.5	5.7
1995	9.1	13.0	3.5	5.5
1996	9.1	12.8	3.4	5.4
1997	9.0	12.6	3.4	5.3
1998	9.0	12.4	3.4	5.2
1999	8.9	12.2	3.3	5.1
2000	8.9	12.1	3.3	4.9
2001	8.8	11.9	3.3	4.8
2002	8.8	11.7	3.2	4.7
2003	8.8	11.5	3.2	4.6
2004	8.7	11.3	3.2	4.5
2005	8.7	11.2	3.1	4.4
APC0	-0.55	-0.93*	-0.95	-2.23*
APC1	-	3.00	-	-
APC2	-	-1.51*	-	-

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC ($p < 0.05$) values.

Fig. 4.10(a): COLON (ICD-10 : C18) - Males
Trends over time (1982-2005) in AAR (Three Year Moving Average)

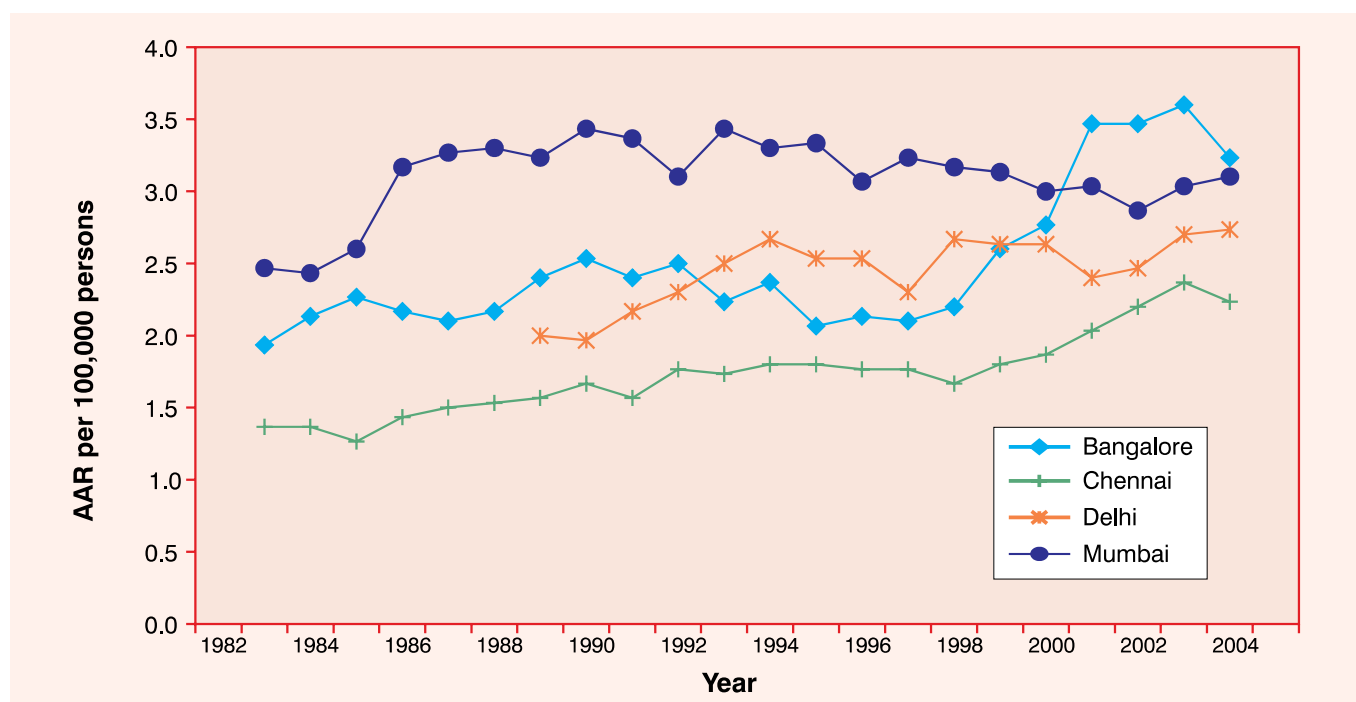


Table 4.10(a): Year wise AARs

Year	Bangalore	Chennai	Delhi	Mumbai
1982	1.8	1.4		2.4
1983	1.8	2.0		2.7
1984	2.2	0.7		2.3
1985	2.4	1.4		2.3
1986	2.2	1.7		3.2
1987	1.9	1.2		4.0
1988	2.2	1.6	2.0	2.6
1989	2.4	1.8	1.9	3.3
1990	2.6	1.3	2.1	3.8
1991	2.6	1.9	1.9	3.2
1992	2.0	1.5	2.5	3.1
1993	2.9	1.9	2.5	3.0
1994	1.8	1.8	2.5	4.2
1995	2.4	1.7	3.0	2.7
1996	2.0	1.9	2.1	3.1
1997	2.0	1.7	2.5	3.4
1998	2.3	1.7	2.3	3.2
1999	2.3	1.6	3.2	2.9
2000	3.2	2.1	2.4	3.3
2001	2.8	1.9	2.3	2.8
2002	4.4	2.1	2.5	3.0
2003	3.2	2.6	2.6	2.8
2004	3.2	2.4	3.0	3.3
2005	3.3	1.7	2.6	3.2
Slope(b)	0.060	0.035	0.040	0.016
p-value	0.001	0.001	0.013	0.274

Fig. 4.10(b): COLON (ICD-10 : C18) - Males
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

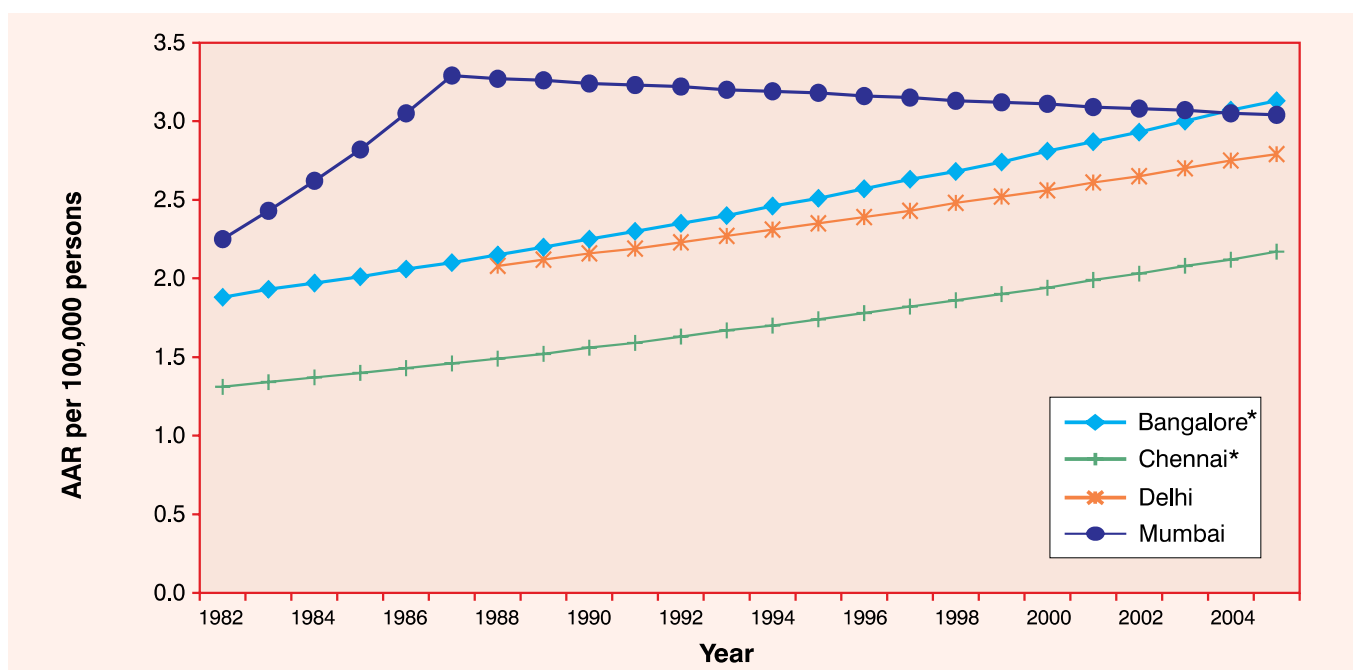


Table 4.10(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP0*	JP1*
1982	1.9	1.3		2.3
1983	1.9	1.3		2.4
1984	2.0	1.4		2.6
1985	2.0	1.4		2.8
1986	2.1	1.4		3.1
1987	2.1	1.5		3.3
1988	2.2	1.5	2.1	3.3
1989	2.2	1.5	2.1	3.3
1990	2.3	1.6	2.2	3.2
1991	2.3	1.6	2.2	3.2
1992	2.4	1.6	2.2	3.2
1993	2.4	1.7	2.3	3.2
1994	2.5	1.7	2.3	3.2
1995	2.5	1.7	2.4	3.2
1996	2.6	1.8	2.4	3.2
1997	2.6	1.8	2.4	3.2
1998	2.7	1.9	2.5	3.1
1999	2.7	1.9	2.5	3.1
2000	2.8	1.9	2.6	3.1
2001	2.9	2.0	2.6	3.1
2002	2.9	2.0	2.7	3.1
2003	3.0	2.1	2.7	3.1
2004	3.1	2.1	2.8	3.1
2005	3.1	2.2	2.8	3.0
APC0	2.24*	2.23*	1.74*	0.63
APC1	-	-	-	7.88
APC2	-	-	-	-0.43

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC (p<0.05) values.

Fig. 4.11(a): RECTUM (ICD-10 : C19-C20) - Males
Trends over time (1982-2005) in AAR (Three Year Moving Average)

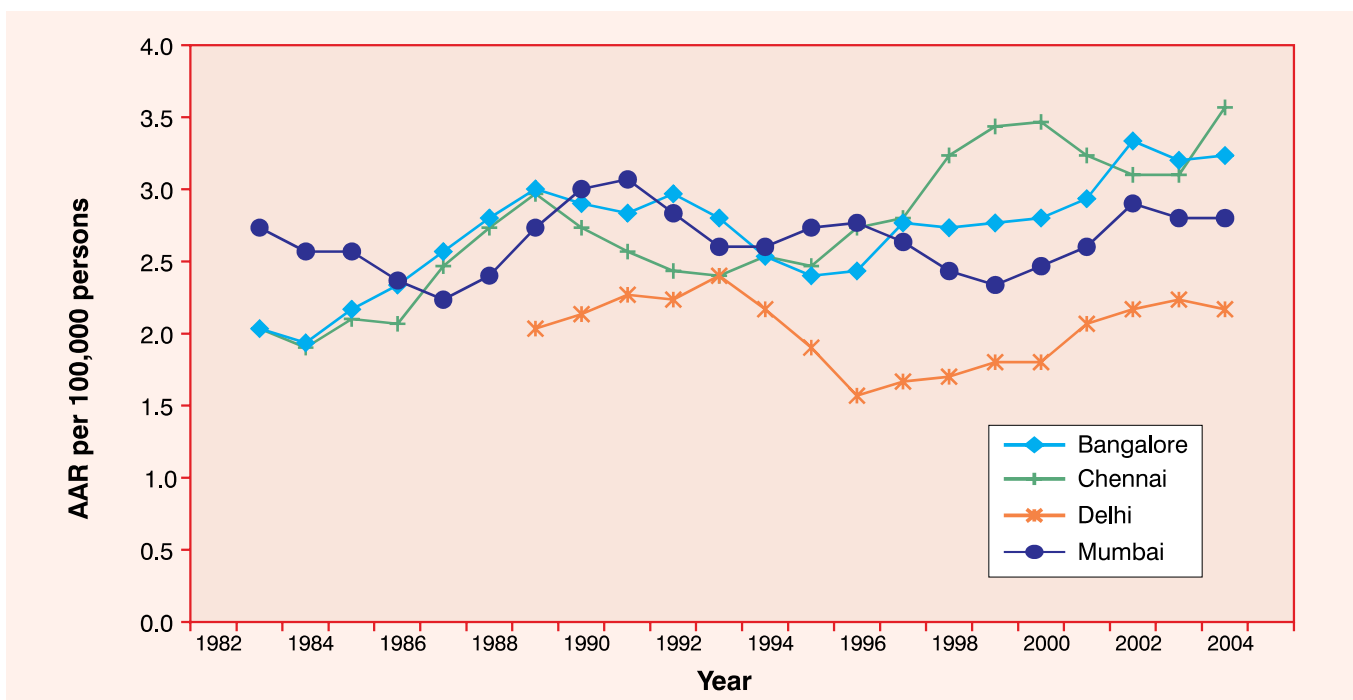


Table 4.11(a): Year wise AARs

Year	Bangalore	Chennai	Delhi	Mumbai
1982	2.5	2.2		3.1
1983	1.8	1.8		2.2
1984	1.8	2.1		2.9
1985	2.2	1.8		2.6
1986	2.5	2.4		2.2
1987	2.3	2.0		2.3
1988	2.9	3.0	1.8	2.2
1989	3.2	3.2	1.9	2.7
1990	2.9	2.7	2.4	3.3
1991	2.6	2.3	2.1	3.0
1992	3.0	2.7	2.3	2.9
1993	3.3	2.3	2.3	2.6
1994	2.1	2.2	2.6	2.3
1995	2.2	3.1	1.6	2.9
1996	2.9	2.1	1.5	3.0
1997	2.2	3.0	1.6	2.4
1998	3.2	3.3	1.9	2.5
1999	2.8	3.4	1.6	2.4
2000	2.3	3.6	1.9	2.1
2001	3.3	3.4	1.9	2.9
2002	3.2	2.7	2.4	2.8
2003	3.5	3.2	2.2	3.0
2004	2.9	3.4	2.1	2.6
2005	3.3	4.1	2.2	2.8
Slope(b)	0.040	0.069	-0.001	0.004
p-value	0.004	0.001	0.973	0.718

Fig. 4.11(b): RECTUM (ICD-10 : C19-C20) - Males
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

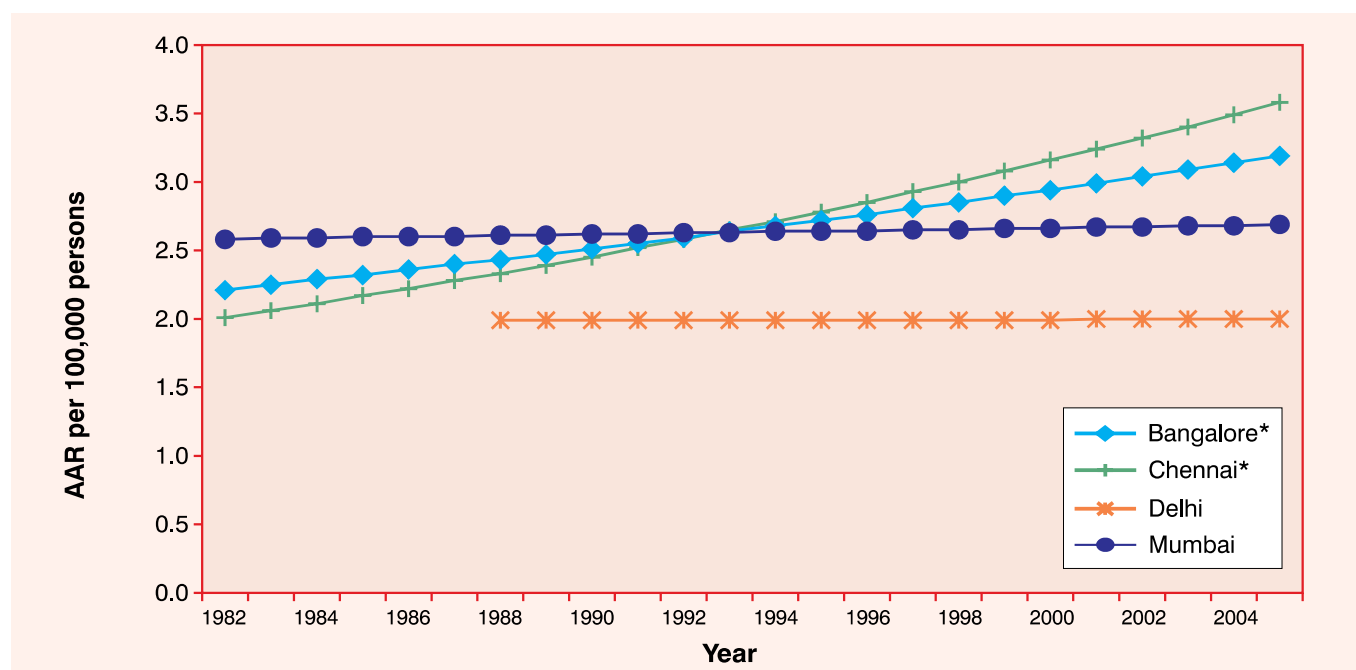


Table 4.11(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP0*	JP0*
1982	2.2	2.0		2.6
1983	2.3	2.1		2.6
1984	2.3	2.1		2.6
1985	2.3	2.2		2.6
1986	2.4	2.2		2.6
1987	2.4	2.3		2.6
1988	2.4	2.3	2.0	2.6
1989	2.5	2.4	2.0	2.6
1990	2.5	2.5	2.0	2.6
1991	2.6	2.5	2.0	2.6
1992	2.6	2.6	2.0	2.6
1993	2.6	2.7	2.0	2.6
1994	2.7	2.7	2.0	2.6
1995	2.7	2.8	2.0	2.6
1996	2.8	2.9	2.0	2.6
1997	2.8	2.9	2.0	2.7
1998	2.9	3.0	2.0	2.7
1999	2.9	3.1	2.0	2.7
2000	2.9	3.2	2.0	2.7
2001	3.0	3.2	2.0	2.7
2002	3.0	3.3	2.0	2.7
2003	3.1	3.4	2.0	2.7
2004	3.1	3.5	2.0	2.7
2005	3.2	3.6	2.0	2.7
APC0	1.60*	2.54*	0.04	0.00
APC1	-	-	-	0.17
APC2	-	-	-	-

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC (p<0.05) values.

Fig. 4.12(a): LIVER (ICD-10 : C22) - Males
Trends over time (1982-2005) in AAR (Three Year Moving Average)

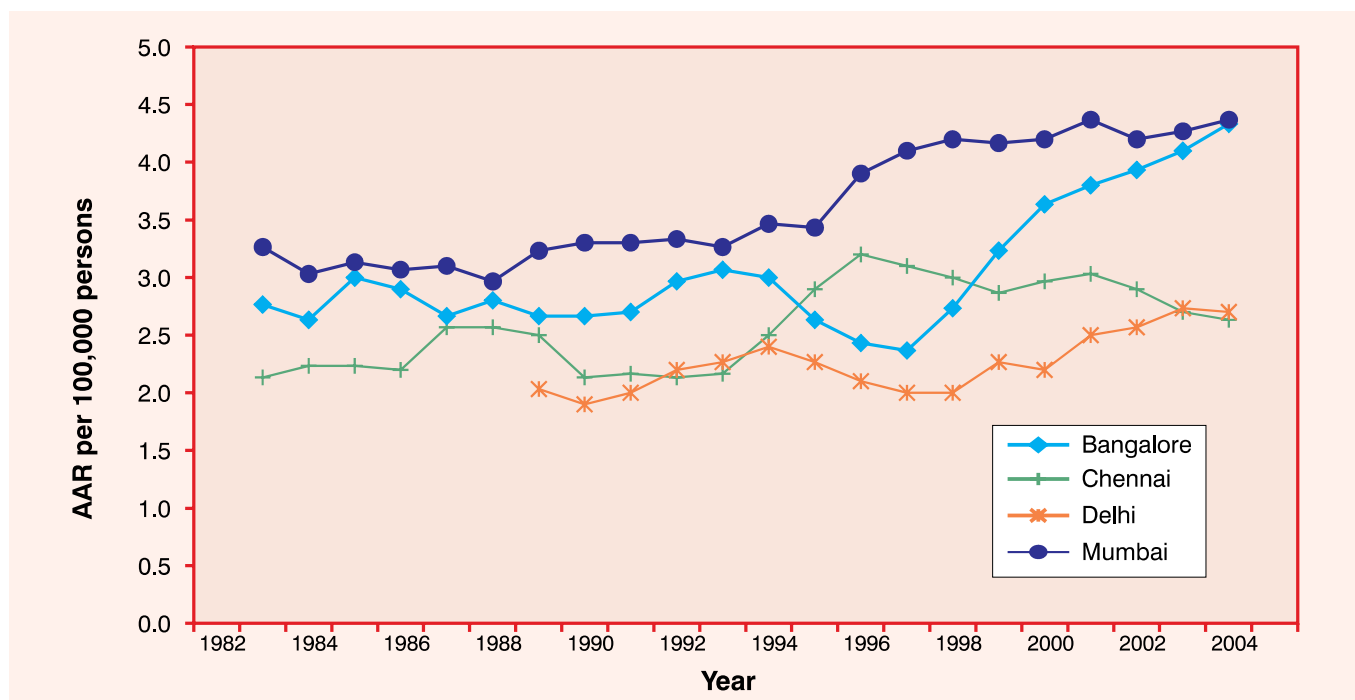


Table 4.12(a): Year wise AARs

Year	Bangalore	Chennai	Delhi	Mumbai
1982	3.6	1.8		3.7
1983	1.4	1.4		3.1
1984	3.3	2.4		3.0
1985	3.2	2.3		3.0
1986	2.5	1.9		3.4
1987	3.0	2.3		2.8
1988	2.5	3.4	2.3	3.1
1989	2.9	1.6	2.0	3.0
1990	2.6	2.1	1.8	3.6
1991	2.5	2.3	1.9	3.3
1992	3.0	2.0	2.3	3.0
1993	3.4	1.6	2.4	3.7
1994	2.8	2.4	2.1	3.1
1995	2.8	3.0	2.7	3.6
1996	2.3	3.2	2.0	3.6
1997	2.2	3.3	1.6	4.5
1998	2.6	2.8	2.4	4.2
1999	3.4	2.9	2.0	3.9
2000	3.7	2.9	2.4	4.4
2001	3.8	3.1	2.2	4.3
2002	3.9	3.0	2.9	4.4
2003	4.1	2.5	2.6	3.9
2004	4.3	2.5	2.7	4.5
2005	4.6	2.9	2.8	4.7
Slope(b)	0.061	0.048	0.039	0.068
p-value	0.003	0.002	0.011	0.001

Fig. 4.12(b): LIVER (ICD-10 : C22) - Males
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

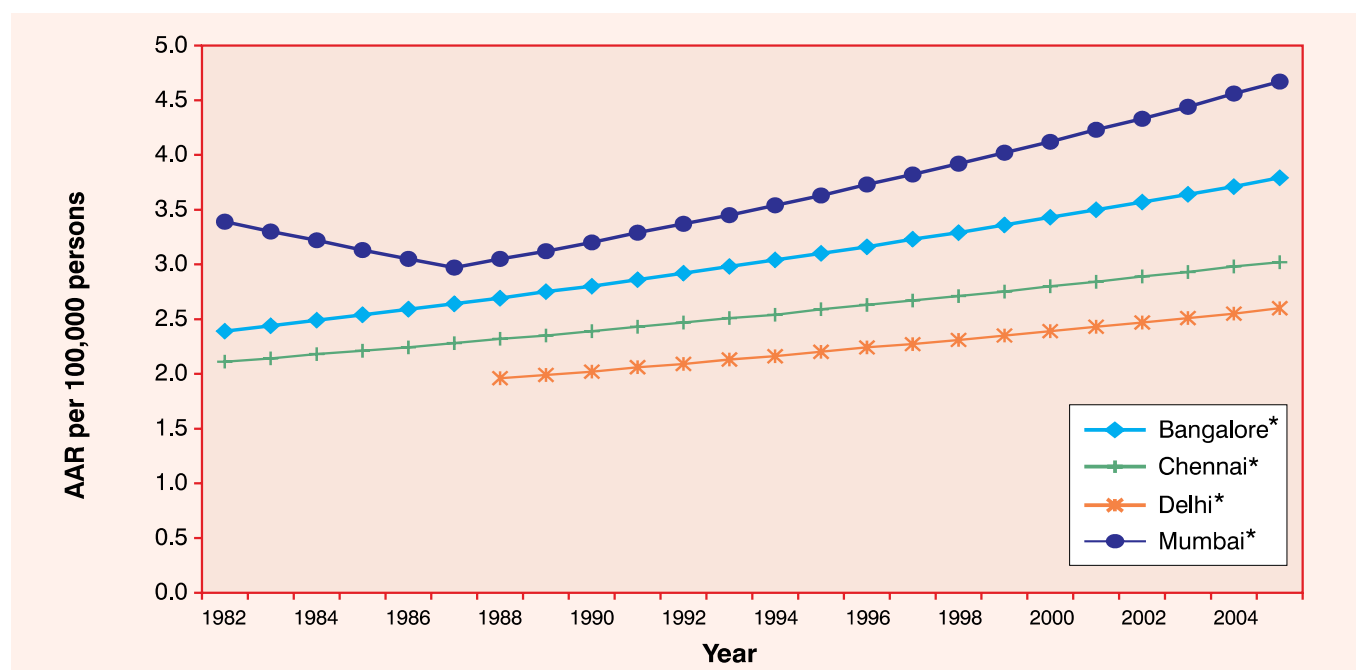


Table 4.12(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP0*	JP1*
1982	2.4	2.1		3.4
1983	2.4	2.1		3.3
1984	2.5	2.2		3.2
1985	2.5	2.2		3.1
1986	2.6	2.2		3.1
1987	2.6	2.3		3.0
1988	2.7	2.3	2.0	3.1
1989	2.8	2.4	2.0	3.1
1990	2.8	2.4	2.0	3.2
1991	2.9	2.4	2.1	3.3
1992	2.9	2.5	2.1	3.4
1993	3.0	2.5	2.1	3.5
1994	3.0	2.5	2.2	3.5
1995	3.1	2.6	2.2	3.6
1996	3.2	2.6	2.2	3.7
1997	3.2	2.7	2.3	3.8
1998	3.3	2.7	2.3	3.9
1999	3.4	2.8	2.4	4.0
2000	3.4	2.8	2.4	4.1
2001	3.5	2.8	2.4	4.2
2002	3.6	2.9	2.5	4.3
2003	3.6	2.9	2.5	4.4
2004	3.7	3.0	2.6	4.6
2005	3.8	3.0	2.6	4.7
APC0	2.02*	1.58*	1.67*	1.85*
APC1	—	—	—	-2.61
APC2	—	—	—	2.55*

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC ($p < 0.05$) values.

Fig. 4.13(a): GALLBLADDER (ICD-10 : C23-C24) - Females
Trends over time (1982-2005) in AAR (Three Year Moving Average)

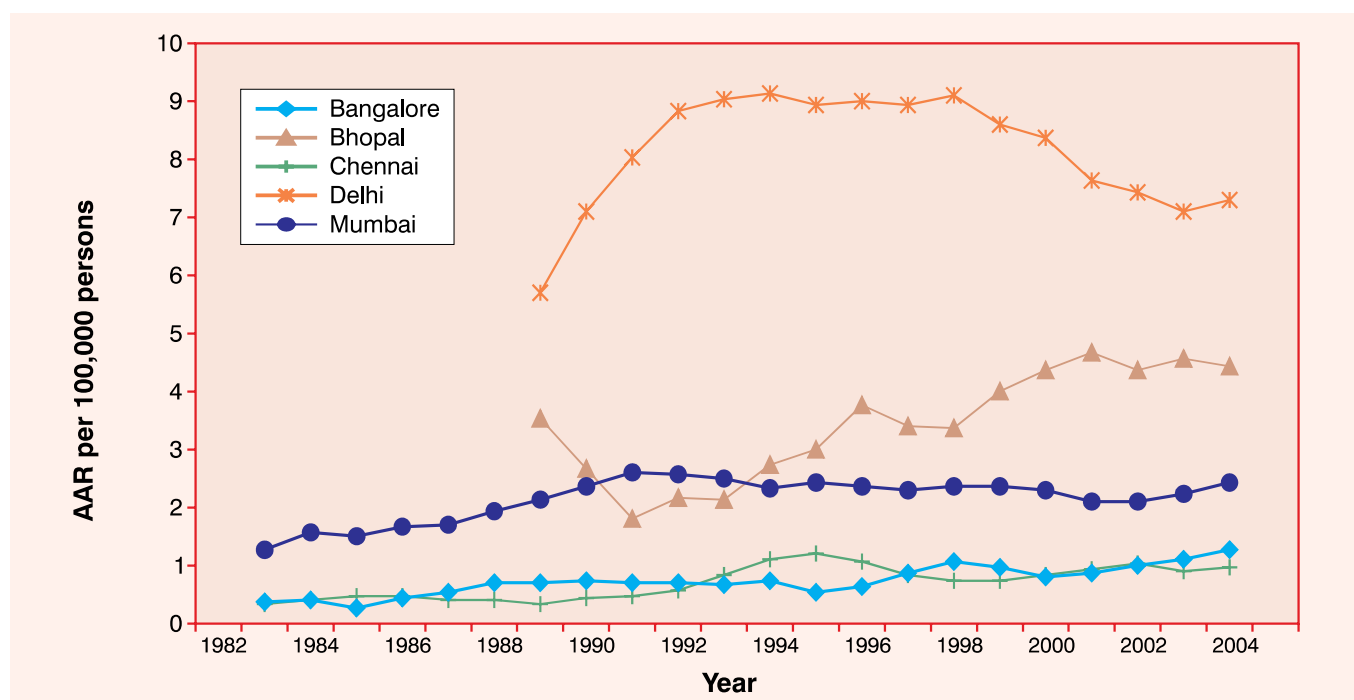


Table 4.13(a): Year wise AARs

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
1982	0.0		0.2		0.9
1983	0.6		0.3		1.6
1984	0.3		0.5		1.3
1985	0.3		0.4		1.8
1986	0.2		0.5		1.4
1987	0.8		0.5		1.8
1988	0.6	4.1	0.2	4.2	1.9
1989	0.7	4.8	0.5	6.2	2.1
1990	0.8	1.7	0.3	6.7	2.4
1991	0.7	1.5	0.5	8.4	2.6
1992	0.6	2.2	0.6	9.0	2.8
1993	0.8	2.8	0.6	9.1	2.3
1994	0.6	1.4	1.3	9.0	2.4
1995	0.8	4.0	1.4	9.3	2.3
1996	0.2	3.6	0.9	8.5	2.6
1997	0.9	3.7	0.9	9.2	2.2
1998	1.5	2.9	0.7	9.1	2.1
1999	0.8	3.5	0.6	9.0	2.8
2000	0.6	5.6	0.9	7.7	2.2
2001	1.0	4.0	1.0	8.4	1.9
2002	1.0	4.4	0.9	6.8	2.2
2003	1.0	4.7	1.2	7.1	2.2
2004	1.3	4.6	0.6	7.4	2.3
2005	1.5	4.0	1.1	7.4	2.8
Slope(b)	0.040	0.114	0.034	0.045	0.044
p-value	0.001	0.033	0.001	0.477	0.001

Fig. 4.13(b): GALLBLADDER (ICD-10 : C23-C24) - Females
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

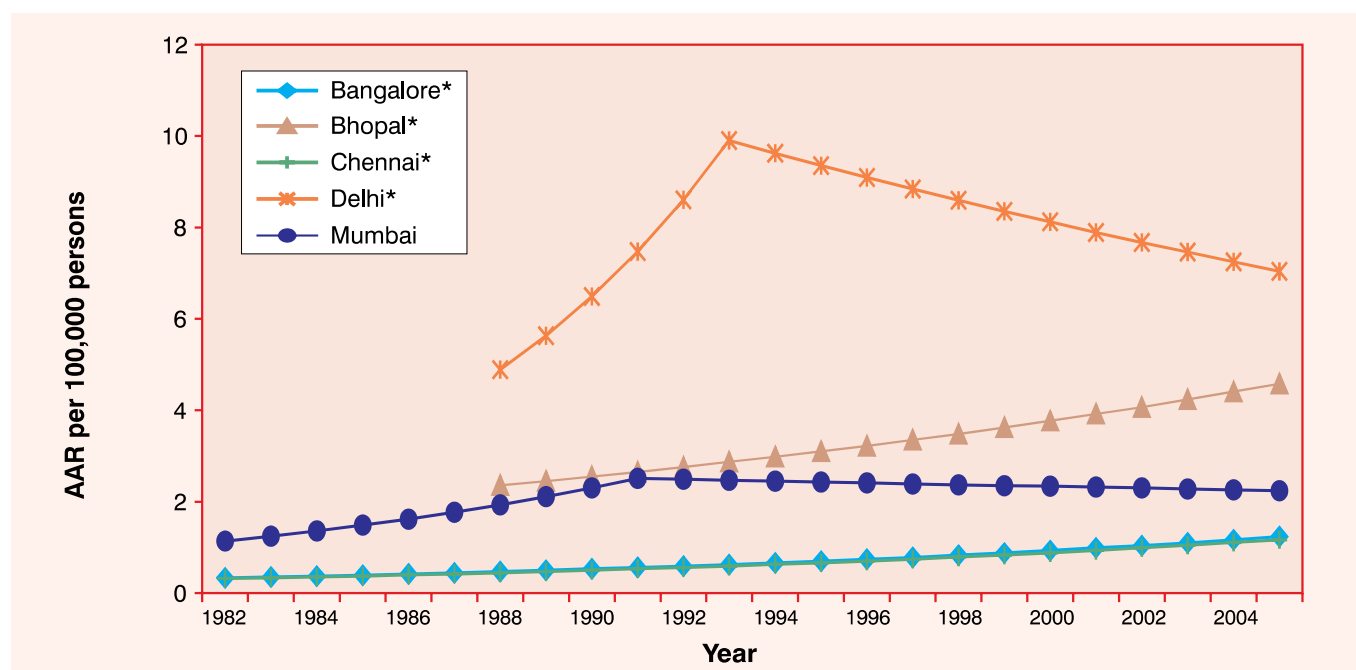


Table 4.13(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore [§]	Bhopal	Chennai [§]	Delhi	Mumbai
	JP0*	JP0*	JP0*	JP1*	JP1*
1982	0.3		0.3		1.1
1983	0.4		0.3		1.3
1984	0.4		0.4		1.4
1985	0.4		0.4		1.5
1986	0.4		0.4		1.6
1987	0.4		0.4		1.8
1988	0.5	2.4	0.4	4.9	1.9
1989	0.5	2.5	0.5	5.6	2.1
1990	0.5	2.6	0.5	6.5	2.3
1991	0.6	2.7	0.5	7.5	2.5
1992	0.6	2.8	0.6	8.6	2.5
1993	0.6	2.9	0.6	9.9	2.5
1994	0.7	3.0	0.6	9.6	2.5
1995	0.7	3.1	0.7	9.4	2.4
1996	0.7	3.2	0.7	9.1	2.4
1997	0.8	3.4	0.7	8.8	2.4
1998	0.8	3.5	0.8	8.6	2.4
1999	0.9	3.6	0.8	8.4	2.4
2000	0.9	3.8	0.9	8.1	2.3
2001	1.0	3.9	0.9	7.9	2.3
2002	1.0	4.1	1.0	7.7	2.3
2003	1.1	4.2	1.1	7.5	2.3
2004	1.2	4.4	1.1	7.3	2.3
2005	1.2	4.6	1.2	7.0	2.2
APC0	5.88*	3.99*	5.87*	0.93	2.53*
APC1	-	-	-	15.13*	9.14*
APC2	-	-	-	-2.79*	-0.8

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC ($p < 0.05$) values.

[§] Kindly note the trend values in the 2 PBCRs are identical and therefore only one line is visible in the graph.

Fig. 4.14(a): LARYNX (ICD-10 : C32) - Males
Trends over time (1982-2005) in AAR (Three Year Moving Average)

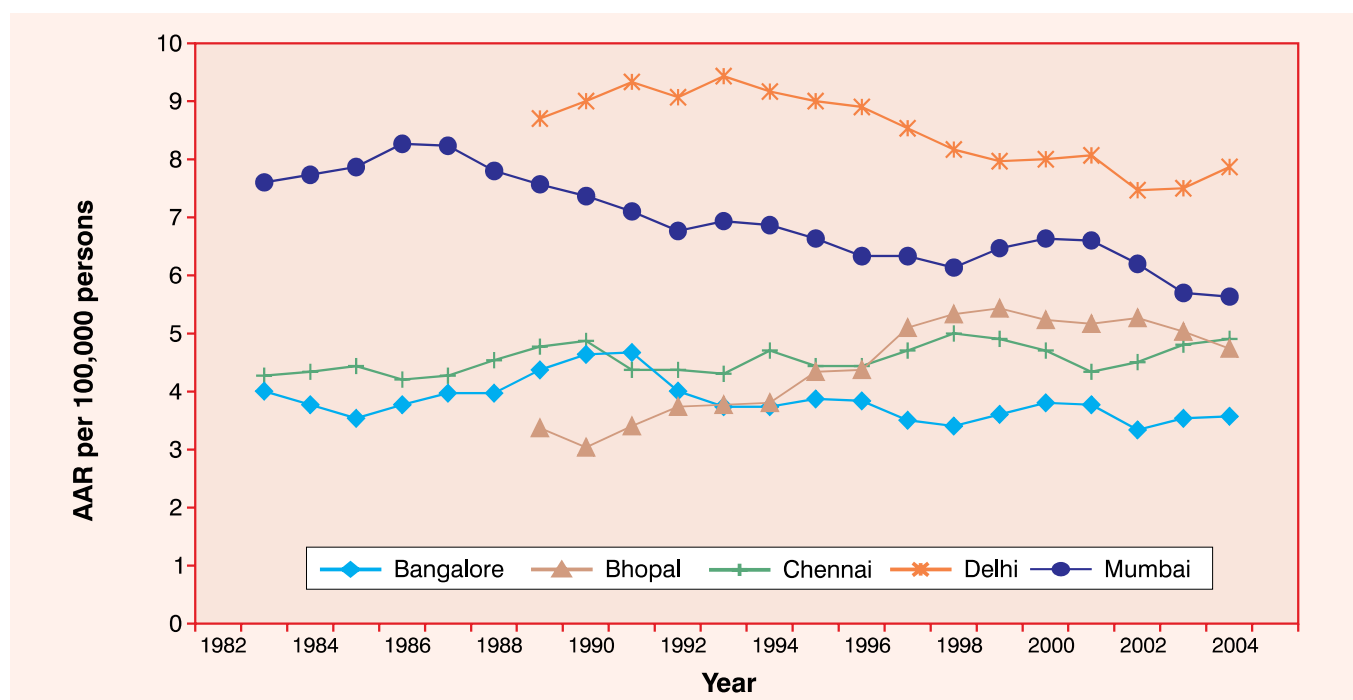


Table 4.14(a): Year wise AARs

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
1982	4.0		4.2		6.7
1983	4.4		3.7		8.5
1984	3.6		4.9		7.6
1985	3.3		4.4		7.1
1986	3.7		4.0		8.9
1987	4.3		4.2		8.8
1988	3.9	5.1	4.6	7.4	7.0
1989	3.7	2.6	4.8	8.3	7.6
1990	5.5	2.4	4.9	10.4	8.1
1991	4.7	4.1	4.9	8.3	6.4
1992	3.8	3.7	3.3	9.3	6.8
1993	3.5	3.4	4.9	9.6	7.1
1994	3.9	4.2	4.7	9.4	6.9
1995	3.8	3.8	4.5	8.5	6.6
1996	3.9	5.0	4.1	9.1	6.4
1997	3.8	4.3	4.7	9.1	6.0
1998	2.8	6.0	5.3	7.4	6.6
1999	3.6	5.7	5.0	8.0	5.8
2000	4.4	4.6	4.4	8.5	7.0
2001	3.4	5.4	4.7	7.5	7.1
2002	3.5	5.5	3.9	8.2	5.7
2003	3.1	4.9	4.9	6.7	5.8
2004	4.0	4.7	5.6	7.6	5.6
2005	3.6	4.6	4.2	9.3	5.5
Slope(b)	-0.024	0.111	0.024	-0.062	-0.102
p-value	0.140	0.010	0.118	0.160	0.001

Fig. 4.14(b): LARYNX (ICD-10 : C32) - Males
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

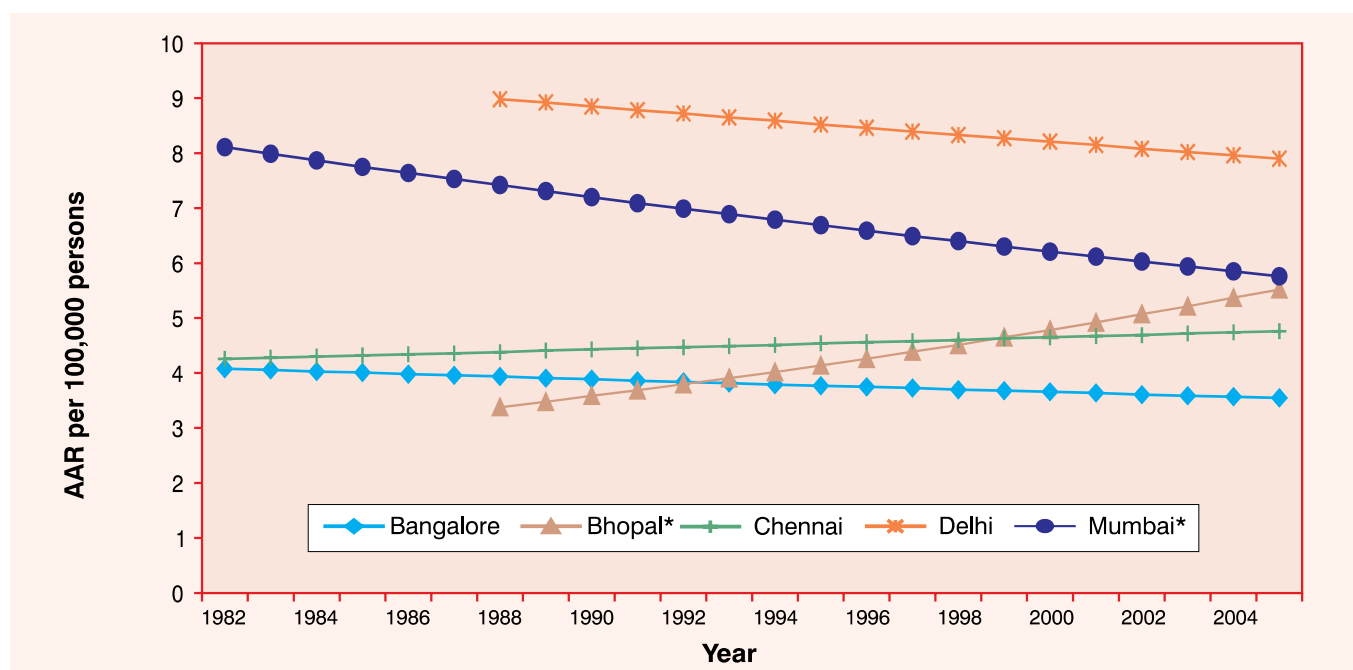


Table 4.14(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP0*	JP0*	JP0*
1982	4.1		4.3		8.1
1983	4.1		4.3		8.0
1984	4.0		4.3		7.9
1985	4.0		4.3		7.8
1986	4.0		4.3		7.6
1987	4.0		4.4		7.5
1988	3.9	3.4	4.4	9.0	7.4
1989	3.9	3.5	4.4	8.9	7.3
1990	3.9	3.6	4.4	8.9	7.2
1991	3.9	3.7	4.5	8.8	7.1
1992	3.8	3.8	4.5	8.7	7.0
1993	3.8	3.9	4.5	8.7	6.9
1994	3.8	4.0	4.5	8.6	6.8
1995	3.8	4.1	4.5	8.5	6.7
1996	3.8	4.3	4.6	8.5	6.6
1997	3.7	4.4	4.6	8.4	6.5
1998	3.7	4.5	4.6	8.3	6.4
1999	3.7	4.7	4.6	8.3	6.3
2000	3.7	4.8	4.7	8.2	6.2
2001	3.6	4.9	4.7	8.2	6.1
2002	3.6	5.1	4.7	8.1	6.0
2003	3.6	5.2	4.7	8.0	5.9
2004	3.6	5.4	4.7	8.0	5.9
2005	3.6	5.5	4.8	7.9	5.8
APC0	-0.61	2.92*	0.49	-0.75	-1.47*
APC1	-	-	-	-	-
APC2	-	-	-	-	-

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC ($p < 0.05$) values.

Fig. 4.15(a): LUNG (ICD-10 : C33-C34) - Males
Trends over time (1982-2005) in AAR (Three Year Moving Average)

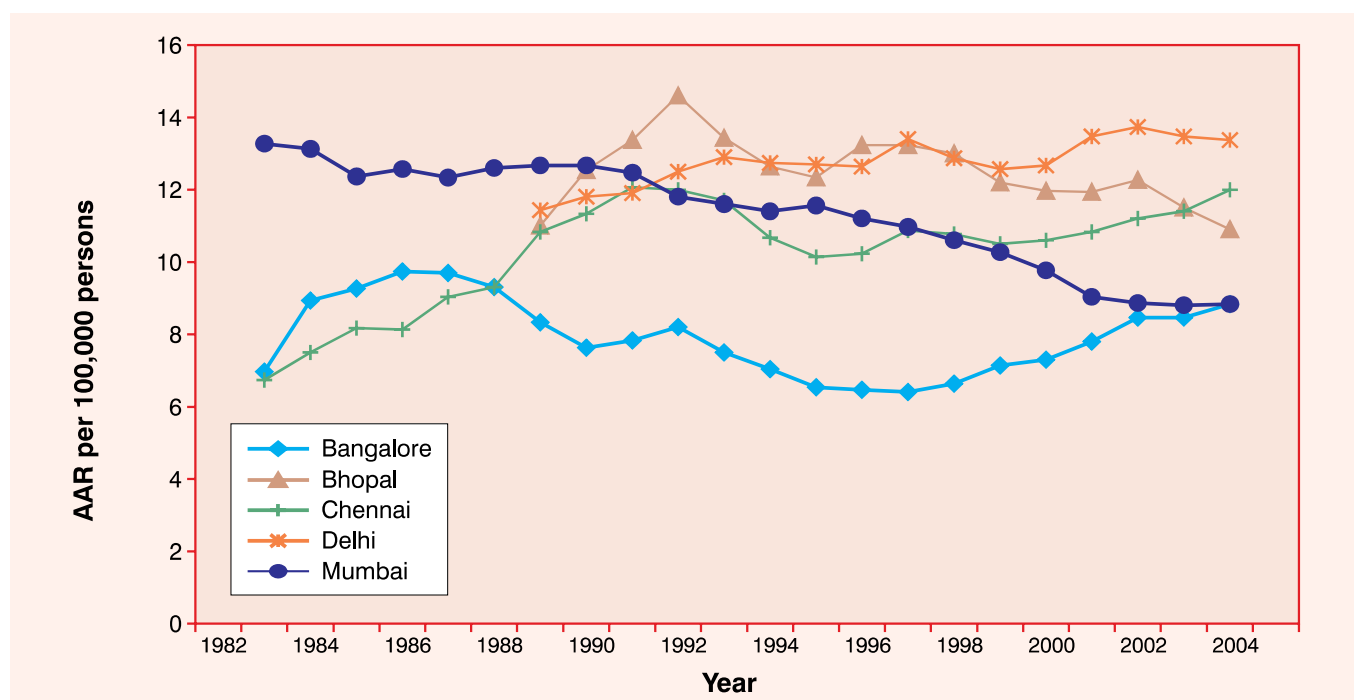


Table 4.15(a): Year wise AARs

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
1982	4.7		5.0		13.3
1983	7.9		7.1		14.0
1984	8.3		8.1		12.5
1985	10.6		7.3		12.9
1986	8.9		9.1		11.7
1987	9.7		8.0		13.1
1988	10.5		10.0		12.2
1989	7.7		9.9		12.5
1990	6.8		12.6		13.3
1991	8.4		11.5		12.2
1992	8.3		12.1		11.9
1993	7.9		12.4		11.3
1994	6.3		10.6		11.6
1995	6.9		9.0		11.3
1996	6.4		10.8		11.8
1997	6.1		10.9		10.5
1998	6.7		10.9		10.6
1999	7.1		10.5		10.7
2000	7.6		10.1		9.5
2001	7.2		11.2		9.1
2002	8.6		11.2		8.5
2003	9.6		11.2		9.0
2004	7.2		11.8		8.9
2005	9.7		13.0		8.6
Slope(b)	-0.013	-0.075	0.198	0.139	-0.217
p-value	0.776	0.306	0.001	0.004	0.001

Fig. 4.15(b): LUNG (ICD-10 : C33-C34) - Males
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

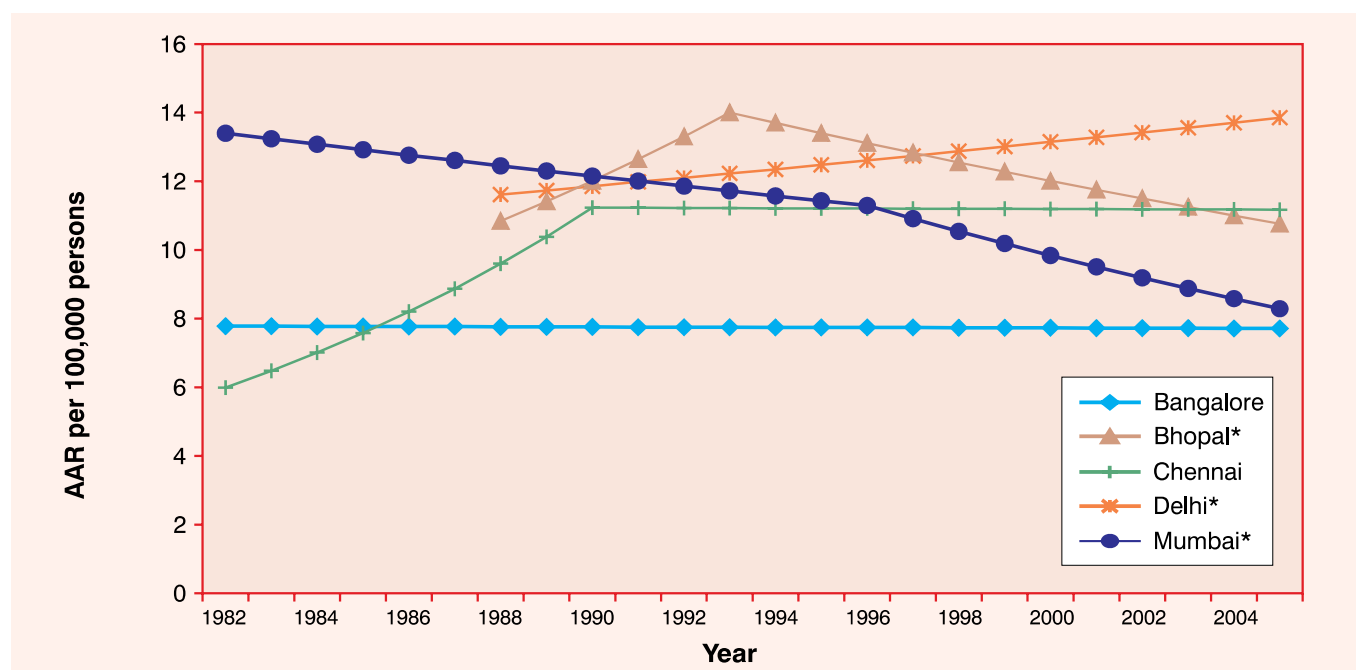


Table 4.15(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
	JP0*	JP1*	JP1*	JP0*	JP1*
1982	7.8		6.0		13.4
1983	7.8		6.5		13.2
1984	7.8		7.0		13.1
1985	7.8		7.6		12.9
1986	7.8		8.2		12.8
1987	7.8		8.9		12.6
1988	7.8	10.8	9.6	11.6	12.5
1989	7.8	11.4	10.4	11.7	12.3
1990	7.8	12.0	11.2	11.9	12.2
1991	7.8	12.6	11.2	12.0	12.0
1992	7.8	13.3	11.2	12.1	11.9
1993	7.8	14.0	11.2	12.2	11.7
1994	7.7	13.7	11.2	12.4	11.6
1995	7.7	13.4	11.2	12.5	11.4
1996	7.7	13.1	11.2	12.6	11.3
1997	7.7	12.8	11.2	12.7	10.9
1998	7.7	12.6	11.2	12.9	10.5
1999	7.7	12.3	11.2	13.0	10.2
2000	7.7	12.0	11.2	13.2	9.8
2001	7.7	11.8	11.2	13.3	9.5
2002	7.7	11.5	11.2	13.4	9.2
2003	7.7	11.3	11.2	13.6	8.9
2004	7.7	11.0	11.2	13.7	8.6
2005	7.7	10.8	11.2	13.9	8.3
APC0	-0.04	-0.57	2.25*	1.04*	-1.97*
APC1	-	5.25	8.16*	-	-1.22*
APC2	-	-2.17*	-0.03	-	-3.38*

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC (p<0.05) values.

Fig. 4.16(a): LUNG (ICD-10 : C33-C34) - Females
Trends over time (1982-2005) in AAR (Three Year Moving Average)

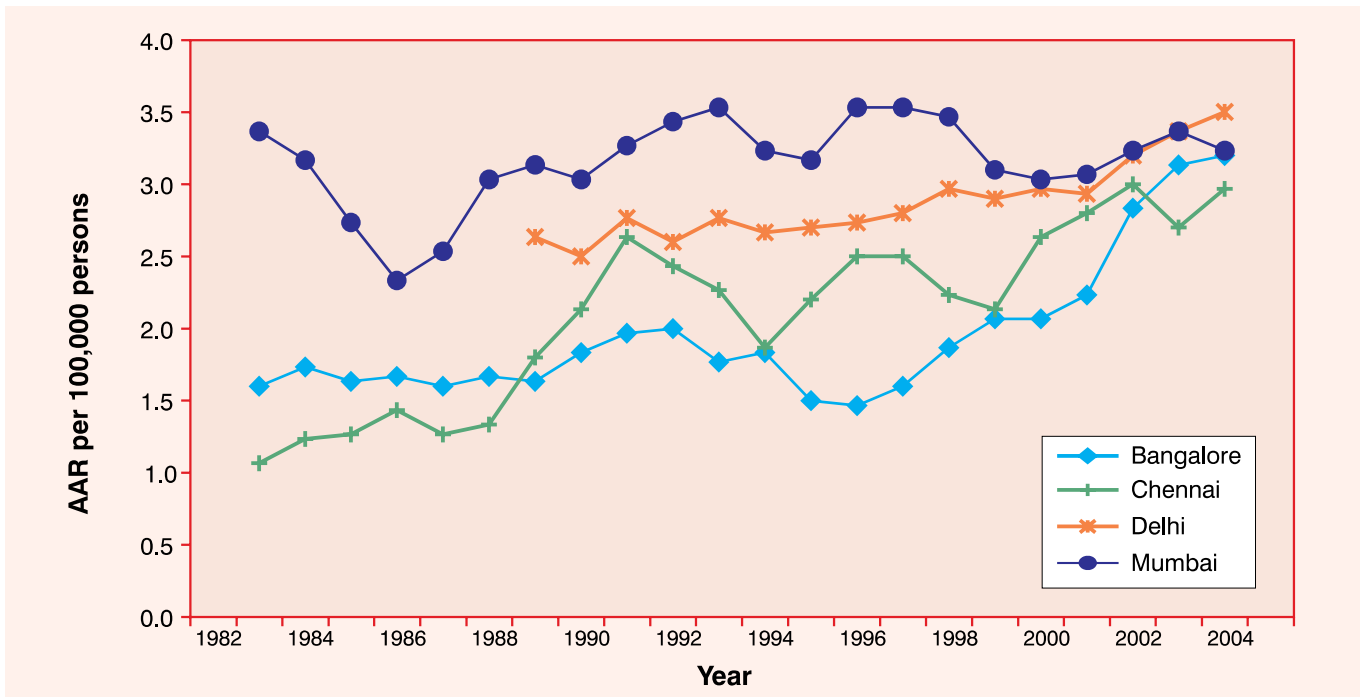


Table 4.16(a): Year wise AARs

Year	Bangalore	Chennai	Delhi	Mumbai
1982	1.2	1.1		3.2
1983	1.6	1.3		3.1
1984	2.0	0.8		3.8
1985	1.6	1.6		2.6
1986	1.3	1.4		1.8
1987	2.1	1.3		2.6
1988	1.4	1.1	2.6	3.2
1989	1.5	1.6	2.1	3.3
1990	2.0	2.7	3.2	2.9
1991	2.0	2.1	2.2	2.9
1992	1.9	3.1	2.9	4.0
1993	2.1	2.1	2.7	3.4
1994	1.3	1.6	2.7	3.2
1995	2.1	1.9	2.6	3.1
1996	1.1	3.1	2.8	3.2
1997	1.2	2.5	2.8	4.3
1998	2.5	1.9	2.8	3.1
1999	1.9	2.3	3.3	3.0
2000	1.8	2.2	2.6	3.2
2001	2.5	3.4	3.0	2.9
2002	2.4	2.8	3.2	3.1
2003	3.6	2.8	3.4	3.7
2004	3.4	2.5	3.5	3.3
2005	2.6	3.6	3.6	2.7
Slope(b)	0.057	0.087	0.056	0.012
p-value	0.023	0.001	0.001	0.421

Fig. 4.16(b): LUNG (ICD-10 : C33-C34) - Females
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

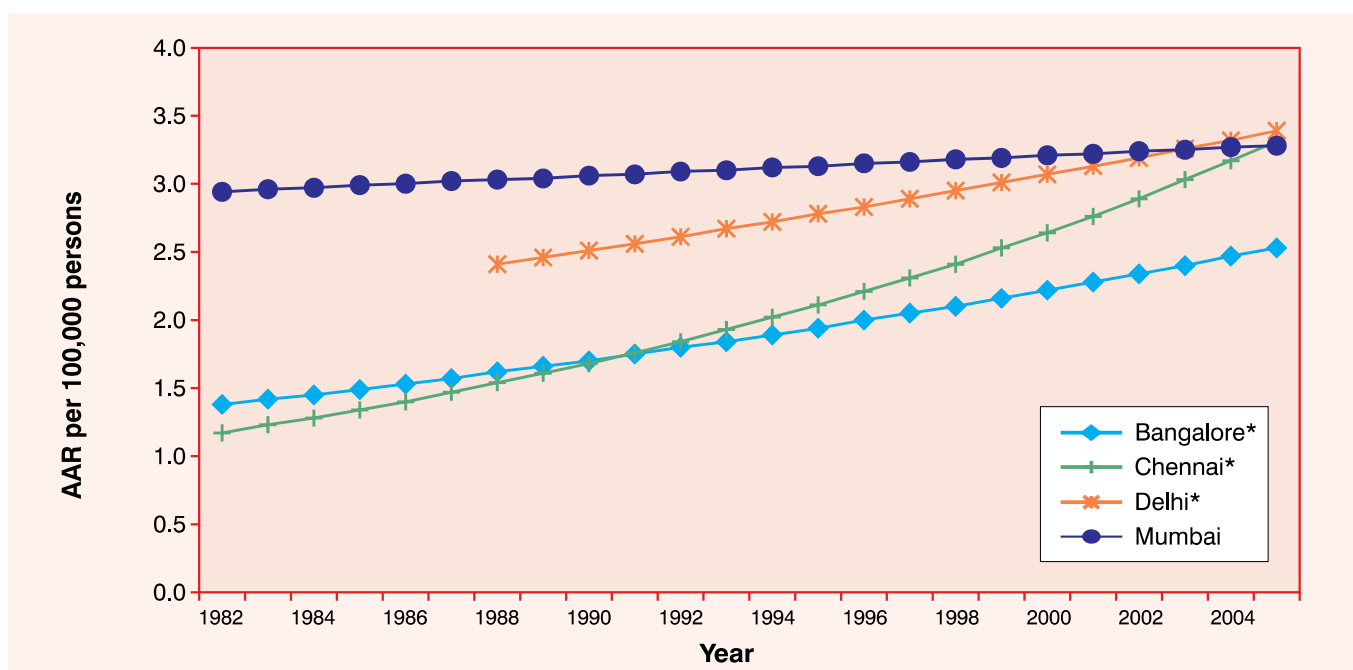


Table 4.16(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP0*	JP0*
1982	1.4	1.2	-	2.9
1983	1.4	1.2	-	3.0
1984	1.5	1.3	-	3.0
1985	1.5	1.3	-	3.0
1986	1.5	1.4	-	3.1
1987	1.6	1.5	-	3.0
1988	1.6	1.5	2.4	3.0
1989	1.7	1.6	2.5	3.0
1990	1.7	1.7	2.5	3.1
1991	1.8	1.8	2.6	3.1
1992	1.8	1.8	2.6	3.1
1993	1.8	1.9	2.7	3.1
1994	1.9	2.0	2.7	3.1
1995	1.9	2.1	2.8	3.1
1996	2.0	2.2	2.8	3.2
1997	2.1	2.3	2.9	3.2
1998	2.1	2.4	3.0	3.2
1999	2.2	2.5	3.0	3.2
2000	2.2	2.6	3.1	3.2
2001	2.3	2.8	3.1	3.2
2002	2.3	2.9	3.2	3.2
2003	2.4	3.0	3.3	3.3
2004	2.5	3.2	3.3	3.3
2005	2.5	3.3	3.4	3.3
APC0	2.67*	4.62*	2.02*	0.47
APC1	-	-	-	-
APC2	-	-	-	-

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC (p<0.05) values.

Fig. 4.17(a): BREAST (ICD-10 : C50) - Females
Trends over time (1982-2005) in AAR (Three Year Moving Average)

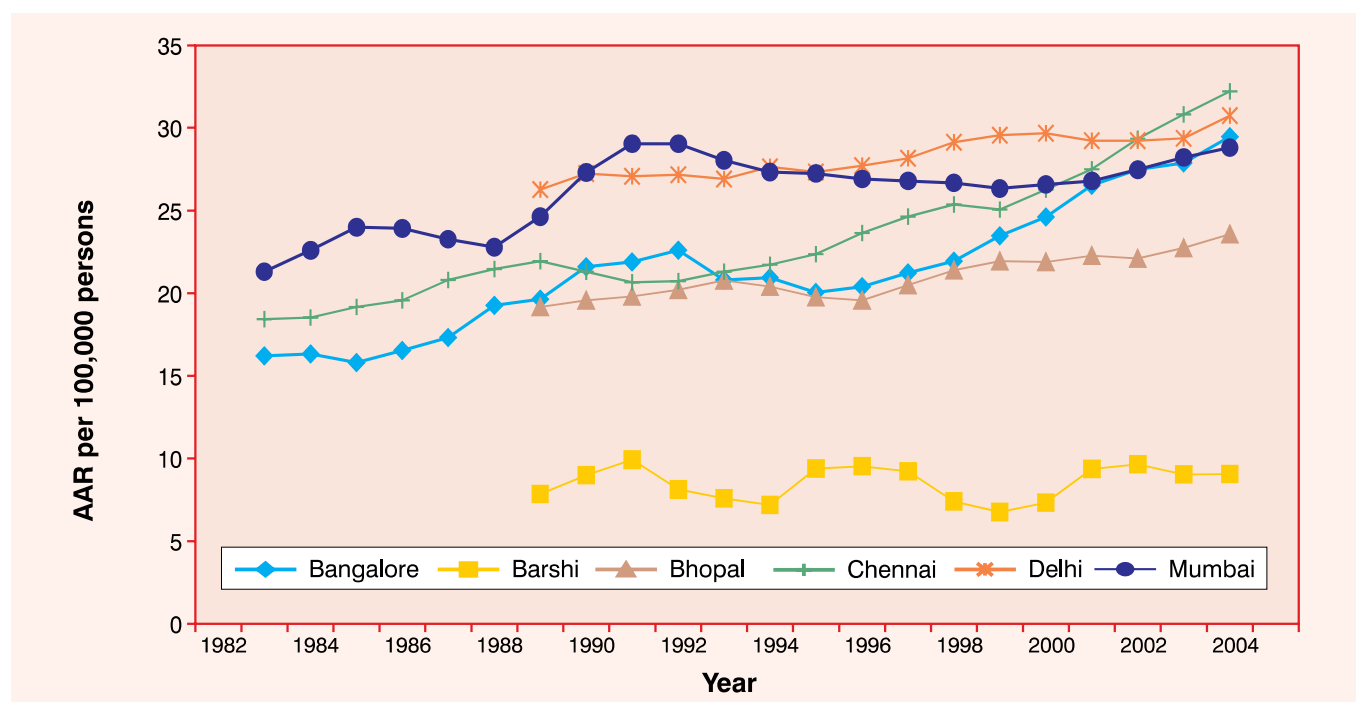


Table 4.17(a): Year wise AARs

Year	Bangalore	Barshi	Bhopal	Chennai	Delhi	Mumbai
1982	15.8			18.4		20.8
1983	16.0			18.2		20.7
1984	16.8			18.7		22.4
1985	16.2			18.7		24.7
1986	14.4			20.1		24.9
1987	19.0			19.9		22.2
1988	18.6	7.2	18.2	22.4	24.8	22.7
1989	20.2	6.6	19.5	22.1	26.9	23.5
1990	20.1	9.8	19.8	21.3	27.1	27.7
1991	24.5	10.6	19.4	20.5	27.7	30.7
1992	21.1	9.4	20.2	20.2	26.4	28.7
1993	22.2	4.4	21.0	21.5	27.4	27.7
1994	19.1	9.0	21.1	22.2	26.9	27.7
1995	21.5	8.2	19.1	21.5	28.6	26.6
1996	19.5	11.0	19.1	23.4	26.5	27.4
1997	20.2	9.4	20.5	26.0	28.0	26.7
1998	24.0	7.3	21.9	24.5	30.0	26.3
1999	21.6	5.5	21.8	25.6	29.4	27.0
2000	24.8	7.5	22.1	25.1	29.3	25.7
2001	27.4	9.0	21.8	28.1	30.3	27.0
2002	27.4	11.6	22.9	29.3	28.1	27.7
2003	27.6	8.4	21.6	30.6	29.3	27.7
2004	28.6	7.1	23.7	32.5	30.7	29.2
2005	32.2	11.7	25.4	33.5	32.2	29.5
Slope(b)	0.587	0.074	0.293	0.587	0.292	0.283
p-value	0.001	0.438	0.001	0.001	0.001	0.001

Fig. 4.17(b): BREAST (ICD-10 : C50) - Females
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

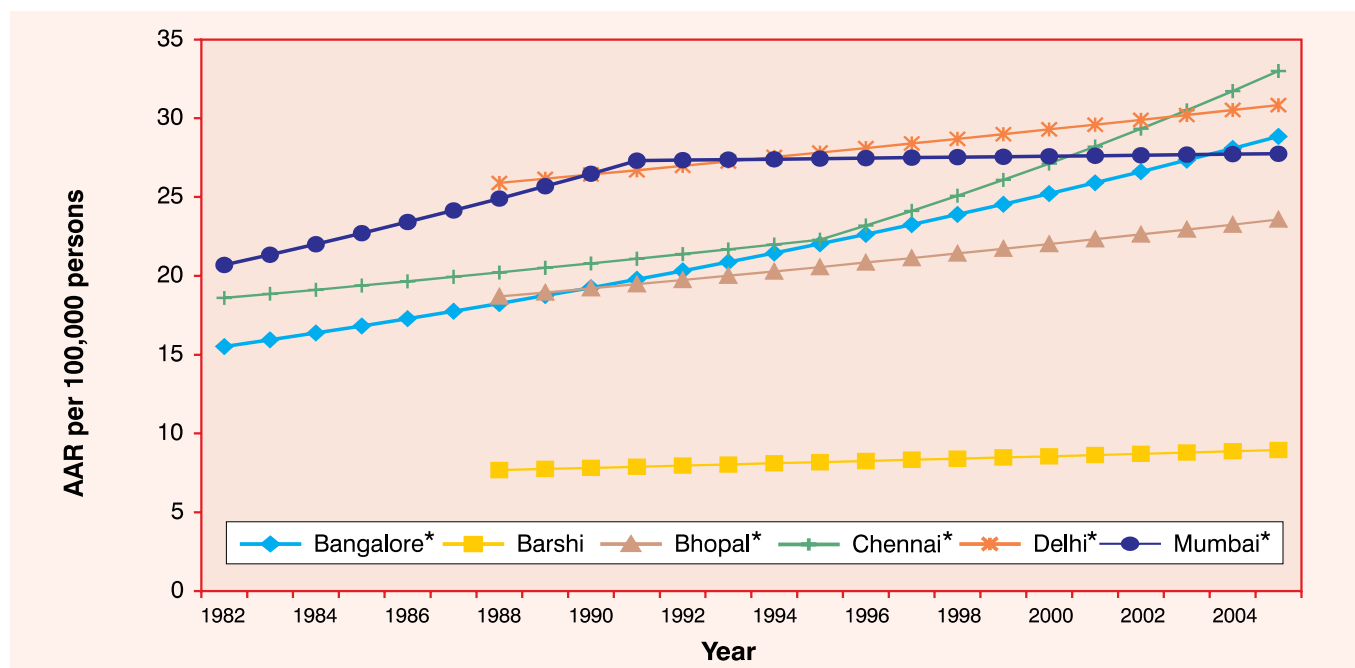


Table 4.17(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Barshi	Bhopal	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP0*	JP1*	JP0*	JP1*
1982	15.5	-	-	18.6	-	20.7
1983	15.9	-	-	18.9	-	21.3
1984	16.4	-	-	19.1	-	22.0
1985	16.8	-	-	19.4	-	22.7
1986	17.3	-	-	19.7	-	23.4
1987	17.8	-	-	19.9	-	24.1
1988	18.2	7.7	18.7	20.2	26.0	24.9
1989	18.7	7.8	19.0	20.5	26.2	25.7
1990	19.3	7.8	19.2	20.8	26.4	26.5
1991	19.8	7.9	19.5	21.1	26.7	27.3
1992	20.3	8.0	19.7	21.4	27.0	27.3
1993	20.9	8.0	20.0	21.7	27.3	27.4
1994	21.4	8.1	20.3	22.0	27.5	27.4
1995	22.0	8.2	20.6	22.3	27.8	27.4
1996	22.6	8.3	20.9	23.2	28.1	27.5
1997	23.3	8.3	21.1	24.1	28.4	27.5
1998	23.9	8.4	21.4	25.1	28.7	27.5
1999	24.5	8.5	21.7	26.1	29.0	27.6
2000	25.2	8.6	22.0	27.1	29.3	27.6
2001	25.9	8.6	22.3	28.2	29.6	27.6
2002	26.6	8.7	22.6	29.3	29.9	27.7
2003	27.3	8.8	22.9	30.5	30.2	27.7
2004	28.1	8.9	23.3	31.7	30.5	27.7
2005	28.9	9.0	23.6	33.0	30.8	27.8
APC0	2.73*	0.9	1.38*	2.45*	1.03*	1.15*
APC1	-	-	-	1.40*	-	3.13*
APC2	-	-	-	4.00*	-	0.11

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC (p<0.05) values.

Fig. 4.18(a): CERVIX (ICD-10 : C53) - Females
Trends over time (1982-2005) in AAR (Three Year Moving Average)

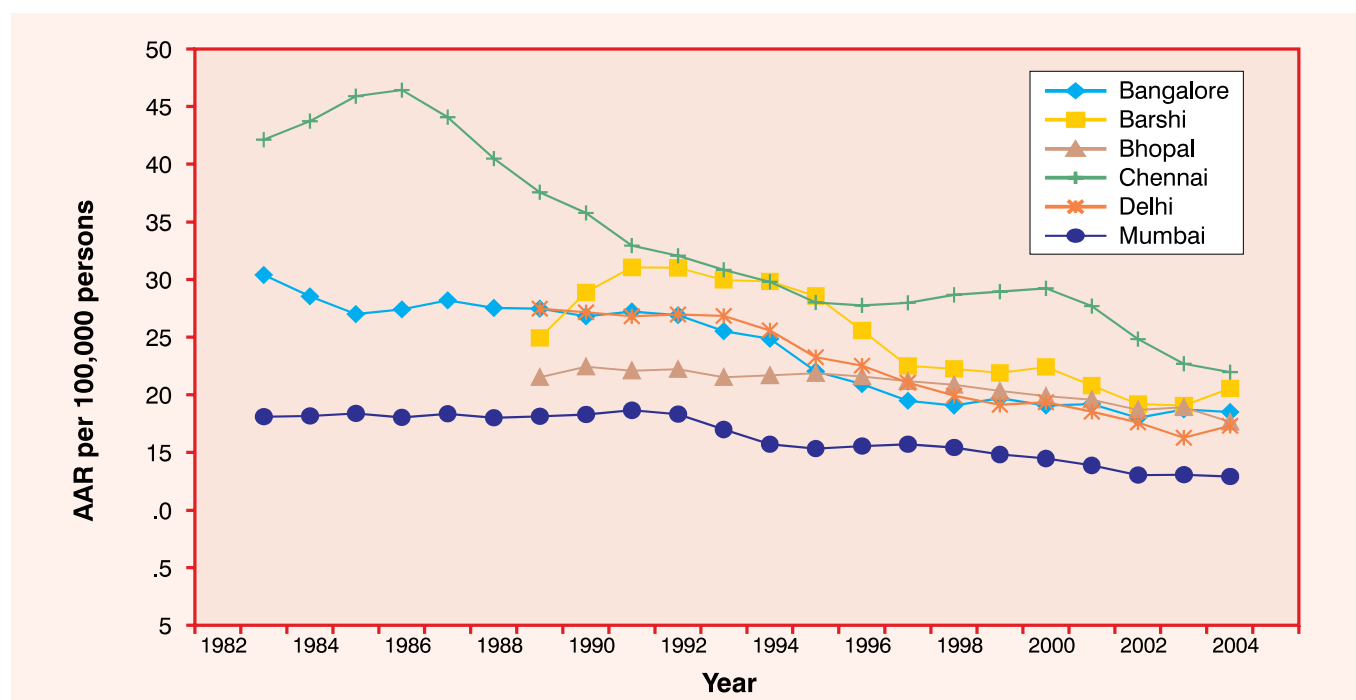


Table 4.18(a): Year wise AARs

Year	Bangalore	Barshi	Bhopal	Chennai	Delhi	Mumbai
1982	32.4			41.0		17.9
1983	30.6			43.5		17.8
1984	28.2			41.9		18.6
1985	26.8			45.8		18.1
1986	26.0			50.0		18.4
1987	29.4			43.5		17.6
1988	29.2	22.1	21.7	38.8	25.9	19.0
1989	24.0	24.9	21.8	39.2	28.4	17.4
1990	29.2	27.8	21.1	34.7	28.1	18.0
1991	27.2	34.0	24.4	33.4	25.0	19.4
1992	25.3	31.4	20.8	30.7	27.3	18.6
1993	28.2	27.7	21.4	32.1	28.6	16.9
1994	23.1	30.8	22.4	29.7	24.6	15.5
1995	23.3	31.0	21.2	27.6	23.5	14.7
1996	19.7	23.9	22.0	26.7	21.7	15.8
1997	19.8	21.8	21.6	29.0	22.4	16.1
1998	18.9	21.8	19.9	28.2	19.1	15.2
1999	18.5	23.1	21.1	28.8	18.3	15.0
2000	21.7	20.8	20.0	29.8	20.0	14.3
2001	17.0	23.3	18.6	29.1	19.8	14.1
2002	18.9	18.3	20.1	24.2	15.8	13.2
2003	18.1	16.0	17.4	21.2	17.2	11.8
2004	19.2	22.9	19.2	22.7	15.8	14.2
2005	18.2	22.7	16.4	22.0	18.9	12.7
Slope	-0.611	-0.554	-0.271	-1.051	-0.747	-0.271
p-value	0.001	0.007	0.001	0.001	0.001	0.001

Fig. 4.18(b): CERVIX (ICD-10 : C53) - Females
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

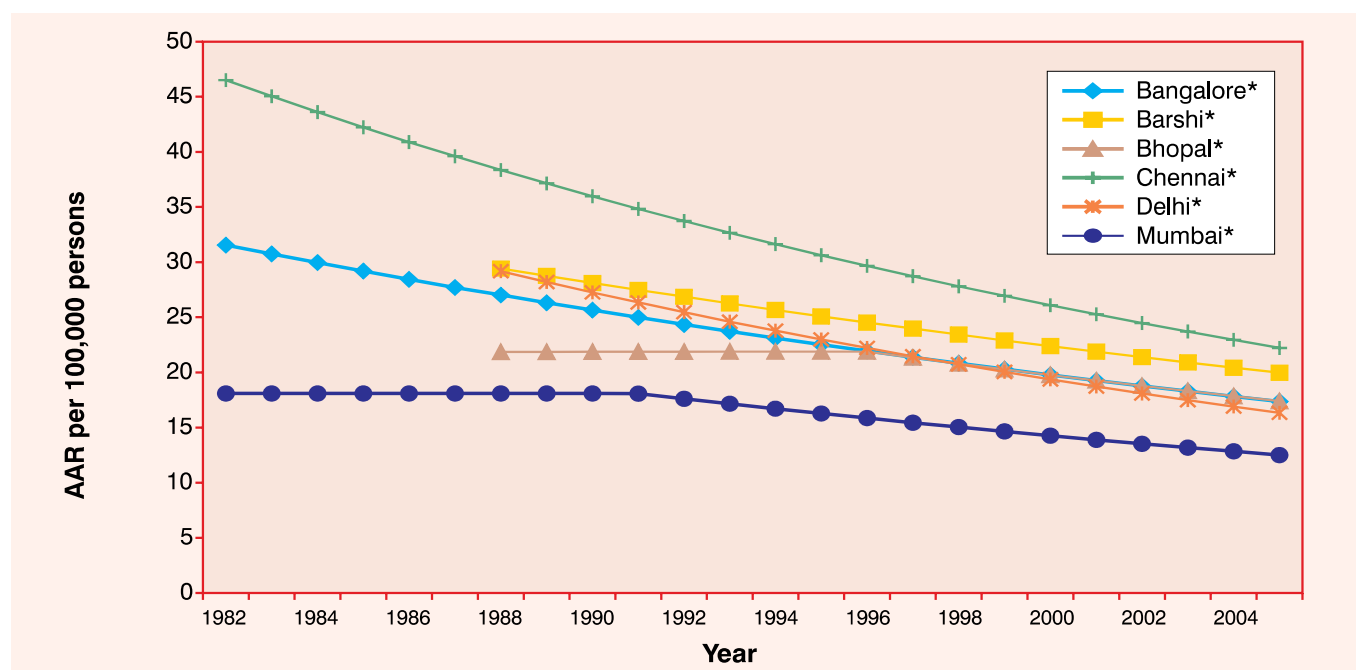


Table 4.18(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Barshi	Bhopal	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP1*	JP0*	JP0*	JP1*
1982	31.6			46.5		18.1
1983	30.8			45.0		18.1
1984	30.0			43.6		18.1
1985	29.2			42.2		18.1
1986	28.4			40.9		18.1
1987	27.7			39.6		18.1
1988	27.0	29.4	21.9	38.4	29.2	18.1
1989	26.3	28.8	21.9	37.1	28.2	18.1
1990	25.6	28.1	21.9	36.0	27.3	18.1
1991	25.0	27.5	21.9	34.8	26.3	18.1
1992	24.3	26.9	21.9	33.7	25.5	17.6
1993	23.7	26.3	21.9	32.7	24.6	17.2
1994	23.1	25.7	21.9	31.6	23.8	16.7
1995	22.5	25.1	21.9	30.6	23.0	16.3
1996	21.9	24.5	21.9	29.7	22.2	15.9
1997	21.4	24.0	21.3	28.7	21.5	15.4
1998	20.8	23.4	20.8	27.8	20.8	15.0
1999	20.3	22.9	20.3	26.9	20.1	14.7
2000	19.8	22.4	19.8	26.1	19.4	14.3
2001	19.3	21.9	19.3	25.3	18.7	13.9
2002	18.8	21.4	18.8	24.5	18.1	13.5
2003	18.3	20.9	18.3	23.7	17.5	13.2
2004	17.8	20.4	17.9	23.0	16.9	12.8
2005	17.4	20.0	17.4	22.2	16.3	12.5
APC0	-2.56*	-2.25*	-1.36*	-3.16*	-3.35*	-1.71*
APC1	-	-	0.02	-	-	-0.01
APC2	-	-	-2.51*	-	-	-2.60*

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC ($p < 0.05$) values.

Fig. 4.19(a): CORPUS UTERI (ICD-10 : C54) - Females
Trends over time (1982-2005) in AAR (Three Year Moving Average)

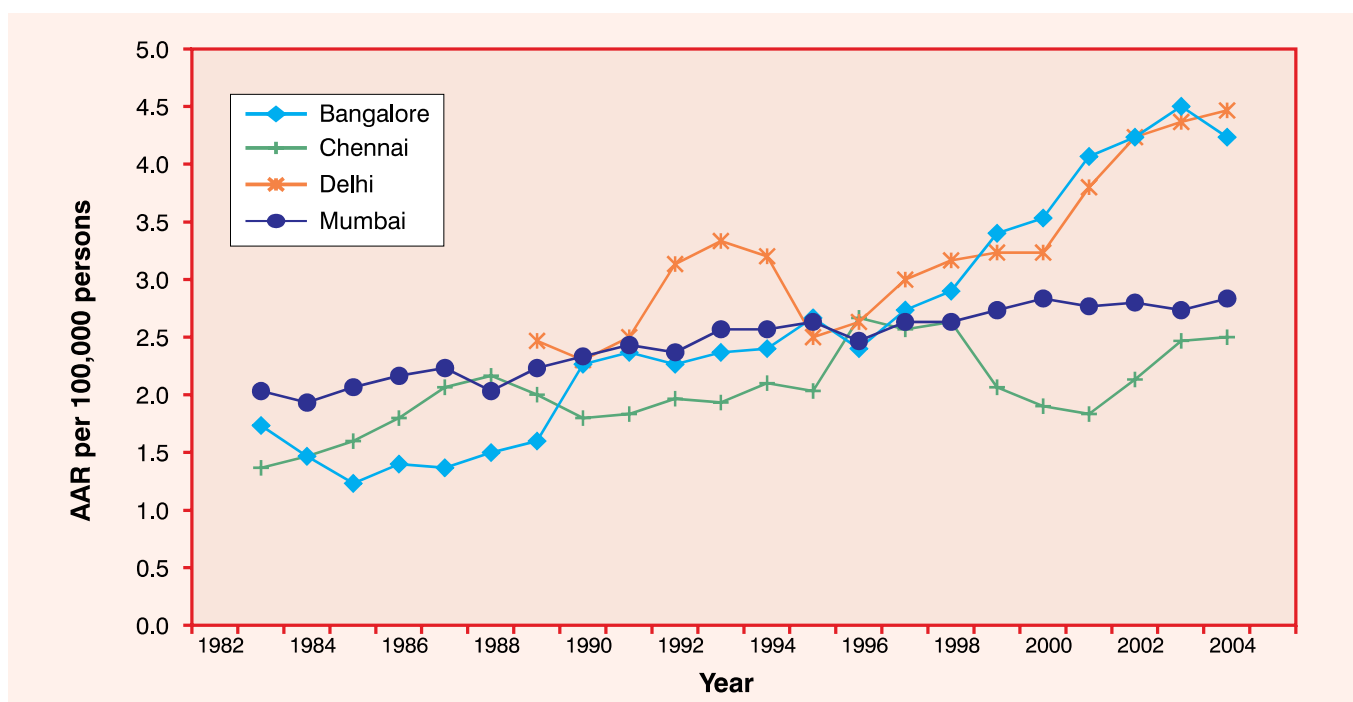


Table 4.19(a): Year wise AARs

Year	Bangalore	Chennai	Delhi	Mumbai
1982	1.7	1.3		2.1
1983	2.1	1.0		2.1
1984	1.4	1.8		1.9
1985	0.9	1.6		1.8
1986	1.4	1.4		2.5
1987	1.9	2.4		2.2
1988	0.8	2.4	2.6	2.0
1989	1.8	1.7	2.4	1.9
1990	2.2	1.9	2.4	2.8
1991	2.8	1.8	2.1	2.3
1992	2.1	1.8	3.0	2.2
1993	1.9	2.3	4.3	2.6
1994	3.1	1.7	2.7	2.9
1995	2.2	2.3	2.6	2.2
1996	2.7	2.1	2.2	2.8
1997	2.3	3.6	3.1	2.4
1998	3.2	2.0	3.7	2.7
1999	3.2	2.3	2.7	2.8
2000	3.8	1.9	3.3	2.7
2001	3.6	1.5	3.7	3.0
2002	4.8	2.1	4.4	2.6
2003	4.3	2.8	4.6	2.8
2004	4.4	2.5	4.1	2.8
2005	4.0	2.2	4.7	2.9
Slope	0.140	0.039	0.124	0.041
p-value	0.001	0.010	0.001	0.001

Fig. 4.19(b): CORPUS UTERI (ICD-10 : C54) - Females
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

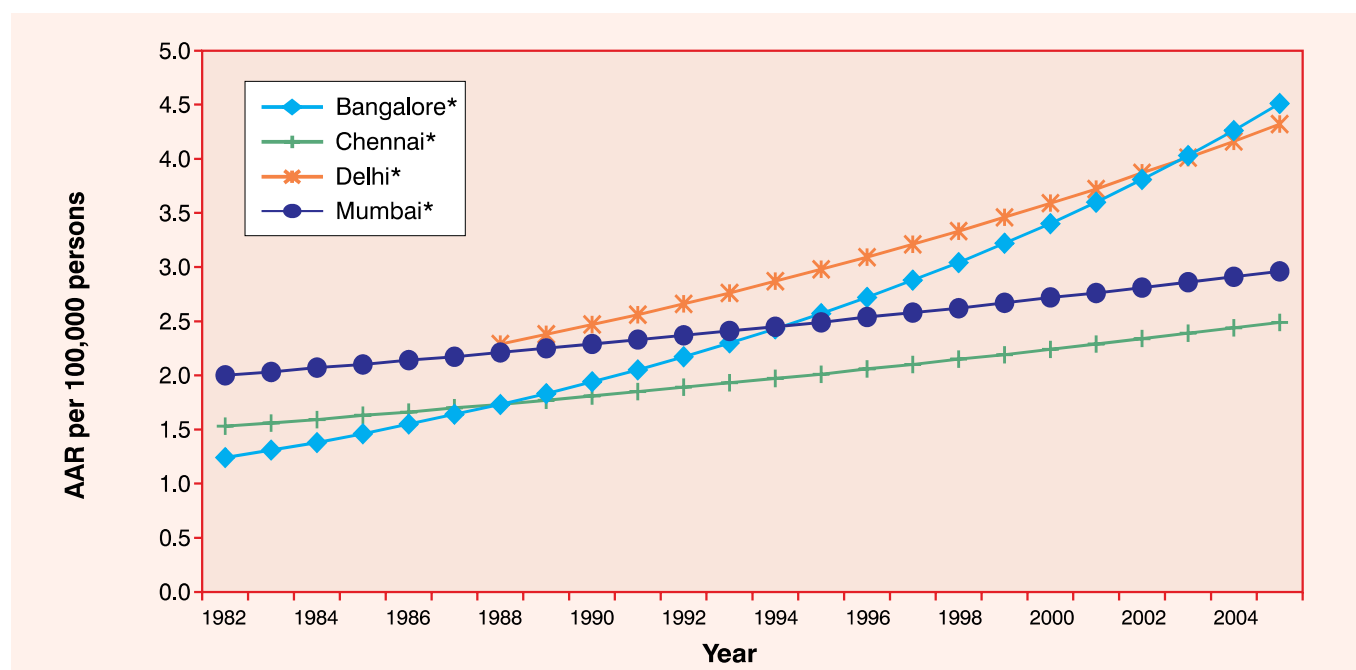


Table 4.19(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP0*	JP0*
1982	1.2	1.5		2
1983	1.3	1.6		2.0
1984	1.4	1.6		2.1
1985	1.5	1.6		2.1
1986	1.6	1.7		2.1
1987	1.6	1.7		2.2
1988	1.7	1.7	2.3	2.2
1989	1.8	1.8	2.4	2.3
1990	1.9	1.8	2.5	2.3
1991	2.1	1.9	2.6	2.3
1992	2.2	1.9	2.7	2.4
1993	2.3	1.9	2.8	2.4
1994	2.4	2.0	2.9	2.5
1995	2.6	2.0	3.0	2.5
1996	2.7	2.1	3.1	2.5
1997	2.9	2.1	3.2	2.6
1998	3.0	2.2	3.3	2.6
1999	3.2	2.2	3.5	2.7
2000	3.4	2.2	3.6	2.7
2001	3.6	2.3	3.7	2.8
2002	3.8	2.3	3.9	2.8
2003	4.0	2.4	4.0	2.9
2004	4.3	2.4	4.2	2.9
2005	4.5	2.5	4.3	3.0
APC0	5.79*	2.15*	3.80*	1.73*
APC1	-	-	-	-
APC2	-	-	-	-

Values of years where a shift in trend observed is highlighted;* represents significant Joinpoint Model & APC ($p < 0.05$) values.

Fig. 4.20(a): OVARY (ICD-10 : C56) - Females
Trends over time (1982-2005) in AAR (Three Year Moving Average)

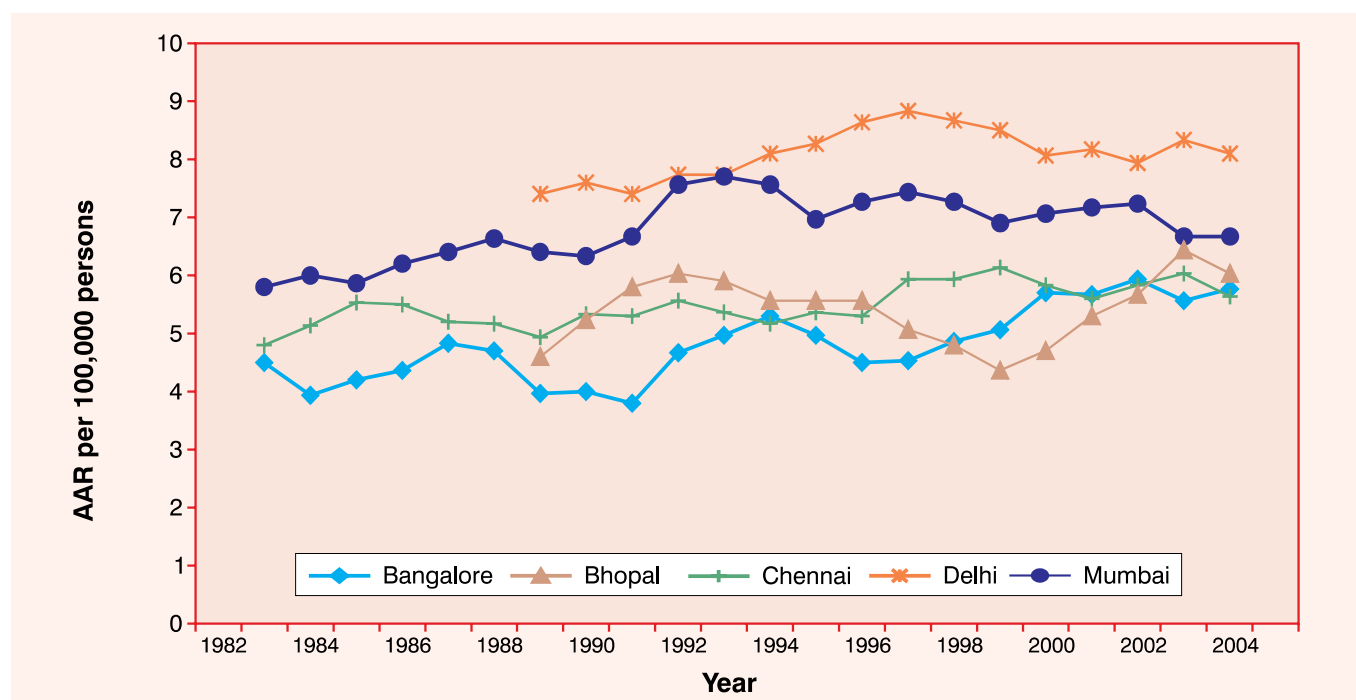


Table 4.20(a): Year wise AARs

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
1982	4.6		4.2		5.6
1983	3.9		4.4		6.0
1984	5.0		5.8		5.8
1985	2.9		5.2		6.2
1986	4.7		5.6		5.6
1987	5.5		5.7		6.8
1988	4.3	3.7	4.3	7.3	6.8
1989	4.3	5.5	5.5	8.0	6.3
1990	3.3	4.6	5.0	6.9	6.1
1991	4.4	5.6	5.5	7.9	6.6
1992	3.7	7.2	5.4	7.4	7.3
1993	5.9	5.3	5.8	7.9	8.8
1994	5.3	5.2	4.9	7.9	7.0
1995	4.7	6.2	4.8	8.5	6.9
1996	4.9	5.3	6.4	8.4	7.0
1997	3.9	5.2	4.7	9.0	7.9
1998	4.8	4.7	6.7	9.1	7.4
1999	5.9	4.5	6.4	7.9	6.5
2000	4.5	3.9	5.3	8.5	6.8
2001	6.7	5.7	5.8	7.8	7.9
2002	5.8	6.3	5.7	8.2	6.8
2003	5.3	5.0	6.0	7.8	7.0
2004	5.6	8.0	6.4	9.0	6.2
2005	6.4	5.1	4.5	7.5	6.8
Slope	0.079	0.044	0.040	0.046	0.051
p-value	0.003	0.378	0.049	0.095	0.019

Fig. 4.20(b): OVARY (ICD-10 : C56) - Females
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

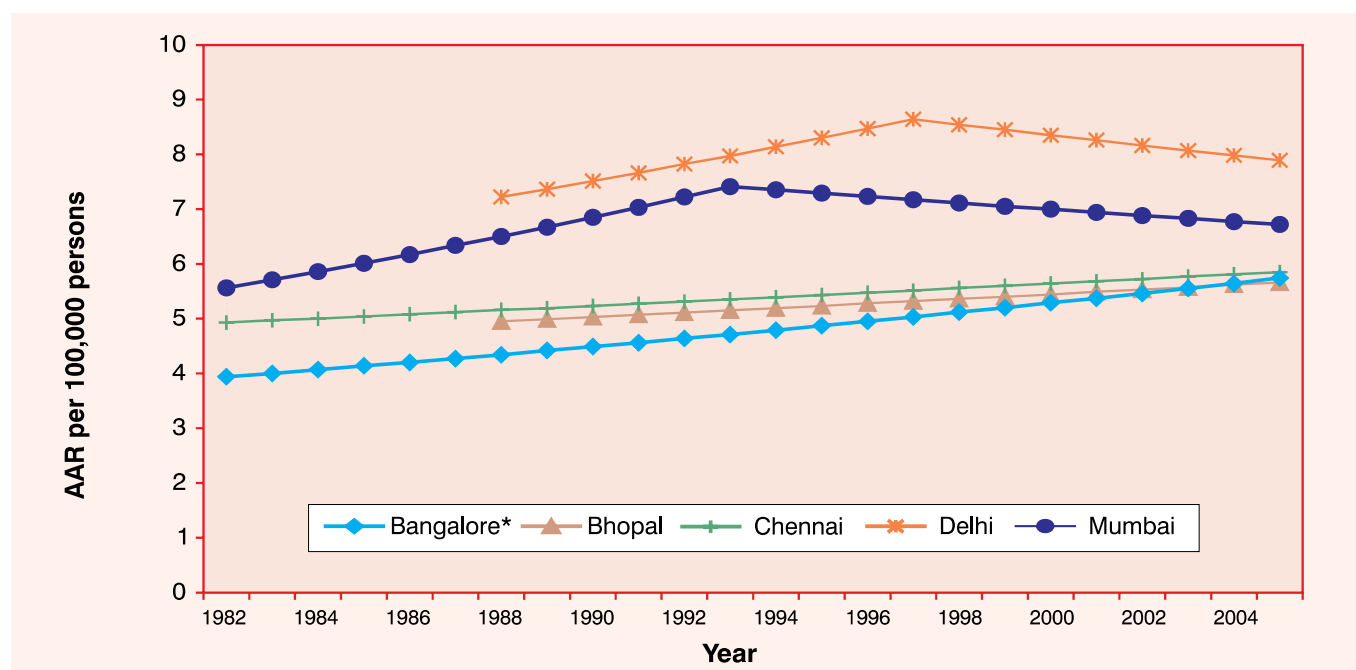


Table 4.20(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP0*	JP1*	JP1*
1982	3.9		4.9		5.6
1983	4.0		5.0		5.7
1984	4.1		5.0		5.9
1985	4.1		5.0		6.0
1986	4.2		5.1		6.2
1987	4.3		5.1		6.3
1988	4.3	5.0	5.2	7.2	6.5
1989	4.4	5.0	5.2	7.4	6.7
1990	4.5	5.0	5.2	7.5	6.9
1991	4.6	5.1	5.3	7.7	7.0
1992	4.6	5.1	5.3	7.8	7.2
1993	4.7	5.2	5.4	8.0	7.4
1994	4.8	5.2	5.4	8.1	7.4
1995	4.9	5.2	5.4	8.3	7.3
1996	5.0	5.3	5.5	8.5	7.2
1997	5.0	5.3	5.5	8.6	7.2
1998	5.1	5.4	5.6	8.5	7.1
1999	5.2	5.4	5.6	8.5	7.1
2000	5.3	5.4	5.6	8.4	7.0
2001	5.4	5.5	5.7	8.3	6.9
2002	5.5	5.5	5.7	8.2	6.9
2003	5.6	5.6	5.8	8.1	6.8
2004	5.6	5.6	5.8	8.0	6.8
2005	5.7	5.7	5.9	8.0	6.7
APC0	1.65*	0.79	0.75	0.57	0.79*
APC1	—	—	—	2.02*	2.64*
APC2	—	—	—	-1.12	-0.81

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC ($p < 0.05$) values.

Fig. 4.21 (a): PROSTATE (ICD-10 : C61) - Males
Trends over time (1982-2005) in AAR (Three Year Moving Average)

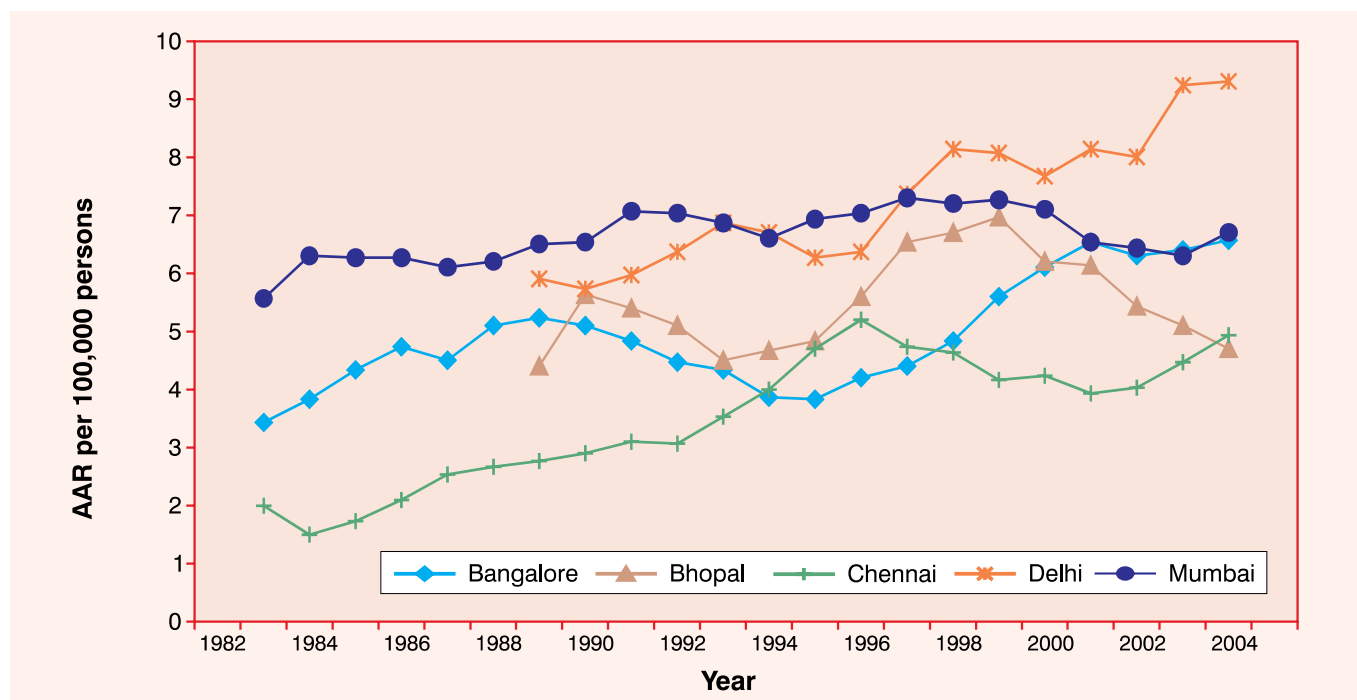


Table 4.21 (a): Year wise AARs

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
1982	3.7		2.8		5.1
1983	2.9		2.0		5.4
1984	3.7		1.2		6.2
1985	4.9		1.3		7.3
1986	4.4		2.7		5.3
1987	4.9		2.3		6.2
1988	4.2	1.9	2.6	6.3	6.8
1989	6.2	5.0	3.1	5.8	5.6
1990	5.3	6.3	2.6	5.6	7.1
1991	3.8	5.6	3.0	5.8	6.9
1992	5.4	4.3	3.7	6.5	7.2
1993	4.2	5.4	2.5	6.8	7.0
1994	3.4	3.8	4.4	7.3	6.4
1995	4.0	4.8	5.1	6.0	6.4
1996	4.1	5.9	4.6	5.5	8.0
1997	4.5	6.1	5.9	7.6	6.7
1998	4.6	7.6	3.7	9.0	7.2
1999	5.4	6.4	4.3	7.8	7.7
2000	6.8	6.9	4.5	7.4	6.9
2001	6.1	5.3	3.9	7.8	6.7
2002	6.7	6.2	3.4	9.2	6.0
2003	6.1	4.8	4.8	7.0	6.6
2004	6.4	4.3	5.2	11.5	6.3
2005	7.2	5.0	4.8	9.4	7.2
Slope(b)	0.118	0.073	0.141	0.230	0.046
p-value	0.001	0.221	0.001	0.001	0.030

Fig. 4.21(b): PROSTATE (ICD-10 : C61) - Males
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

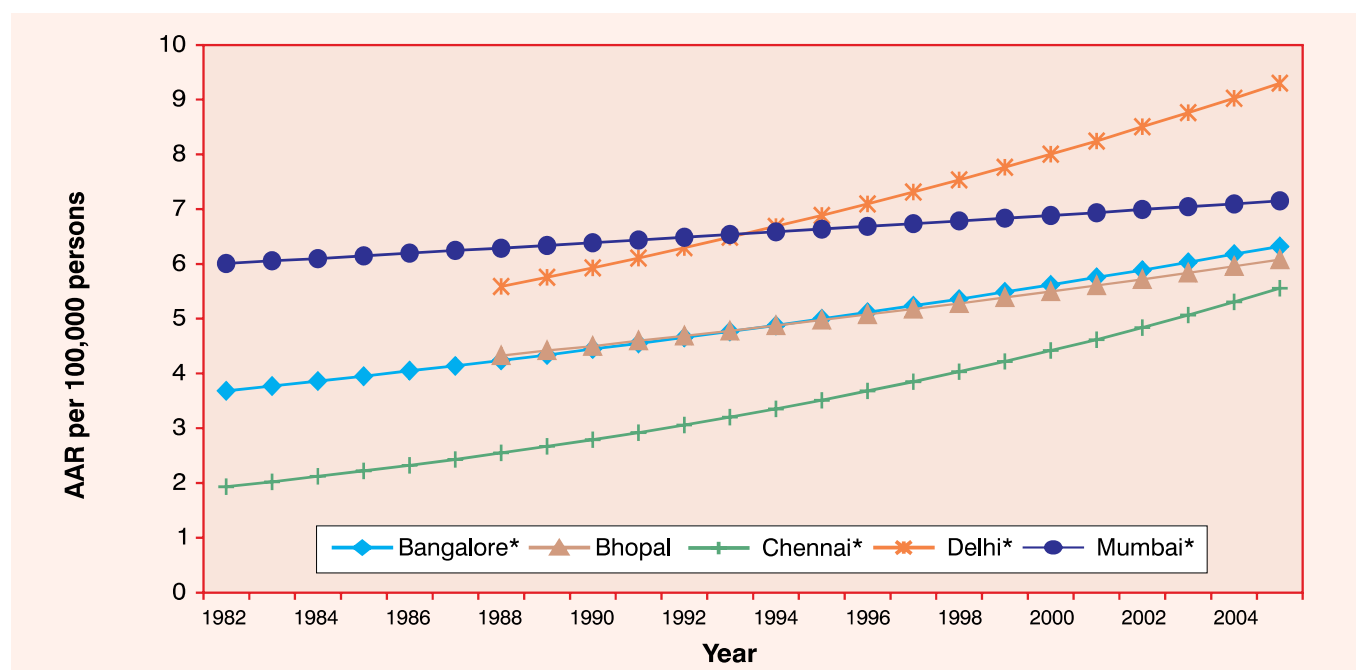


Table 4.21(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP0*	JP0*	JP0*
1982	3.7		1.9		6.0
1983	3.8		2.0		6.1
1984	3.9		2.1		6.1
1985	3.9		2.2		6.1
1986	4.0		2.3		6.2
1987	4.1		2.4		6.2
1988	4.2	4.3	2.5	5.6	6.3
1989	4.3	4.4	2.7	5.8	6.3
1990	4.4	4.5	2.8	5.9	6.4
1991	4.5	4.6	2.9	6.1	6.4
1992	4.7	4.7	3.1	6.3	6.5
1993	4.8	4.8	3.2	6.5	6.5
1994	4.9	4.9	3.3	6.7	6.6
1995	5.0	5.0	3.5	6.9	6.6
1996	5.1	5.1	3.7	7.1	6.7
1997	5.2	5.2	3.8	7.3	6.7
1998	5.4	5.3	4.0	7.5	6.8
1999	5.5	5.4	4.2	7.8	6.8
2000	5.6	5.5	4.4	8.0	6.9
2001	5.8	5.6	4.6	8.2	6.9
2002	5.9	5.7	4.8	8.5	7.0
2003	6.0	5.8	5.1	8.8	7.0
2004	6.2	6.0	5.3	9.0	7.1
2005	6.3	6.1	5.6	9.3	7.2
APC0	2.38*	2.02	4.71*	3.05*	0.76*
APC1	—	—	—	—	—
APC2	—	—	—	—	—

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC ($p < 0.05$) values.

Fig. 4.22(a): BRAIN NERVOUS SYSTEM (ICD-10 : C70-72) - Males
Trends over time (1982-2005) in AAR (Three Year Moving Average)

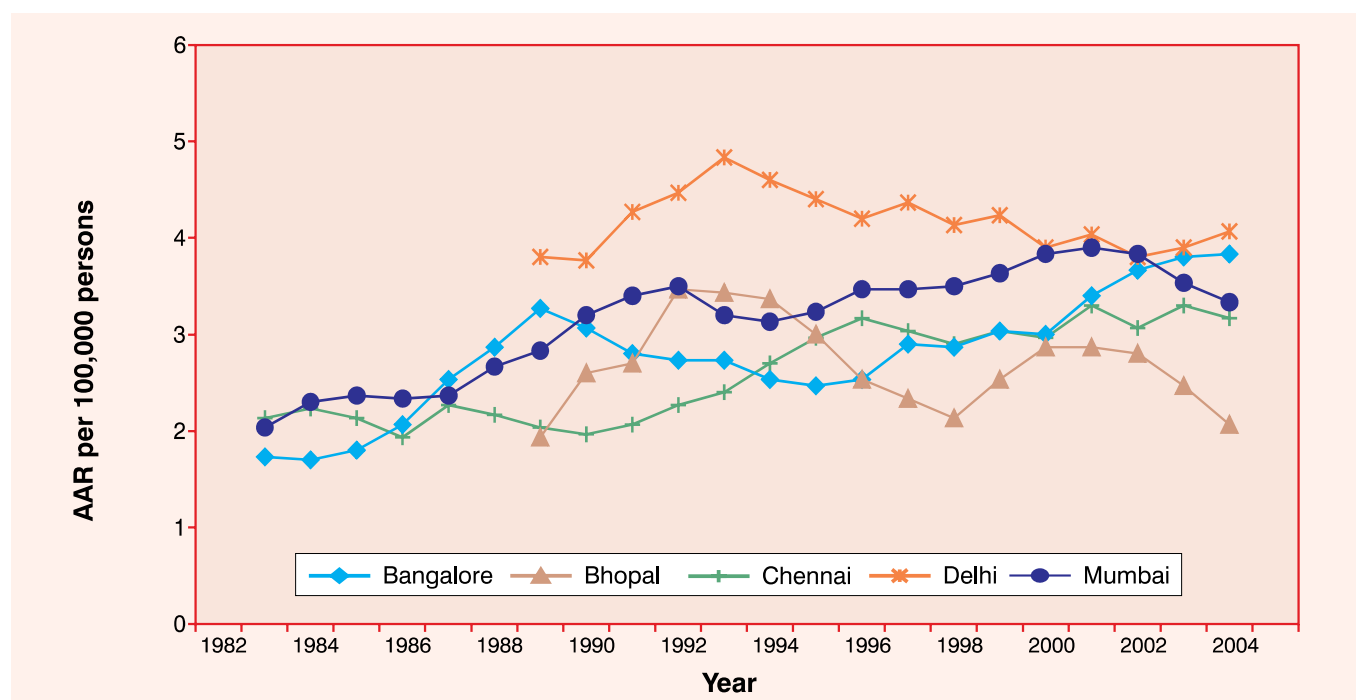


Table 4.22(a): Year wise AARs

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
1982	1.6		1.2		1.8
1983	2.4		2.3		1.7
1984	1.0		2.9		2.6
1985	1.5		1.5		2.6
1986	2.7		2.0		1.9
1987	2.0		2.3		2.5
1988	2.9	0.9	2.5	3.8	2.7
1989	3.7	3.0	1.7	3.4	2.8
1990	3.2	1.9	1.9	4.2	3.0
1991	2.3	2.9	2.3	3.7	3.8
1992	2.9	3.3	2.0	4.9	3.4
1993	3.0	4.2	2.5	4.8	3.3
1994	2.3	2.8	2.7	4.8	2.9
1995	2.3	3.1	2.9	4.2	3.2
1996	2.8	3.1	3.3	4.2	3.6
1997	2.5	1.4	3.3	4.2	3.6
1998	3.4	2.5	2.5	4.7	3.2
1999	2.7	2.5	2.9	3.5	3.7
2000	3.0	2.6	3.7	4.5	4.0
2001	3.3	3.5	2.3	3.7	3.8
2002	3.9	2.5	3.9	3.9	3.9
2003	3.8	2.4	3.0	3.8	3.8
2004	3.7	2.5	3.0	4.0	2.9
2005	4.0	1.3	3.5	4.4	3.3
Slope(b)	0.081	-0.012	0.069	-0.001	0.074
p-value	0.001	0.764	0.001	0.969	0.001

Fig. 4.22(b): BRAIN, NERVOUS SYSTEM (ICD-10 : C70-72) - Males
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

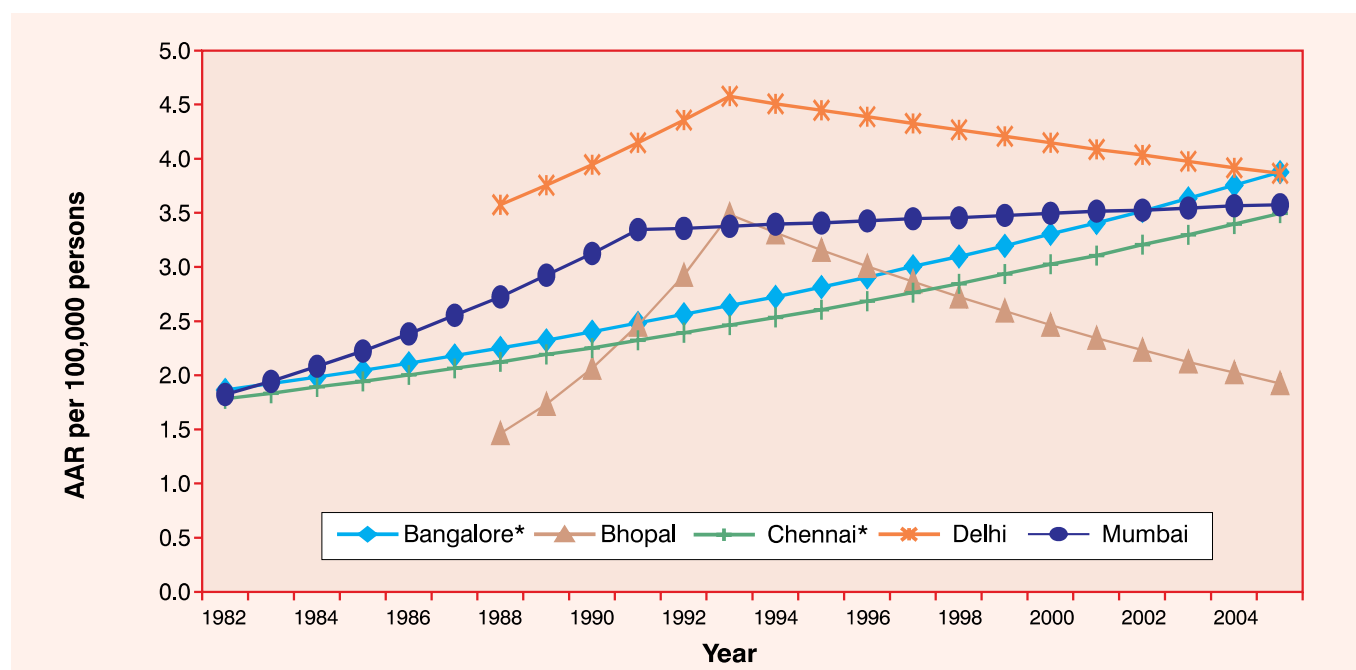


Table 4.22(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
	JP0*	JP1*	JP0*	JP1*	JP1*
1982	1.9		1.8		1.8
1983	1.9		1.8		1.9
1984	2.0		1.9		2.1
1985	2.0		1.9		2.2
1986	2.1		2.0		2.4
1987	2.2		2.1		2.6
1988	2.3	1.5	2.1	3.6	2.7
1989	2.3	1.7	2.2	3.8	2.9
1990	2.4	2.1	2.3	3.9	3.1
1991	2.5	2.5	2.3	4.1	3.3
1992	2.6	2.9	2.4	4.4	3.4
1993	2.6	3.5	2.5	4.6	3.4
1994	2.7	3.3	2.5	4.5	3.4
1995	2.8	3.2	2.6	4.4	3.4
1996	2.9	3.0	2.7	4.4	3.4
1997	3.0	2.9	2.8	4.3	3.4
1998	3.1	2.7	2.8	4.3	3.5
1999	3.2	2.6	2.9	4.2	3.5
2000	3.3	2.5	3.0	4.1	3.5
2001	3.4	2.3	3.1	4.1	3.5
2002	3.5	2.2	3.2	4.0	3.5
2003	3.6	2.1	3.3	4.0	3.5
2004	3.8	2.0	3.4	3.9	3.6
2005	3.9	1.9	3.5	3.9	3.6
APC0	3.24*	0.01	2.97*	0.00	2.69*
APC1	–	19.07	–	5.04	6.99*
APC2	–	-4.84	–	-1.39	0.49

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC ($p < 0.05$) values.

Fig. 4.23(a): BRAIN NERVOUS SYSTEM (ICD-10 : C70-72) - Females
Trends over time (1982-2005) in AAR (Three Year Moving Average)

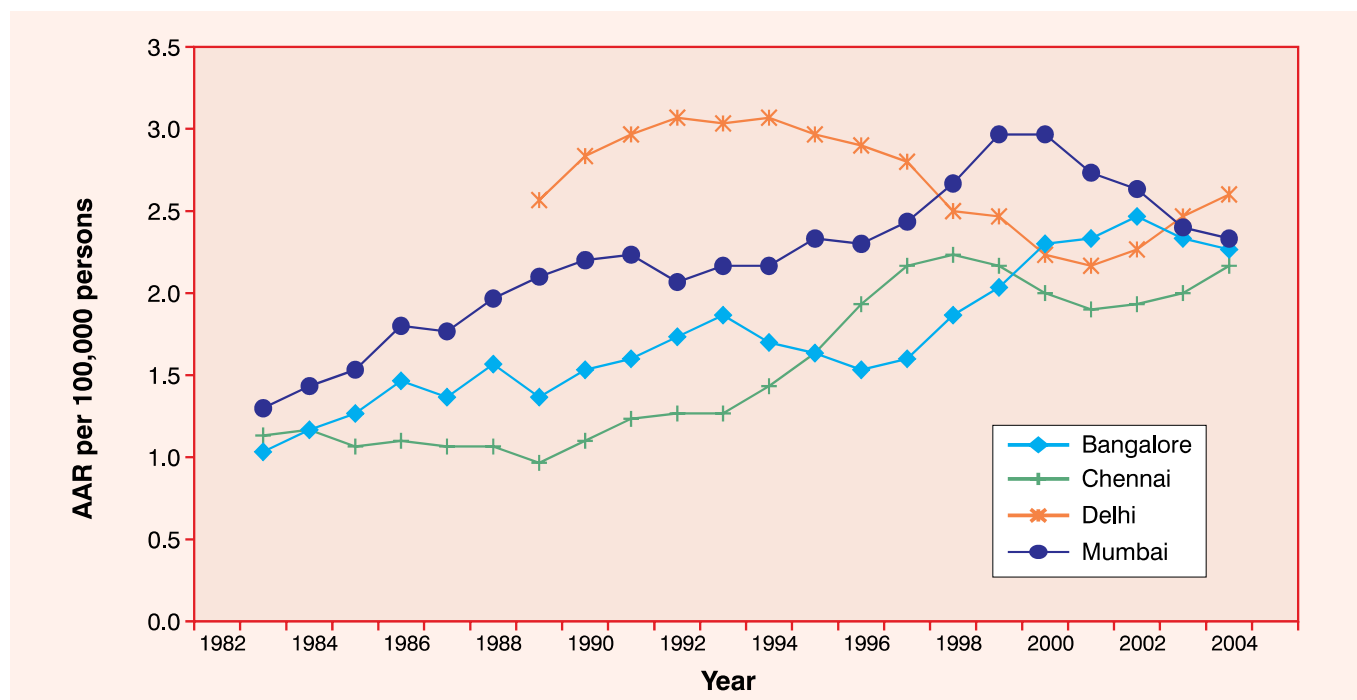


Table 4.23(a): Year wise AARs

Year	Bangalore	Chennai	Delhi	Mumbai
1982	1.1	0.8		1.3
1983	0.9	1.0		1.2
1984	1.1	1.6		1.4
1985	1.5	0.9		1.7
1986	1.2	0.7		1.5
1987	1.7	1.7		2.2
1988	1.2	0.8	2.0	1.6
1989	1.8	0.7	2.6	2.1
1990	1.1	1.4	3.1	2.6
1991	1.7	1.2	2.8	1.9
1992	2.0	1.1	3.0	2.2
1993	1.5	1.5	3.4	2.1
1994	2.1	1.2	2.7	2.2
1995	1.5	1.6	3.1	2.2
1996	1.3	2.1	3.1	2.6
1997	1.8	2.1	2.5	2.1
1998	1.7	2.3	2.8	2.6
1999	2.1	2.3	2.2	3.3
2000	2.3	1.9	2.4	3.0
2001	2.5	1.8	2.1	2.6
2002	2.2	2.0	2.0	2.6
2003	2.7	2.0	2.7	2.7
2004	2.1	2.0	2.7	1.9
2005	2.0	2.5	2.4	2.4
Slope	0.054	0.063	-0.022	0.057
p-value	0.001	0.001	0.229	0.001

Fig. 4.23(b): BRAIN NERVOUS SYSTEM (ICD-10 : C70-72) - Females
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

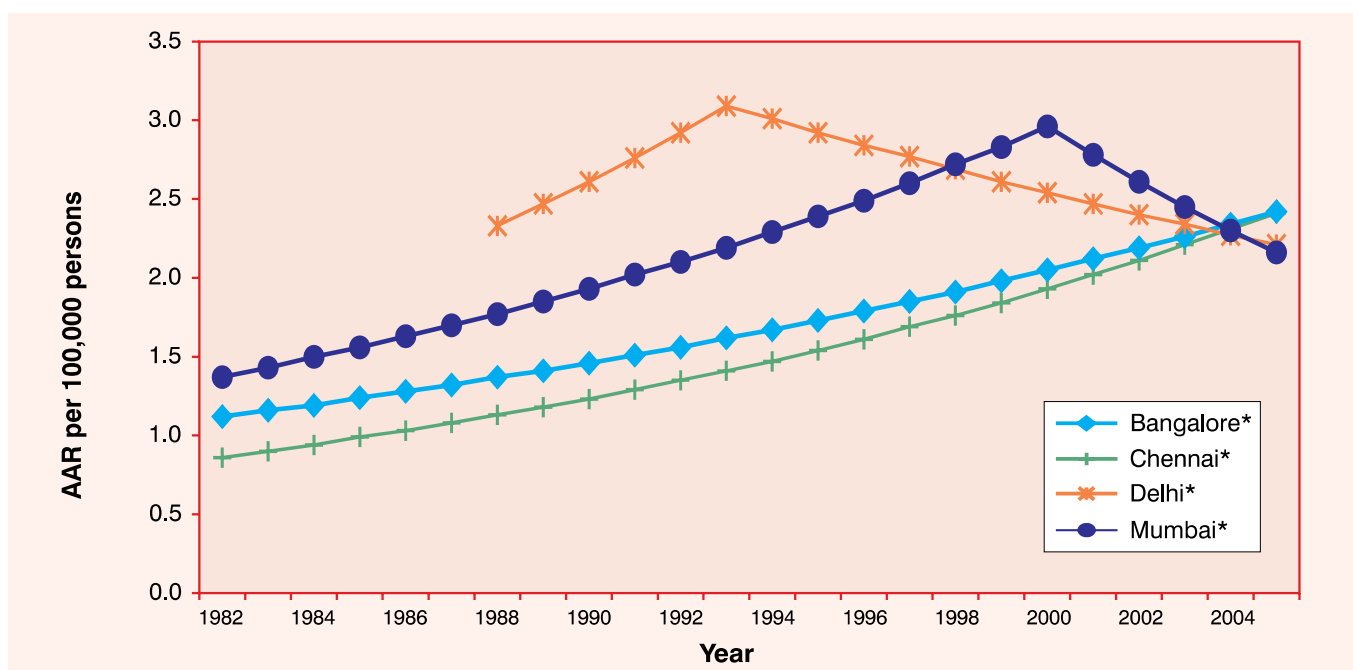


Table 4.23(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP1*	JP1*
1982	1.1	0.9		1.4
1983	1.2	0.9		1.4
1984	1.2	0.9		1.5
1985	1.2	1.0		1.6
1986	1.3	1.0		1.6
1987	1.3	1.1		1.7
1988	1.4	1.1	2.3	1.8
1989	1.4	1.2	2.5	1.9
1990	1.5	1.2	2.6	1.9
1991	1.5	1.3	2.8	2.0
1992	1.6	1.4	2.9	2.1
1993	1.6	1.4	3.1	2.2
1994	1.7	1.5	3.0	2.3
1995	1.7	1.5	2.9	2.4
1996	1.8	1.6	2.8	2.5
1997	1.9	1.7	2.8	2.6
1998	1.9	1.8	2.7	2.7
1999	2.0	1.8	2.6	2.8
2000	2.1	1.9	2.5	3.0
2001	2.1	2.0	2.5	2.8
2002	2.2	2.1	2.4	2.6
2003	2.3	2.2	2.3	2.5
2004	2.3	2.3	2.3	2.3
2005	2.4	2.4	2.2	2.2
APC0	3.42*	4.58*	-0.93	2.90*
APC1	-	-	5.8	4.35*
APC2	-	-	-2.76*	-6.12

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC (p<0.05) values.

Fig. 4.24(a): THYROID GLAND (ICD-10 : C73) - Females
Trends over time (1982-2005) in AAR (Three Year Moving Average)

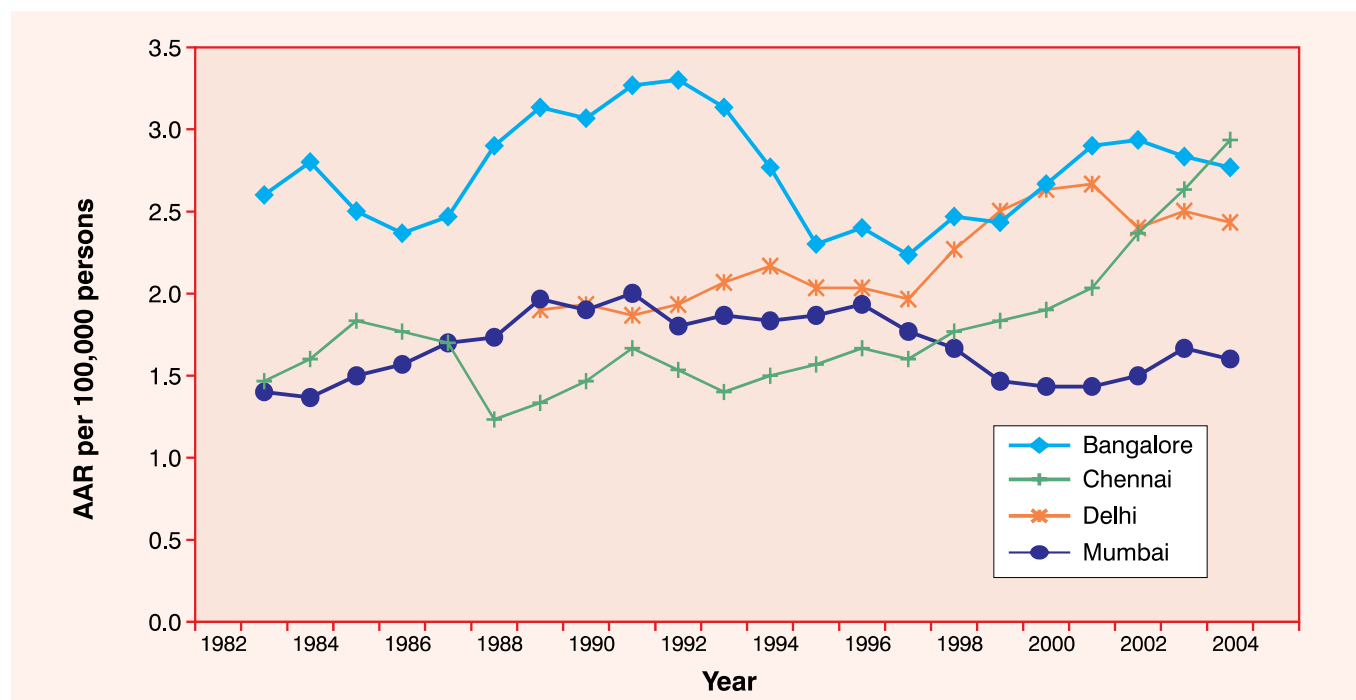


Table 4.24(a): Year wise AARs

Year	Bangalore	Chennai	Delhi	Mumbai
1982	2.2	1.3		1.5
1983	2.5	1.6		1.3
1984	3.1	1.5		1.4
1985	2.8	1.7		1.4
1986	1.6	2.3		1.7
1987	2.7	1.3		1.6
1988	3.1	1.5	1.7	1.8
1989	2.9	0.9	2.1	1.8
1990	3.4	1.6	1.9	2.3
1991	2.9	1.9	1.8	1.6
1992	3.5	1.5	1.9	2.1
1993	3.5	1.2	2.1	1.7
1994	2.4	1.5	2.2	1.8
1995	2.4	1.8	2.2	2.0
1996	2.1	1.4	1.7	1.8
1997	2.7	1.8	2.2	2.0
1998	1.9	1.6	2.0	1.5
1999	2.8	1.9	2.6	1.5
2000	2.6	2.0	2.9	1.4
2001	2.6	1.8	2.4	1.4
2002	3.5	2.3	2.7	1.5
2003	2.7	3.0	2.1	1.6
2004	2.3	2.6	2.7	1.9
2005	3.3	3.2	2.5	1.3
Slope	0.005	0.050	0.049	0.000
p-value	0.733	0.001	0.001	0.961

Fig. 4.24(b): THYROID GLAND (ICD-10 : C73) - Females
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

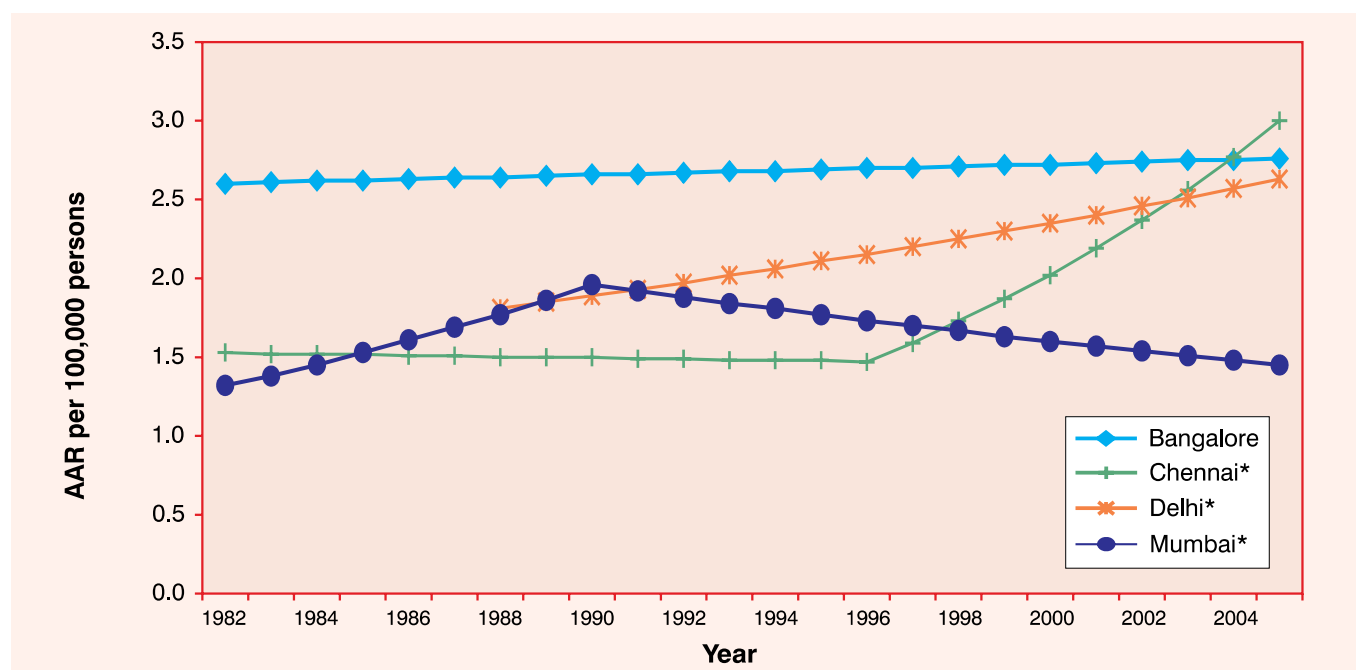


Table 4.24(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Chennai	Delhi	Mumbai
	JP0*	JP1*	JP0*	JP1*
1982	2.6	1.5		1.3
1983	2.6	1.5		1.4
1984	2.6	1.5		1.5
1985	2.6	1.5		1.5
1986	2.6	1.5		1.6
1987	2.6	1.5		1.7
1988	2.6	1.5	1.8	1.8
1989	2.7	1.5	1.9	1.9
1990	2.7	1.5	1.9	2.0
1991	2.7	1.5	1.9	1.9
1992	2.7	1.5	2.0	1.9
1993	2.7	1.5	2.0	1.8
1994	2.7	1.5	2.1	1.8
1995	2.7	1.5	2.1	1.8
1996	2.7	1.5	2.2	1.7
1997	2.7	1.6	2.2	1.7
1998	2.7	1.7	2.3	1.7
1999	2.7	1.9	2.3	1.6
2000	2.7	2.0	2.4	1.6
2001	2.7	2.2	2.4	1.6
2002	2.7	2.4	2.5	1.5
2003	2.8	2.6	2.5	1.5
2004	2.8	2.8	2.6	1.5
2005	2.8	3.0	2.6	1.5
APC0	0.26	2.60*	2.22*	-0.02
APC1	-	-0.26	-	5.08*
APC2	-	8.23*	-	-2.00*

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC (p<0.05) values.

Fig. 4.25(a): NHL (ICD-10 : C82-85,C96) - Males
Trends over time (1982-2005) in AAR (Three Year Moving Average)

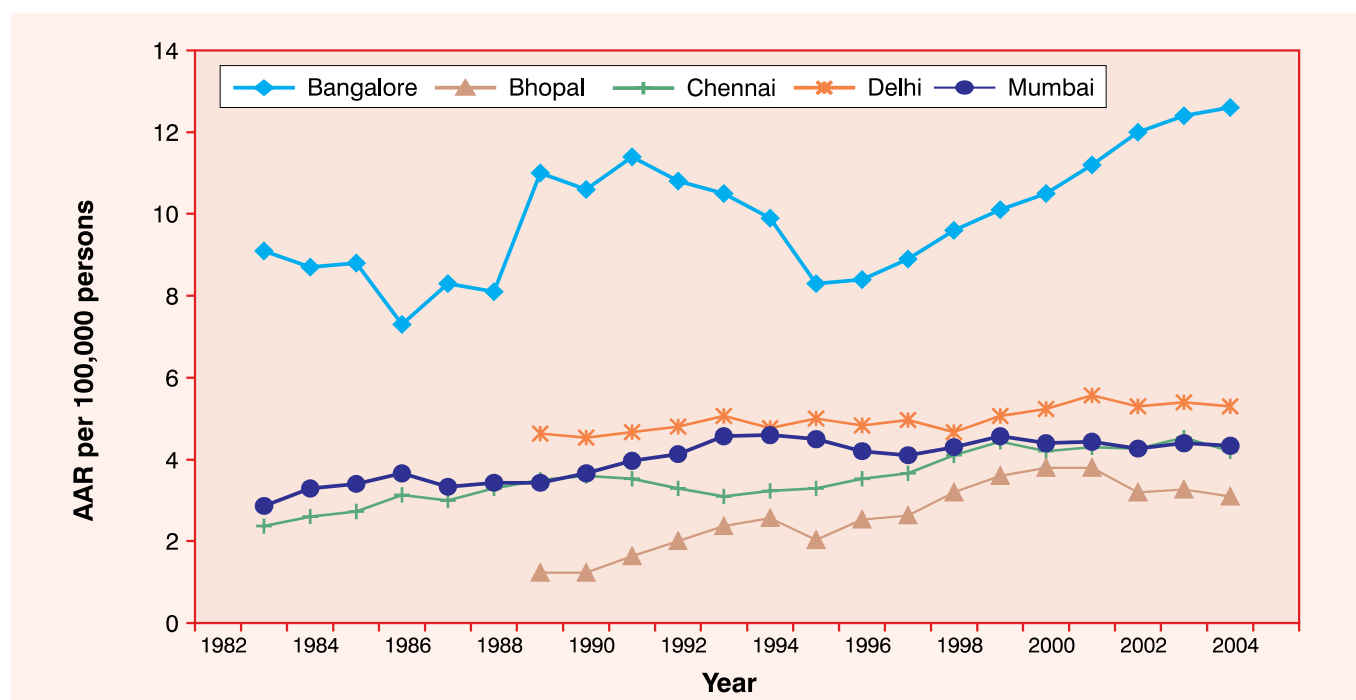


Table 4.25(a): Year wise AARs

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
1982	3.1		2.7		2.5
1983	2.9		2.2		3
1984	3.1		2.2		3.1
1985	2.7		3.4		3.8
1986	3.0		2.6		3.3
1987	1.6		3.4		3.9
1988	3.7	1.0	3.0	4.8	2.8
1989	2.8	0.6	3.5	4.8	3.6
1990	4.5	2.1	4.0	4.3	3.9
1991	3.3	1.0	3.3	4.5	3.5
1992	3.6	1.8	3.3	5.2	4.5
1993	3.9	3.2	3.3	4.7	4.4
1994	3.0	2.1	2.7	5.3	4.8
1995	3.0	2.4	3.7	4.3	4.6
1996	2.3	1.6	3.5	5.4	4.1
1997	3.1	3.6	3.4	4.8	3.9
1998	3.5	2.7	4.1	4.7	4.3
1999	3.0	3.3	4.8	4.5	4.7
2000	3.6	4.8	4.4	6.0	4.7
2001	3.9	3.3	3.4	5.2	3.8
2002	3.7	3.3	5.1	5.5	4.8
2003	4.4	3.0	4.3	5.2	4.2
2004	4.3	3.5	4.2	5.5	4.2
2005	3.9	2.8	4.1	5.2	4.6
Slope(b)	0.047	0.149	0.082	0.047	0.070
p-value	0.014	0.001	0.001	0.023	0.001

Fig. 4.25(b): NHL (ICD-10 : C82-85,C96) - Males
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

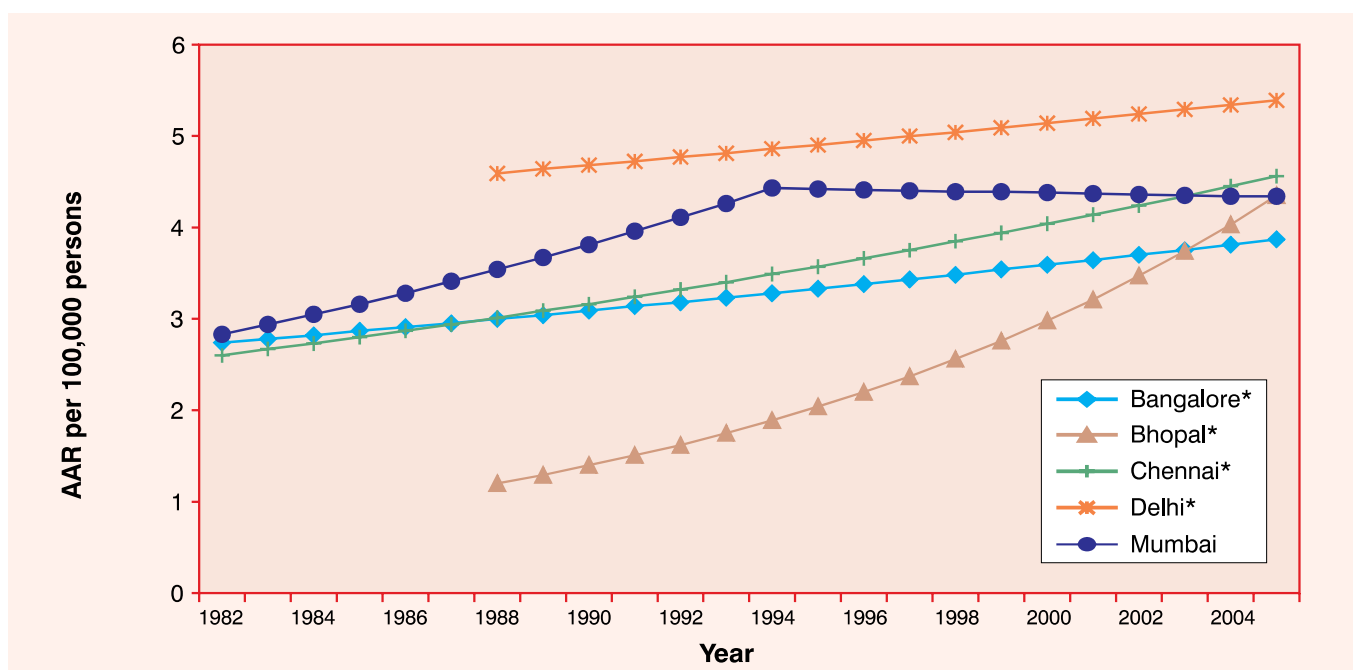


Table 4.25(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Bhopal	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP0*	JP0*	JP1*
1982	2.7		2.6		2.8
1983	2.8		2.7		2.9
1984	2.8		2.7		3.1
1985	2.9		2.8		3.2
1986	2.9		2.9		3.3
1987	3.0		2.9		3.4
1988	3.0	1.2	3.0	4.6	3.5
1989	3.0	1.3	3.1	4.6	3.7
1990	3.1	1.4	3.2	4.7	3.8
1991	3.1	1.5	3.2	4.7	4.0
1992	3.2	1.6	3.3	4.8	4.1
1993	3.2	1.8	3.4	4.8	4.3
1994	3.3	1.9	3.5	4.9	4.4
1995	3.3	2.0	3.6	4.9	4.4
1996	3.4	2.2	3.7	5.0	4.4
1997	3.4	2.4	3.8	5.0	4.4
1998	3.5	2.6	3.9	5.0	4.4
1999	3.5	2.8	3.9	5.1	4.4
2000	3.6	3.0	4.0	5.1	4.4
2001	3.6	3.2	4.1	5.2	4.4
2002	3.7	3.5	4.2	5.2	4.4
2003	3.8	3.7	4.3	5.3	4.4
2004	3.8	4.0	4.5	5.3	4.3
2005	3.9	4.4	4.6	5.4	4.3
APC0	1.51*	7.87*	2.47*	0.95*	1.91*
APC1	-	-	-	-	3.80*
APC2	-	-	-	-	-0.19

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC (p<0.05) values.

Fig. 4.26(a): NHL (ICD-10 : C82-85,C96) - Females
Trends over time (1982-2005) in AAR (Three Year Moving Average)

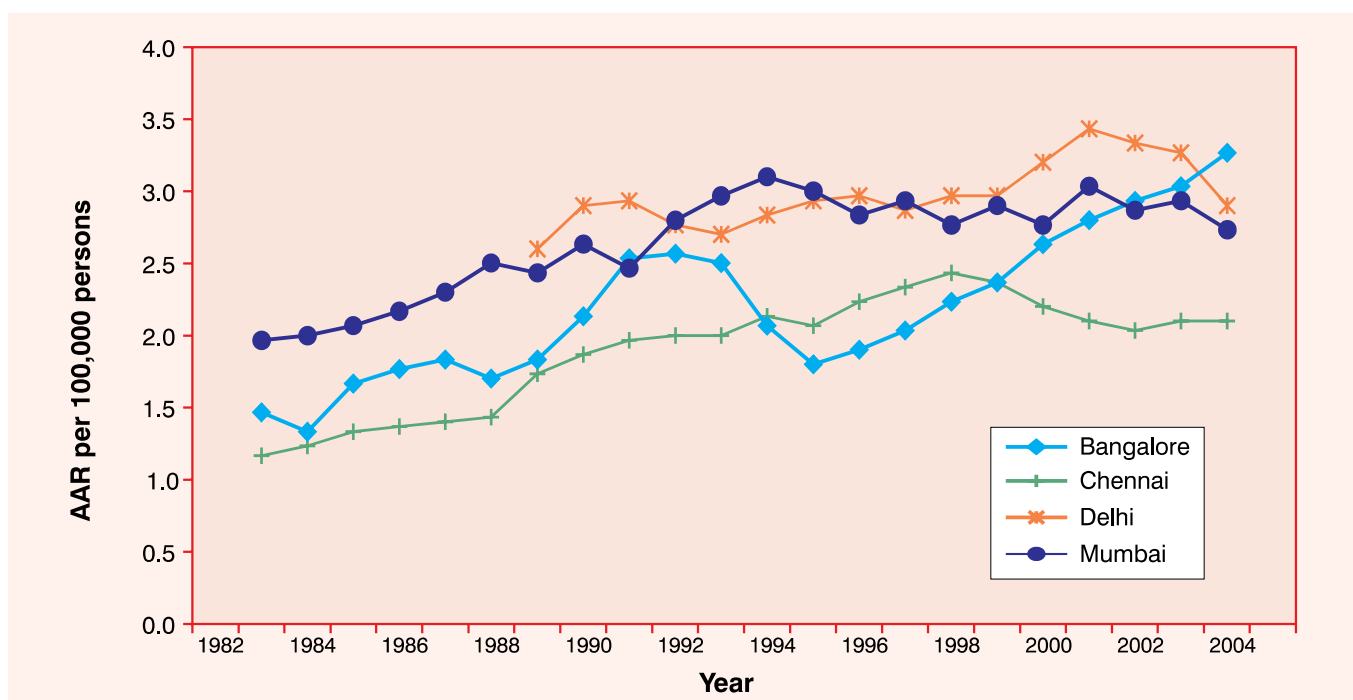


Table 4.26(a): Year wise AARs

Year	Bangalore	Chennai	Delhi	Mumbai
1982	1.4	1.3		1.8
1983	1.4	1.3		1.9
1984	1.6	0.9		2.2
1985	1.0	1.5		1.9
1986	2.4	1.6		2.1
1987	1.9	1.0		2.5
1988	1.2	1.6	2.3	2.3
1989	2.0	1.7	2.4	2.7
1990	2.3	1.9	3.1	2.3
1991	2.1	2.0	3.2	2.9
1992	3.2	2.0	2.5	2.2
1993	2.4	2.0	2.6	3.3
1994	1.9	2.0	3.0	3.4
1995	1.9	2.4	2.9	2.6
1996	1.6	1.8	2.9	3.0
1997	2.2	2.5	3.1	2.9
1998	2.3	2.7	2.6	2.9
1999	2.2	2.1	3.2	2.5
2000	2.6	2.3	3.1	3.3
2001	3.1	2.2	3.3	2.5
2002	2.7	1.8	3.9	3.3
2003	3.0	2.1	2.8	2.8
2004	3.4	2.4	3.1	2.7
2005	3.4	1.8	2.8	2.7
Slope	0.075	0.048	0.034	0.043
p-value	0.001	0.001	0.044	0.001

Fig. 4.26(b): NHL (ICD-10 : C82-85,C96) - Females
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

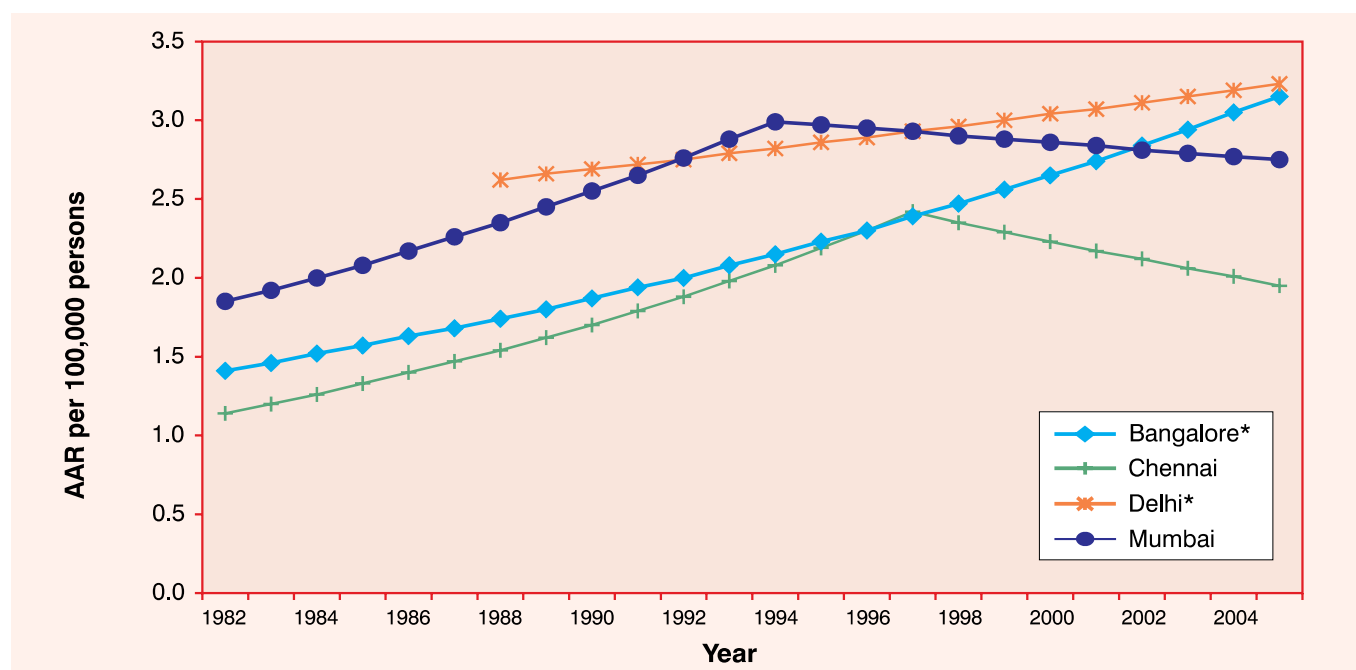


Table 4.26(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Chennai	Delhi	Mumbai
	JP0*	JP1*	JP0*	JP1*
1982	1.4	1.1		1.9
1983	1.5	1.2		1.9
1984	1.5	1.3		2.0
1985	1.6	1.3		2.1
1986	1.6	1.4		2.2
1987	1.7	1.5		2.3
1988	1.7	1.5	2.6	2.4
1989	1.8	1.6	2.7	2.5
1990	1.9	1.7	2.7	2.6
1991	1.9	1.8	2.7	2.7
1992	2.0	1.9	2.8	2.8
1993	2.1	2.0	2.8	2.9
1994	2.2	2.1	2.8	3.0
1995	2.2	2.2	2.9	3.0
1996	2.3	2.3	2.9	3.0
1997	2.4	2.4	2.9	2.9
1998	2.5	2.4	3.0	2.9
1999	2.6	2.3	3.0	2.9
2000	2.7	2.2	3.0	2.9
2001	2.7	2.2	3.1	2.8
2002	2.8	2.1	3.1	2.8
2003	2.9	2.1	3.2	2.8
2004	3.1	2.0	3.2	2.8
2005	3.2	2.0	3.2	2.8
APC0	3.55*	2.83*	1.23*	1.79*
APC1	-	5.11*	-	4.11*
APC2	-	-2.62	-	-0.78

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC (p<0.05) values.

Fig. 4.27(a): LYMPHOID LEUKAEMIA (ICD-10 : C91) - Males
Trends over time (1982-2005) in AAR (Three Year Moving Average)

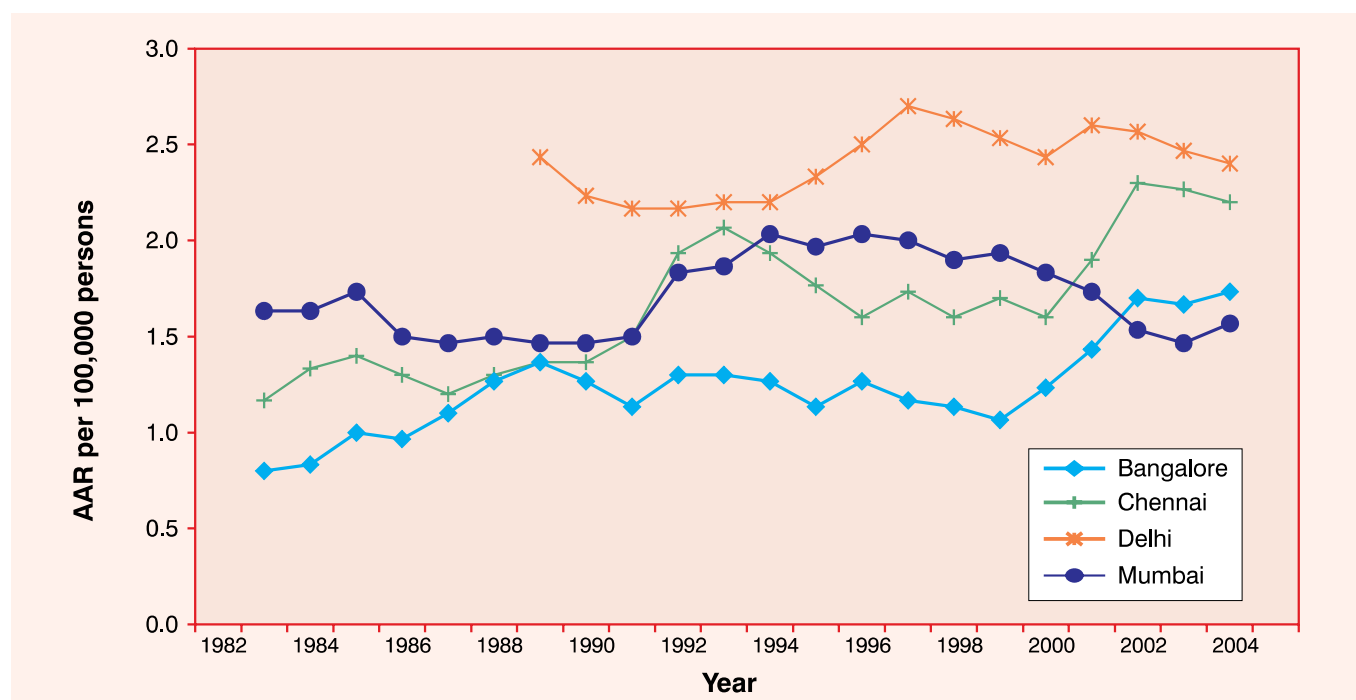


Table 4.27(a): Year wise AARs

Year	Bangalore	Chennai	Delhi	Mumbai
1982	0.8	1.2		1.7
1983	0.7	1.0		1.1
1984	0.9	1.3		2.1
1985	0.9	1.7		1.7
1986	1.2	1.2		1.4
1987	0.8	1.0		1.4
1988	1.3	1.4	2.8	1.6
1989	1.7	1.5	2.5	1.5
1990	1.1	1.2	1.9	1.3
1991	1.0	1.4	2.2	1.6
1992	1.3	1.9	2.3	1.6
1993	1.6	2.5	2.0	2.3
1994	1.0	1.8	2.3	1.7
1995	1.2	1.5	2.3	2.1
1996	1.2	2.0	2.4	2.1
1997	1.4	1.3	2.8	1.9
1998	0.9	1.9	2.9	2.0
1999	1.1	1.6	2.2	1.8
2000	1.2	1.6	2.5	2.0
2001	1.4	1.6	2.6	1.7
2002	1.7	2.5	2.7	1.5
2003	2.0	2.8	2.4	1.4
2004	1.3	1.5	2.3	1.5
2005	1.9	2.3	2.5	1.8
Slope(b)	0.032	0.044	0.010	0.009
p-value	0.001	0.001	0.451	0.316

Fig. 4.27(b): LYMPHOID LEUKAEMIA (ICD-10 : C91) - Males
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

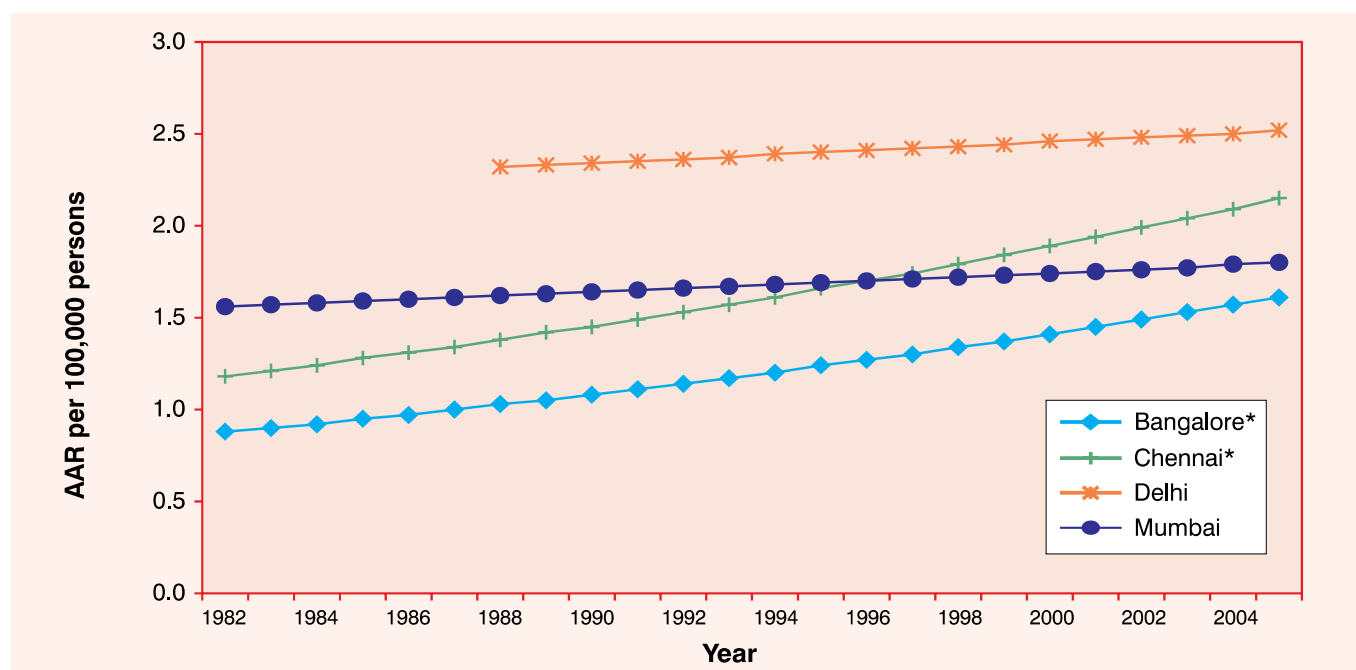


Table 4.27(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP0*	JP0*
1982	0.9	1.2		1.6
1983	0.9	1.2		1.6
1984	0.9	1.2		1.6
1985	1.0	1.3		1.6
1986	1.0	1.3		1.6
1987	1.0	1.3		1.6
1988	1.0	1.4	2.3	1.6
1989	1.1	1.4	2.3	1.6
1990	1.1	1.5	2.3	1.6
1991	1.1	1.5	2.4	1.7
1992	1.1	1.5	2.4	1.7
1993	1.2	1.6	2.4	1.7
1994	1.2	1.6	2.4	1.7
1995	1.2	1.7	2.4	1.7
1996	1.3	1.7	2.4	1.7
1997	1.3	1.7	2.4	1.7
1998	1.3	1.8	2.4	1.7
1999	1.4	1.8	2.4	1.7
2000	1.4	1.9	2.5	1.7
2001	1.5	1.9	2.5	1.8
2002	1.5	2.0	2.5	1.8
2003	1.5	2.0	2.5	1.8
2004	1.6	2.1	2.5	1.8
2005	1.6	2.2	2.5	1.8
APC0	2.68*	2.64*	0.49	0.61
APC1	-	-	-	-
APC2	-	-	-	-

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC (p<0.05) values.

Fig. 4.28(a): MYELOID LEUKAEMIA (ICD-10 : C92-94) - Males
Trends over time (1982-2005) in AAR (Three Year Moving Average)

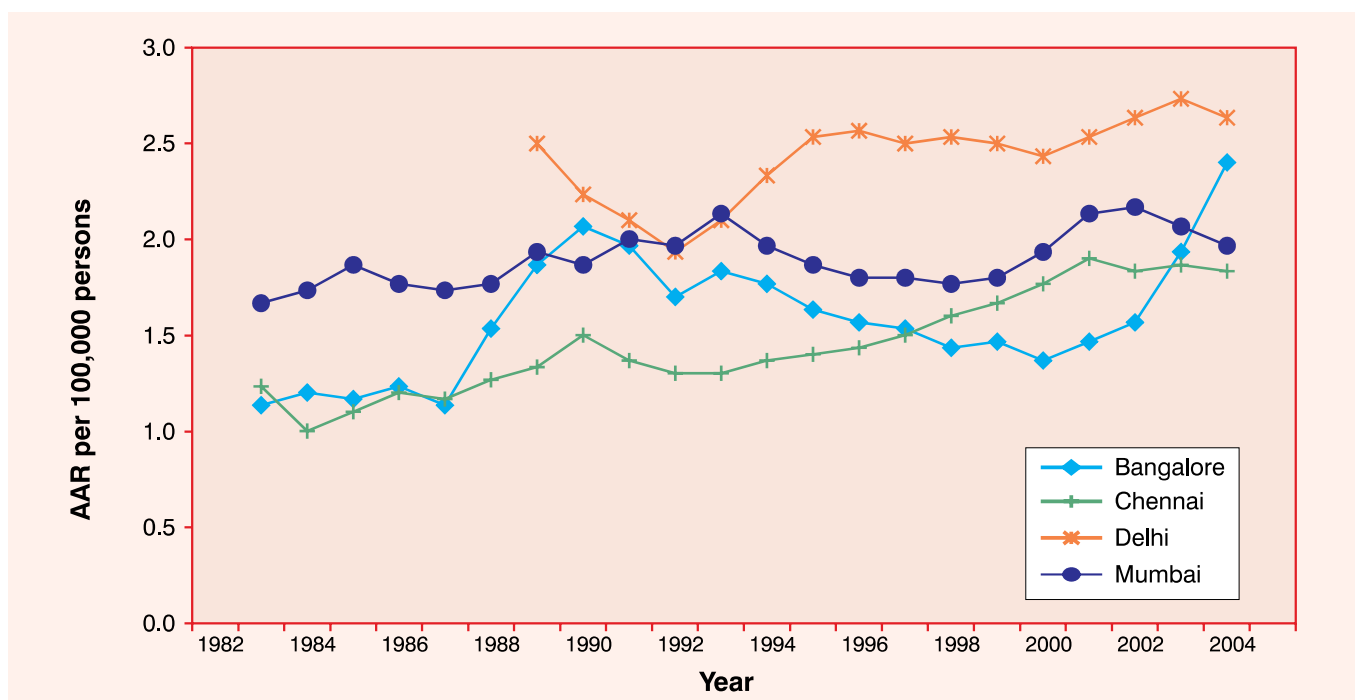


Table 4.28(a): Year wise AARs

Year	Bangalore	Chennai	Delhi	Mumbai
1982	1.0	1.7		1.6
1983	1.1	0.9		1.4
1984	1.3	1.1		2.0
1985	1.2	1.0		1.8
1986	1.0	1.2		1.8
1987	1.5	1.4		1.7
1988	0.9	0.9	2.8	1.7
1989	2.2	1.5	2.4	1.9
1990	2.5	1.6	2.3	2.2
1991	1.5	1.4	2.0	1.5
1992	1.9	1.1	2.0	2.3
1993	1.7	1.4	1.8	2.1
1994	1.9	1.4	2.5	2.0
1995	1.7	1.3	2.7	1.8
1996	1.3	1.5	2.4	1.8
1997	1.7	1.5	2.6	1.8
1998	1.6	1.5	2.5	1.8
1999	1.0	1.8	2.5	1.7
2000	1.8	1.7	2.5	1.9
2001	1.3	1.8	2.3	2.2
2002	1.3	2.2	2.8	2.3
2003	2.1	1.5	2.8	2.0
2004	2.4	1.9	2.6	1.9
2005	2.7	2.1	2.5	2.0
Slope(b)	0.034	0.036	0.021	0.014
p-value	0.018	0.001	0.107	0.034

Fig. 4.28(b): MYELOID LEUKAEMIA (ICD-10 : C92-94) - Males
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

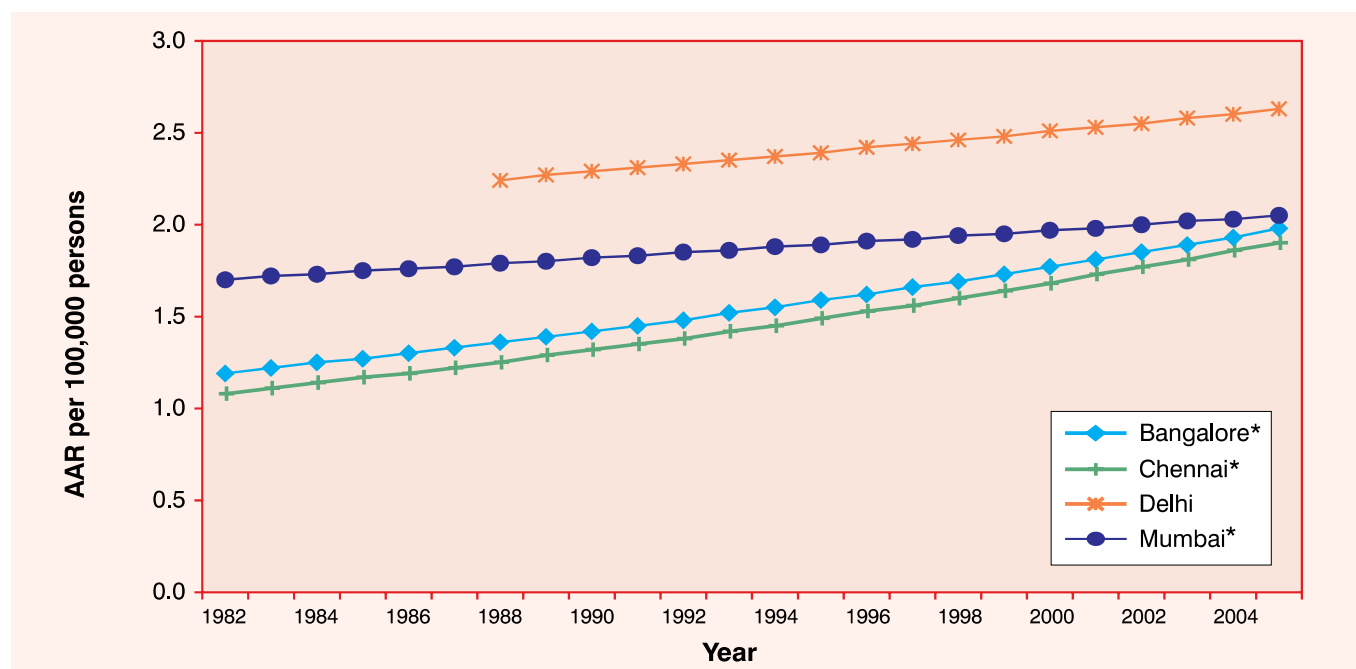


Table 4.28(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP0*	JP0*
1982	1.2	1.1		1.7
1983	1.2	1.1		1.7
1984	1.3	1.1		1.7
1985	1.3	1.2		1.8
1986	1.3	1.2		1.8
1987	1.3	1.2		1.8
1988	1.4	1.3	2.2	1.8
1989	1.4	1.3	2.3	1.8
1990	1.4	1.3	2.3	1.8
1991	1.5	1.4	2.3	1.8
1992	1.5	1.4	2.3	1.9
1993	1.5	1.4	2.4	1.9
1994	1.6	1.5	2.4	1.9
1996	1.6	1.5	2.4	1.9
1997	1.7	1.6	2.4	1.9
1998	1.7	1.6	2.5	1.9
1999	1.7	1.6	2.5	1.9
2000	1.8	1.7	2.5	2.0
2001	1.8	1.7	2.5	2.0
2002	1.9	1.8	2.6	2.0
2003	1.9	1.8	2.6	2.0
2004	1.9	1.9	2.6	2.0
2005	2.0	1.9	2.6	2.1
APC0	2.23*	2.49*	0.93	0.80*
APC1	—	—	—	—
APC2	—	—	—	—

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC ($p < 0.05$) values.

Fig. 4.29(a): MYELOID LEUKAEMIA (ICD-10 : C92-94) - Females
Trends over time (1982-2005) in AAR (Three Year Moving Average)

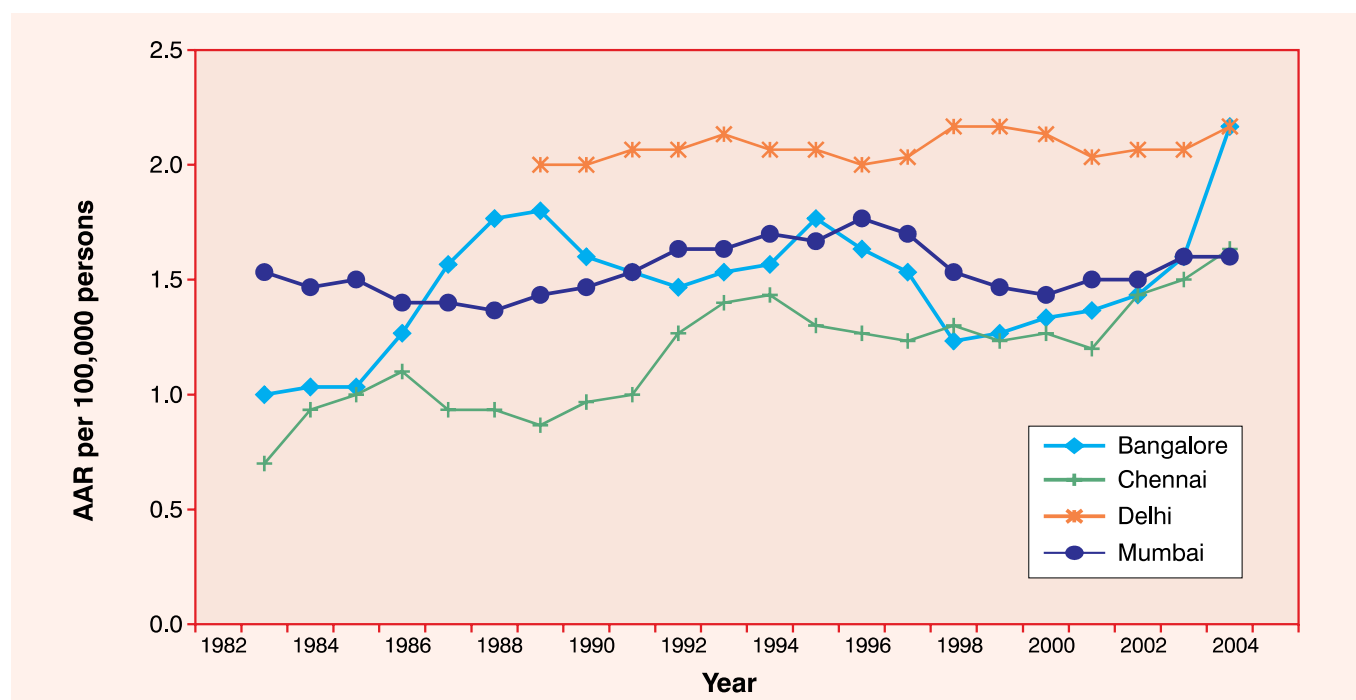


Table 4.29(a): Year wise AARs

Year	Bangalore	Chennai	Delhi	Mumbai
1982	1.0	0.4		1.6
1983	1.2	0.9		1.3
1984	0.8	0.8		1.7
1985	1.1	1.1		1.4
1986	1.2	1.1		1.4
1987	1.5	1.1		1.4
1988	2.0	0.6	2.0	1.4
1989	1.8	1.1	2.0	1.3
1990	1.6	0.9	1.4	1.6
1991	1.4	0.9	1.9	1.5
1992	1.6	1.2	2.2	1.5
1993	1.4	1.7	1.6	1.9
1994	1.6	1.3	2.2	1.5
1995	1.7	1.3	2.0	1.7
1996	2.0	1.3	1.9	1.8
1997	1.2	1.2	1.9	1.8
1998	1.4	1.2	2.1	1.5
1999	1.1	1.5	2.4	1.3
2000	1.3	1.0	1.8	1.6
2001	1.6	1.3	1.7	1.4
2002	1.2	1.3	2.1	1.5
2003	1.5	1.7	2.1	1.6
2004	2.1	1.5	1.7	1.7
2005	2.9	1.7	2.4	1.5
Slope	0.030	0.035	0.012	0.005
p-value	0.020	0.001	0.302	0.285

Fig. 4.29(b): MYELOID LEUKAEMIA (ICD-10 : C92-94) - Females
Trends over time (1982-2005) in AAR (Joinpoint Regression Model)

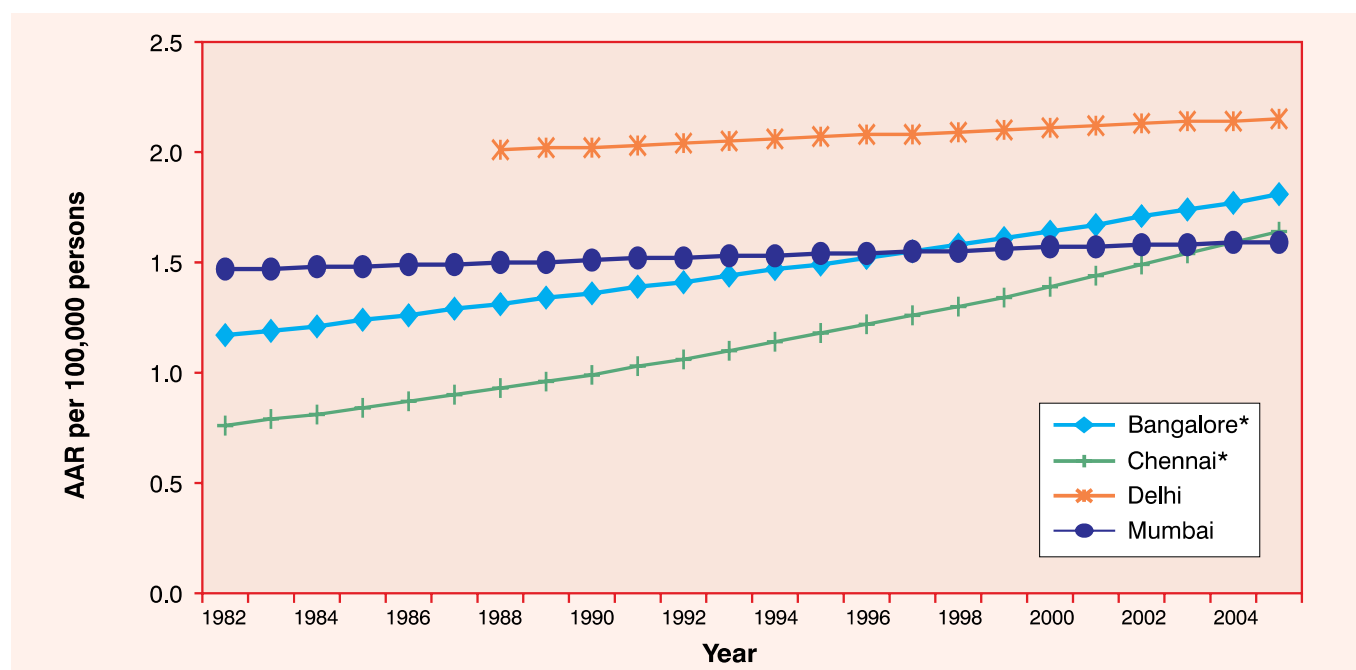


Table 4.29(b): Value of Joinpoint AARs with Annual Percent Change (APC)

Year	Bangalore	Chennai	Delhi	Mumbai
	JP0*	JP0*	JP0*	JP0*
1982	1.2	0.8		1.5
1983	1.2	0.8		1.5
1984	1.2	0.8		1.5
1985	1.2	0.8		1.5
1986	1.3	0.9		1.5
1987	1.3	0.9		1.5
1988	1.3	0.9	2.0	1.5
1989	1.3	1.0	2.0	1.5
1990	1.4	1.0	2.0	1.5
1991	1.4	1.0	2.0	1.5
1992	1.4	1.1	2.0	1.5
1993	1.4	1.1	2.1	1.5
1994	1.5	1.1	2.1	1.5
1995	1.5	1.2	2.1	1.5
1996	1.5	1.2	2.1	1.5
1997	1.6	1.3	2.1	1.6
1998	1.6	1.3	2.1	1.6
1999	1.6	1.3	2.1	1.6
2000	1.6	1.4	2.1	1.6
2001	1.7	1.4	2.1	1.6
2002	1.7	1.5	2.1	1.6
2003	1.7	1.5	2.1	1.6
2004	1.8	1.6	2.1	1.6
2005	1.8	1.6	2.2	1.6
APC0	1.90*	3.41*	0.41	0.36
APC1	—	—	—	—
APC2	—	—	—	—

Values of years where a shift in trend observed is highlighted; * represents significant Joinpoint Model & APC ($p < 0.05$) values.

Chapter 5

PROJECTION OF BURDEN OF CANCER

Projection of cancer burden means a systematic way of prediction of number of cancer cases for all anatomical sites or for a specific site and for a specified period of time. This could be based on time trend in incidence rates based on the projected population.

The present chapter projects the cancer cases for the country by sex for selected sites of cancer for the periods 2008-2010, 2015 & 2020 [Table 5(a) and 5(b)]. The incidence data generated by PBCRs at Bangalore, Barshi, Bhopal, Chennai, Delhi and Mumbai for the years 2001-2005 formed the sources of data. The Crude Incidence Rate (CR) was considered suitable for assessing the future load (magnitude) of cancer cases in the country. The CR is preferable to AAR as the latter is more suitable for comparison of rates between areas than for assessing the disease burden for the area. The combination of time trend in pooled crude rates of selected sites for past five years and population estimate by time was used to arrive at the projection for each of the above periods. The Linear Regression method was used to assess the time trend. For whichever sites the trend was not found to be significant, the latest rates were taken into consideration.

The pooled crude rates of the five urban registries (Bangalore, Barshi, Chennai, Delhi and Mumbai) were taken to represent the estimates for all Indian states excluding states from the North East region. The Crude Rate of various cancer sites provided in the report of 2005-2006 for the North East region were assumed to represent the estimates for the same area. The crude rate of cancers of cervix and breast of the rural registry at Barshi was taken into account to represent the rural areas of India. Accordingly, the weightage of 0.7 and 0.3 for rural and urban areas respectively was used to estimate the projection for Breast and Cervix cancers.

The Percentage change observed in decadal growth rate of 1991-2001 as compared to the decadal growth of 1981-1991 was assumed to continue and correspondingly the growth rate of India is calculated separately for both males and females to calculate the yearly populations for the year 2001-2020.

**Table 5(a): Projected Cases at India level for Selected Sites and Selected time periods
(2008-2010, 2015, 2020) - MALES**

ICD-10	Site Name	2008	2009	2010	2015	2020
C00-C96	All Sites	447399	454842	462408	497081	534354
C01-C02	Tongue	23932	24330	24735	26590	28584
C03-C06	Mouth	28066	29474	30921	38380	46785
C12-C13	Hypopharynx	14131	14366	14605	15700	16878
C15	Oesophagus	23573	23433	23281	22114	20642
C16	Stomach	24993	25408	25831	27768	29850
C18	Colon	11236	11423	11613	12484	13420
C19-C20	Rectum	11738	11933	12132	13041	14019
C22	Liver	14062	14295	14533	15623	16795
C23-C24	Gall Bladder	8396	8536	8678	9329	10028
C32	Larynx	24356	24761	25173	27060	29089
C33-C34	Lung	42863	43576	44301	47623	51194
C61	Prostate	25273	25693	26120	28079	30185
C70-C72	Brain NS	18238	18541	18850	20263	21782
C82-C95, C96	NHL	19835	20165	20501	22038	23690
C91	Lymp. Leuk.	9565	9724	9886	10627	11424
C92-C94	Myeloid Leuk.	11616	11809	12005	12905	13873

**Table 5(b): Projected Cases at India level for Selected Sites and Selected time periods
(2008-2010, 2015, 2020) - FEMALES**

ICD-10	Site Name	2008	2009	2010	2015	2020
C00-C96	All Sites	498773	507990	517378	563808	614404
C01-C02	Tongue	7687	7829	7974	8689	9469
C03-C06	Mouth	14402	14669	14940	16280	17741
C12-C13	Hypopharynx	4620	4706	4793	5223	5691
C15	Oesophagus	17755	18083	18417	20070	21871
C16	Stomach	12458	12689	12923	14083	15347
C18	Colon	10675	11276	11896	15206	19014
C19-C20	Rectum	9005	9172	9341	10180	11093
C22	Liver	7564	7943	8334	10412	12795
C23-C24	Gall Bladder	17839	18169	18505	20166	21975
C32	Larynx	3894	3966	4039	4401	4796
C33-C34	Lung	13009	13250	13494	14705	16025
C50	Breast	84805	87693	90659	106124	123634
C53	Cervix	100088	101938	103821	113138	123291
C54	Corpus Uteri	14314	14579	14848	16181	17633
C56	Ovary	29386	29929	30482	33218	36199
C70-C72	Brain NS	11232	11440	11651	12697	13836
C73	Thyroid Gland	11329	11538	11751	12806	13955
C82-C85, C96	NHL	11696	11913	12133	13222	14408
C91	Lymp. Leuk.	5703	5808	5916	6447	7025
C92-C94	Myeloid Leuk.	11070	11770	12492	16363	20828

References

1. Boyle, P. and Parkin, D.M. Statistical Methods for Registries – Ch. In Cancer Registration – Principles and Methods, Eds. Jensen, O.M., Parkin, D.M., Maclennan, R., Muir C.S. and Skeet R.G., IARC Scientific Publications, No.95, Lyon, 1991.
2. Consolidated Report of the Population Based Cancer Registries 1990-1996 : National Cancer Registry Programme (ICMR), Bangalore, 2001.
3. Consolidated Report of the North East Population Based Cancer Registries 2005-2006 : National Cancer Registry Programme (ICMR), Bangalore, 2008.
4. Kim H.J., Fay M.P., Feuer E.J., Midthune D.N. - Permutation Tests for Joinpoint Regression with Applications to Cancer Rates. Stat Med 2000; 19:335-51 (correction: 2001; 20:655).
5. Muir C.S., Demaret E and Boyle P., The cancer registry in cancer control: an overview. IARC Sc. Pub. 1985, 66, 13-26.
6. Takiar R and Shobana B: Cancer Incidence Rates and Problem of Denominators - A New approach in Indian Cancer Registries: Asian Pacific J Cancer Prev; Vol.10, 2009.

Other Publications of NCRP

1. Annual Report 1982: National Cancer Registry, Indian Council of Medical Research, New Delhi, 1985
2. Annual Report 1983: National Cancer Registry, Indian Council of Medical Research, New Delhi, 1986
3. Annual Report 1984: National Cancer Registry, Indian Council of Medical Research, New Delhi, 1987
4. Annual Report 1985: National Cancer Registry, Indian Council of Medical Research, New Delhi, 1988
5. Annual Report 1986: National Cancer Registry, Indian Council of Medical Research, New Delhi, 1989
6. Annual Report 1987: National Cancer Registry Programme, Indian Council of Medical Research, New Delhi, 1989
7. Biennial Report 1988-1989: National Cancer Registry Programme, Indian Council of Medical Research, New Delhi, 1992
8. Consolidated Report of the Population Based Cancer Registries 1990-1996: National Cancer Registry Programme (ICMR), Bangalore, 2001
9. Consolidated Report of the Population Based Cancer Registries 1990-1996 Supplement: Year-wise Tabulation of Incident Cancers and Rates by Site and Gender: National Cancer Registry Programme (ICMR), Bangalore, 2001
10. Ten Year Consolidated Report of the Hospital Based Cancer Registries 1984-93: National Cancer Registry Programme (ICMR), Bangalore, 2001
11. NCRP - An Overview 1981-2001: National Cancer Registry Programme (ICMR), Bangalore, 2001
12. Two-Year Report of the Population Based Cancer Registries 1997-1998: National Cancer Registry Programme (ICMR), Bangalore, 2002
13. Five Year Consolidated Report on Hospital Based Cancer Registries : 1994-1998: National Cancer Registry Programme (ICMR), Bangalore, 2002
14. Development of an Atlas of Cancer in India. First All India Report 2001-2002 vol. I and II. [www.canceratlasindia.org]: National Cancer Registry Programme (ICMR), Bangalore, 2004
15. An Overview - Development of an Atlas of Cancer in India. First All India Report 2001-2002 vol. I and II. [www.canceratlasindia.org]: National Cancer Registry Programme (ICMR), Bangalore, 2004
16. Two-Year Report of the Population Based Cancer Registries 1999-2000: National Cancer Registry Programme (ICMR), Bangalore, 2005
17. Two-Year Report of the Hospital Based Cancer Registries 1999-2000: National Cancer Registry Programme (ICMR), Bangalore, 2005
18. First Report of the Population Based Cancer Registries under North Eastern Regional Cancer Registry 2003-2004: National Cancer Registry (ICMR), Bangalore, 2006
19. An Overview - First Report of the North-East Population Based Cancer Registries 2003-2004: National Cancer Registry Programme (ICMR), Bangalore 2006
20. Consolidated Report of Population Based Cancer Registries 2001-2004: National Cancer Registry Programme (ICMR), Bangalore 2006
21. Consolidated report of Hospital Based Cancer Registries 2001-2003: National Cancer Registry Programme (ICMR), Bangalore, 2007
22. Second Report of the North East Population Based Cancer Registries 2005-2006: National Cancer Registry Programme (ICMR), Bangalore, 2008
23. Two-Year Report of the Population Based Cancer Registries 2004-2005: National Cancer Registry Programme (ICMR), Bangalore 2008