

**NATIONAL CENTRE FOR DISEASE INFORMATICS AND RESEARCH**  
**NATIONAL CANCER REGISTRY PROGRAMME**  
*Indian Council of Medical Research*

**Time Trends in Cancer Incidence Rates**  
**1982-2010**

**Bangalore, India**

*July 2013*

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# NATIONAL CENTRE FOR DISEASE INFORMATICS AND RESEARCH

## NATIONAL CANCER REGISTRY PROGRAMME

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# FOREWORD



This report on “Time Trends in Cancer Incidence Rates from 1982-2010” spanning three decades is a second report on cancer trends in India. The data from 13 Population Based Cancer Registries (PBCRs) are included in this report as compared to that of 6 PBCRs reported earlier. Since the data of several PBCRs have been used based on a relatively larger population, the report is informative and interesting.

This report has important data from the North Eastern part of the country covering the data of the entire states of Mizoram and Sikkim. Three North Eastern districts namely, Dibrugarh District and Kamrup Urban District of Assam and Imphal West District of Manipur state have also been included in the analysis. Ahmedabad Rural PBCR’s data has been included from the western part of the country and Thiruvananthapuram is a new addition from south India. Ascertainment of the trends of rates in smaller geographic areas is expected to lead to more accurate cancer projections.

This trend report can be used by public health officials and practitioners for needs assessments, programme evaluations and the development of cancer control strategies. This could also help to assess the result of the cancer control activities undertaken in the past so that they can be redesigned and implemented with necessary course corrections. The assessment of cancer trends based on the cancer incidence rates over a selected time period is the only way to distinguish the impacts of changing population and changing risks. Because recent trends are likely to be the best predictor of cancer rates in consecutive years, the extrapolations made in this report are of utmost reliability.

I must appreciate all the staff and principal investigators of the Population Based Cancer Registries and those at NCDIR for their cooperation and dedication in completing this huge task of compiling such a large data from across the country.



**Dr V.M. Katoch**

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# PREFACE

The National Cancer Registry Programme (NCRP) commenced by the Indian Council of Medical Research (ICMR) in the year 1981 has come a long way in assimilating, nurturing and disseminating the most reliable data on cancer in our country. It now has a network of 28 Population Based Cancer Registries (PBCRs), the recent most being at Hyderabad.

The hallmark of the success of NCRP has been the development of the in-house developed softwares to capture and process the data. The development of the software module to assist in generation of tables on Time Trends has been of immense help. The overall use of Information Technology has made it possible to come up with this second report on Time Trends within four years of the first one.

It is interesting to compare the leading sites of cancer in the starting years and the recent years of functioning of each PBCR. This report has included 6 older and 7 newer registries. The sites of cancer showing an increasing trend in these new regions have been included along with the older PBCRs. Some additional sites of cancer showing an increasing trend have also been introduced in this report. The research that has gone into identifying the sites of cancer that are contributing to the increasing or decreasing cancer incidence is commendable. The results have been presented well to cover all the 13 PBCRs. On a careful reading of this book, one can get a fair idea of the overall time trends in incidence rates of cancer in the country.

I wish to thank the Coordinating Unit of NCRP which has now graduated into a new ICMR centre - National Centre for Disease Informatics and Research (NCDIR) and the registries for their incessant efforts and dedication towards completion of this report.



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# Time Trends in Cancer Incidence Rates: 1982-2010

## Executive Summary

The National Cancer Registry Programme (NCRP) published the first report on Time Trends in Cancer Incidence Rates 1982-2005 in 2009. This second report covers additional five years (2006-2010) data for the older PBCRs at Bangalore, Bhopal, Chennai, Delhi, Mumbai and Barshi and provides an insight on the trends in seven additional PBCRs at Thiruvananthapuram, Dibrugarh, Kamrup Urban District, Imphal West District, Ahmedabad Rural District and the states of Mizoram and Sikkim. These seven PBCRs have contributed at least 7 years data. Some information on trends in incidence rates is also provided for the PBCRs at Kolkata, Kollam, Ahmedabad Urban, Pune, Aurangabad and Nagpur that have data for 5-6 years. The older PBCRs have been functioning for a much longer period of time. Further one is able to examine the time trend based on five year annual average age adjusted incidence rates (AAR) for at least five such periods, thus providing potency to the findings. Therefore, this summary deals predominantly with the results from these centres. Notable, outcomes from other PBCRs do find mention. This second report has also examined differences if any in the rise in certain sites of cancer by broad age groups, particularly the younger age groups and some of the findings are also highlighted below.

The population of India in general and that of the areas covered by the registries in particular, have displayed rapid changes in life styles, dietary practices and socio-economic milieu. Diagnostic and detection technologies have improved and more of the population has not only access, but can also afford the same. Pathology laboratories with amenities for microscopic diagnosis of cancer and radiation oncology treatment facilities have multiplied, increasing the sources of data collection for registry workers underscoring the greater need of cooperation from more persons and institutions. Software applications programmes have considerably enhanced the quality of the data. On the downside, the stringent and varied methods used by the de-duplication module in the software applications programme for recent years' data could exclude those cases that would have otherwise been included in earlier years. Thus, the above factors involving population dynamics, registry practices and use of electronic information technology could all affect the incidence rates in different ways. These need to be kept in mind when interpreting the results.

Among males, cancers of the tongue, mouth, colon, rectum, liver, lung, prostate, brain, non-hodgkin's lymphoma and lymphoid leukaemia have shown statistically significant increase in incidence rates. Some additional sites of cancer for males that have shown a rising trend and included in this report are gallbladder, pancreas, kidney and urinary bladder.

In females, cancers of the gall bladder, lung, breast, corpus uteri, ovary, thyroid, brain, non-Hodgkin's lymphoma and myeloid leukaemia have shown a statistically significant increase in AARs.

In terms of highest Annual Percentage Change (APC %), cancer of the corpus uteri (Bangalore: 6.3%; Delhi: 3.6%) and gall bladder in females (Chennai: 6.2%) stand out. Cancer of the corpus uteri is significantly increasing in all four metro PBCRs, both overall and in the 45+ age groups. In addition in Bangalore, Chennai and Delhi the younger 35-44 year age group also show a significant increase. Cancer of the gall bladder in females is increasing in both the southern PBCRs at Chennai and Bangalore and also in Bhopal. In Delhi the increase is seen only in males and in Mumbai in both males and females. In Chennai and Bhopal the increase is significantly seen in younger women (25-34 and 35-44 age groups). Increased risk of cancer of the corpus uteri has been associated with obesity, low parity and use of unopposed or non-cyclical oestrogen replacement therapy (Beral *et al*, 1999, 2005; Bray, *et al*, 2005). Cancer of the lung in females has shown an increase in all the four metros and also in Kamrup urban district. In females in Chennai there is significant increase in lung cancer in the younger age groups of 25-34 and 35-44. Tumours of the brain that have shown an increase in Bangalore and Chennai are also significantly increasing in the younger 25-44 age group in both males and females in Bangalore and in females in Chennai. Likewise the increasing incidence of cancer of the thyroid in females in Chennai and Delhi is also seen in the younger age groups.

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.

The last chapter of this report estimates and projects the number of cancer cases overall and by selected leading sites. This is based on the trends in the incidence rates published in this report and the latest three-year (2009-2011) report of the population based cancer registries. Only simple methods of projections based on the Annual Percentage Change in the incidence rates has been used and no sophisticated statistical models have been applied for arriving at the numbers. Nonetheless, the chapter provides a reasonably accurate estimate of the future burden of cancer.



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