

ICMR-National Centre for Disease Informatics and Research, Bengaluru



Report on Sites of Cancer Associated with Tobacco use in India -

Findings from the National Cancer Registry Programme



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REPORT ON SITES OF CANCER ASSOCIATED WITH TOBACCO USE IN INDIA

Findings from the National Cancer Registry Programme





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Message

I am pleased that ICMR-NCDIR has prepared a 'Report of Cancer sites Associated with Tobacco Use in India: Findings from the National Cancer Registry Programme'. The data generated by the National Cancer Registry Programme (NCRP) has been critical for sustaining cancer surveillance and control in India.

The report provides a comprehensive and detailed description of Tobacco Related Cancers (TRCs) in India for the first time since the inception of NCRP. TRCs constitute about 40-50% of all cancers, and the widespread tobacco use poses a huge avoidable burden on health. The Population and Hospital based registry sites form the very backbone of NCRP. The efforts made by the Principal Investigators, Co-Principal Investigators, registry staff and NCDIR towards translating data into action are worthy of praise.

I wish that the report will be optimally used as an advocacy tool to bring about suitable interventions to control tobacco use and consequently cancer control in the country.

Balram Bhargava

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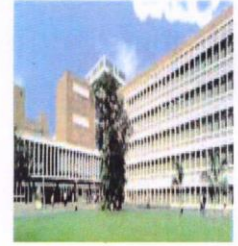
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Message

The National Cancer Registry Programme (NCRP) of the Indian Council of Medical Research has played a key role in cancer surveillance in India since 1981. NCRP is presently being implemented through a network of 238 Hospital-based and 38 Population-based cancer registries (HBCRs' and PBCRs), which generate original and high-quality data on cancer incidence and profile in different regions of the country.

Tobacco use and its consequential adverse effects, especially regarding cancer, continue to be a public health problem of concern in India. The '**Report of Cancer sites Associated with Tobacco Use in India: Findings from the National Cancer Registry Programme**' is the first kind that focuses explicitly on Tobacco Related Cancers (TRCs). The report includes a brief description of tobacco use in India, cancer sites associated with tobacco use and findings from the NCRP, based on data generated from 28 Population Based Cancer Registries (PBCRs') and 58 Hospital Based Cancer Registries (HBCRs') for the years 2012 to 2016. The findings are given for all the TRC related body sites and specific sites in terms of incidence rates, mortality rates, cumulative risk, leading anatomic sites, incidence trends, clinical staging and projected estimates in future. In addition, the geographical, gender and age-wise distribution of TRCs' are lucidly presented through well-designed tables and figures.

The report is an outcome of the untiring efforts of the Registry and NCDIR staff in striving to obtain timely and high-quality data. It is hoped that the report will help contribute towards raising awareness for the prevention and control of Tobacco Related Cancers through the concerted efforts of relevant stakeholders and sectors.

Dr G.K.Rath

G.K.Rath
13-5-21



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डॉ प्रशान्त माथुर डी सी एच, डी एन की, पी एच, डी., एम एन ए एम एस
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ICMR - National Centre for Disease Informatics and Research
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Acknowledgement

We are pleased to bring out the '**Report of Cancer sites Associated with Tobacco Use in India: Findings from the National Cancer Registry Programme**'. The report reiterates ICMR-NCDIR's commitment towards cancer control by generating reliable and periodic data on cancer magnitude, epidemiologic and clinical profile in India through the National Cancer Registry Programme (NCRP). This is the first of its kind of report on tobacco related cancers in India which is to raise awareness for an avoidable set of cancers.

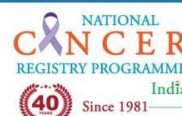
This is an opportunity to express my gratitude and thanks to the investigators and registry staff of the population and hospital-based registries for their unceasing efforts. The expertise provided by the Research Area Panel (RAP) for cancer and Scientific Advisory Committee (SAC) of NCDIR has been very crucial for the NCRP to fulfil a critical role in cancer surveillance and provide timely data and inputs for programme officials and policymakers and relevant stakeholders. Thanks to the cancer patients whose data in NCRP is helping in tackling cancer.

I would also like to thank the scientific, technical and administrative team of NCDIR for their untiring work to run NCRP. Special thanks to Dr Anita Nath, Mr Sathish Kumar K, Mrs Priyanka Das and Mr KL Sudarshan for preparing this report, and Dr Sravya L, Dr Prachi Phadke, Mr Stephen S, Mr Monesh B Vishwakarma, Mr Sandeep, Ms N Sathya, Mr Sarvanaraj and Mr Solomon T for their assistance.

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Executive Summary

In India, a total of 1.39 million new cancer cases were estimated to occur in 2020. There is ample scientific evidence which establishes the association of tobacco use with many cancers. India is among the countries with a high burden of tobacco use and tobacco-related health problems, especially cancer. Tobacco in all its forms contain a large proportion of carcinogenic nitrosamines, volatile aldehydes, and polynuclear agents. Hence tobacco use forms the foremost preventable cause of cancer incidence and mortality.

The National Cancer Registry Programme (NCRP) of the Indian Council of Medical Research (ICMR) has played a vital role in cancer surveillance since 1981 by collecting and compiling data on cancer epidemiology and clinical profile of cancer cases in the country. The NCRP has been using the International Agency for Research on Cancer (IARC) classification, World Health Organization (WHO) monographs for enlisting the anatomical sites of cancer associated with tobacco use. In this report we continue the earlier listing of tobacco related cancer sites by the IARC to make provision for comparisons with the data described in earlier reports of the NCRP. The sites include- lip (C00), tongue (C01–C02), mouth (C03–C06), oropharynx (C10), hypopharynx (C12–C13), pharynx unspecified (C14), oesophagus (C15), larynx (C32), lung (C33–C34), and urinary bladder (C67). Analysis has been done on the data compiled from 28 Population Based Cancer Registries (PBCRs) and 58 Hospital Based Cancer Registries (HBCRs) under the NCRP for the time 2012-2016. The report includes findings from a pooled analysis of all cancer sites associated with tobacco use and a specific site wise analysis.

Salient findings:

(a) Pooled analysis-All sites of cancer associated with tobacco use

- The highest Age Adjusted Incidence Rate (AAR) of cancer in sites associated with tobacco use is 161.3 per 100,000- males and 58.1 per 100,000- females are reported in the East Khasi Hills district of Meghalaya.
- The probability of developing any cancer type (cumulative risk) in the age group 0 - 74 years is highest in the East Khasi Hills district (1 in 5 for males and 1 in 14 for females).
- The relative proportion of cancer in site associated with tobacco use, to all cancer sites is highest in the East Khasi Hills district of Meghalaya (70.4% in males and 46.5% in females).
- In all the regions, the relative proportion of sites of cancer associated with tobacco use to all cancer sites was higher in males than that of females.
- Lung cancer is the most frequently observed site of cancer associated with tobacco use among males, followed by mouth, tongue and oesophagus in both genders.



- The age-specific incidence rate (ASpR) of cancer in all sites of cancer associated with tobacco use is the highest in the 70 to 74 years age group for both genders in most registries.
- The majority of the cancers in sites associated with tobacco use are reported to have presented in the locoregional stage in both genders.
- Trend analysis of AAR over time indicates a significant increase in Aurangabad, Mizoram state, Kamrup urban, Delhi, Kollam district and Chennai among males and in Bhopal among females. On the other hand, AAR has declined significantly over time in Sikkim state, Dibrugarh district, Mumbai and Barshi rural among males and in Sikkim state, Dibrugarh district, Mumbai, Bangalore and Chennai among females.
- The projected number of incidence cases for cancer in all sites associated with tobacco use by the year 2025 is 427273, of which the number of lung cancer cases would be the highest (111328) and constitute 27.2% of all cancers.

(b) Specific site-wise analysis

- *Lip cancer*: The AAR for males is highest in Kamrup urban (1.2 per 100,000) and females in East Khasi Hills district (1.5 per 100,000)
- *Tongue cancer*: The AAR for males is the highest in East Khasi Hills district (12.8 per 100,000) and females in Bhopal (4.1 per 100,000)
- *Mouth cancer*: The AAR for males is the highest in Ahmedabad urban (19.5 per 100,000) and females in East Khasi Hills district (9.5 per 100,000)
- *Cancer of oropharynx*: The AAR for both genders is highest in Kamrup urban (4.4 per 100,000 in males and 1.7 per 100,000 in females)
- *Cancer of hypopharynx*: The AAR for males is the highest in East Khasi Hills district (21.8 per 100,000) and females in Kamrup urban (3.7 per 100,000)
- *Cancer of the pharynx*: The AAR for males is the highest in East Khasi Hills district (4.4 per 100,000) and females in Sikkim (1.2 per 100,000)
- *Cancer of the oesophagus*: The AAR is highest in East Khasi Hills district (75.4 per 100,000 in males and 33.6 per 100,000 in females)
- *Cancer of the larynx*: The AAR is highest in East Khasi Hills district (13.5 per 100,000 in males and 2.0 per 100,000 in females)
- *Lung cancer*: The AAR for both genders is highest in Aizawl district (38.8 per 100,000 in males and 37.9 per 100,000 in females)
- *Urinary bladder cancer*: The AAR for both genders is the highest in Delhi (6.8 per 100,000 in males and 1.5 per 100,000 in females)

The Government and relevant stakeholders have taken up an extensive range of tobacco and cancer control measures through programme and policy initiatives. Yet, tobacco control and its adverse consequences, one of which is cancer, continue to pose a public health challenge. The report findings should enable programme officials, policymakers, health care providers and community leaders to strengthen the existing measures and develop innovative and evidence based measures to control tobacco use in all its forms.



Abbreviations

AAMR: Age Adjusted Mortality Rate

AAR: Age Adjusted Incidence Rate

APC: Annual Percent Change

ASpR: Age specific Incidence Rate

CMR: Crude Mortality Rate

COTPA: Cigarettes and Other Tobacco Products (Prohibition of Advertisement and Regulation of Trade and Commerce, Production, Supply and Distribution) Act

CR: Crude Incidence Rate

DNA: Deoxyribonucleic acid

ENDS: Electronic Nicotine Delivery Systems

FCTC: Framework Convention of Tobacco Control

FSSAI: Food Safety and Standards Authority of India

GATS: Global Adult Tobacco Surveillance

HBCR: Hospital Based Cancer Registry

IARC: International Agency for Research on Cancer

ICD-10: International Classification of Diseases-10

ICMR: Indian Council of Medical Research

IEC: Information, Education and Communication

LDCT: Low-dose computed tomography

MOHFW: Ministry of Health and Family Welfare

NCD: Noncommunicable Diseases

NCDIR: National Centre for Disease Informatics and Research

NCRP: National Cancer Registry Programme

NNMS: National Noncommunicable Disease Monitoring Survey

NPCDCS: National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases, and Stroke

NTCP: National Tobacco Control Program

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OPMD: Oral Potentially Malignant Diseases

PAH: Poly-Aromatic Hydrocarbons

PAR: Population Attributable Risk

PBCR: Population Based Cancer Registry

PMJAY: Pradhan Mantri Jan Arogya Yojana

RCC: Regional Cancer Centres

SCI: State Cancer Institute

TCCC: Tertiary Cancer Care Centres

TRC: Tobacco Related Cancers

WHO: World Health Organization

