A Report on Cancer Burden in North Eastern States of India

2017

National Centre for Disease Informatics and Research

Indian Council of Medical Research (ICMR), Bengaluru

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About NCDIR - NCRP

The National Cancer Registry Programme (NCRP) has been in existence since 1982. The coordinating unit of this programme at Bengaluru was upgraded into a permanent institute, National Centre for Disease Informatics and Research (NCDIR) under Indian Council of Medical Research in 2011. This centre has been a crucial repository of data collected from the collaborating cancer registries located in medical colleges/institutions and hospitals throughout India. The use of Information technology to collate the patient information enforces data standards, instant identification of errors and opportunities for immediate action.

NCRP functions through Population and Hospital Based Cancer Registries (PBCR and HBCR) across different states in India. A PBCR captures information on cancer cases from different health establishments for individuals residing in the catchment area of that PBCR for at least last one year irrespective of place of diagnosis or treatment whereas HBCR captures cases registered in that particular hospital irrespective of place of residence.

NCRP has been generating valid estimates on burden, pattern and trends of cancer in different parts of the country addressing geographical and ethnic variation in pathogenesis of cancer. NCRP provides a direction to cancer component of National Program on Cancer, Diabetes, Cardiovascular disease and Stroke (NPCDCS) for planning prevention programme, establishing treatment facilities, allocating resources and assessing the impact of specific activities such as screening, awareness generation etc.

There are 29 PBCRs under NCRP out of which 11 are in the 8 states of North East (Assam -3, Arunachal Pradesh -2, 1 each in Manipur, Mizoram, Meghalaya, Nagaland, Tripura and Sikkim).
There are 29 HBCRs under NCRP network out of which 5 are in the North East Region. ie. Dibrugarh, Guwahati, Aizawl, Imphal, Agartala.

The PBCRs face several adverse conditions and to name a few, cancer is not yet a notifiable disease in our country, the mortality registration system has its own pitfalls and hospitals do not cooperate at all times. Hence, instituting a PBCR is only a means to an end and not an end in itself. NCRP has been continuously devising different approaches to provide timely assistance and keep the registries afloat. The limitation in the mortality data by the registries under NCDIR- NCRP is mainly refers to incompleteness of the number of cancer deaths which in turn is due to incomplete or incorrect certification of cause of death.

In recent years, the software applications developed by NCDIR have further evolved and so has the data submission methodology and overall support. Hospitals that have access to IT infrastructure can use the oncology modules for pathology, radiotherapy, medical oncology and surgical oncology developed by NCDIR to register information on patients as part of their routine work. These are available online free of cost for all the interested hospitals and laboratories. This would reduce the effort and time spent in visiting these sources to collect the data.

The incidence data from 11 out of 18 PBCRs of India have been published in Cancer Incidence in Five Continents (CI 5) Vol X published by International Association of Cancer Registries (IARC-WHO).

National Centre for Disease Informatics and Research (NCDIR) employs scientific staff constituting of medical scientists, computer science scientists, statistical scientists and technical assistants. This institute has immense potential as professionals belonging to several streams are working under the same roof. Training programmes, workshops and meetings are conducted regularly to keep the staff abreast with the new knowledge and the progress made by the centres. Additionally, it has undertaken tasks in data formatting, checking and submission of data to several international studies on behalf of the registries.

Foreword

डा. सौम्या स्वामीनाथन
सचिव, भारत सरकार
स्वास्थ्य अनुसंधान विभाग
एवं
महानिदेशक, आई सी एम आर
Dr. Soumya Swaminathan
Secretary to the Government of India
Director-General, ICMR

भारतीय आयुर्विज्ञान अनुसंधान परिषद
स्वास्थ्य अनुसंधान विभाग
स्वास्थ्य एवं परिवार कल्याण मंत्रालय
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The ICMR-NCDIR has been running the National Cancer Registry Program (NCRP) at several sites in the country since 1982, providing robust data on cancer burden, trends and outcomes through its 29 Population Based and 29 Hospital Based Cancer registries. The coverage of NCRP in the 8 States of North East has been very comprehensive and hence the data is of very high quality. It is an outcome of a partnership and hard work of investigators in all the States of North East.

I am pleased to note that ICMR-NCDIR has prepared a report of the cancer registries of the North East to highlight the magnitude of the cancer burden so as to drive appropriate policy measures, programmatic implementation and advocacy for greater efforts to undertake comprehensive cancer prevention and control initiatives. It also provides an impetus to strengthen research and interaction with public health efforts to address the burden of cancer. This would help in generation of awareness amongst stakeholders as well as development of evidence based policies for cancer management and prevention in the NE.

I hope that this report is disseminated widely to all stakeholders so that the high burden of cancers in the North East can be dealt with effectively. I wish this endeavor all success.

(Soumya Swaminathan)

Preface

NATIONAL CENTRE FOR DISEASE INFORMATICS AND RESEARCH
NATIONAL CANCER REGISTRY PROGRAMME
(INDIAN COUNCIL OF MEDICAL RESEARCH)
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The ICMR-NCDIR National Cancer Registry Program (NCRP) has developed a strong network of population and hospital based cancer registries in the north east states of India collecting and reporting high quality cancer data. Accordingly, the cancer burden reported is high with unique features and distribution across the region. The efforts have been guided by Secretary Department of Health Research & Director General, ICMR, ICMR-NCDIR Scientific Advisory Committee and Research Area Panel on Cancer and the tireless work of the investigators in the registries.

It is thus appropriate that a focused approach to address the burden of cancer be initiated. ICMR-NCDIR has prepared this special report "**A Report on Cancer Burden in North Eastern States of India**" highlighting the key pooled cancer scenario as well as state wise problem of cancer. Briefly, the leading sites of cancers, trends wherever available, treatment related information, status of risk factors and exposures for causing cancer and health systems preparedness to tackle cancers is alluded to. At the end of each chapter there are advocacy points and take home messages for initiating action.

The report shall be useful in creating awareness about cancer scenario amongst the key stakeholders in a brief and lucid manner and stimulate thoughts of undertaking appropriate research and evidence driven policies and programs for cancer control.

(Prashant Mathur)

Message

Dr. G. K. Rath, M.D.
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It gives me immense pleasure to note that the NCDIR, Bangalore is bringing out a report on incidence and patterns of cancer in North Eastern States. The earlier reports published in 2006 and 2008 covered the registries only from four states Assam, Manipur, Mizoram and Sikkim and now this present report covers entire eight states of North Eastern India.

For the first time besides providing types of cancer occurrence in this region it also provides ethnicity variation which is immensely interesting.

I hope that this report will serve as the base for aetiological studies on cancer apart from instituting region specific cancer control measures.

I take this opportunity to congratulate the principal investigators and all staff of north eastern cancer registries who had put their hard work for collection of data from various sources without whom this is impossible.

I also congratulate Dr. Prashant Mathur and all staff of NCDIR, Bangalore for their tireless effort to bring out this report of international standard.

(G.K. Rath)

Acknowledgement

It gives us immense pleasure to bring out a special report of ICMR – NCDIR, National Cancer Registry Programme on Cancer in North Eastern States of India.

We hereby acknowledge the guidance and support of Dr. Soumya Swaminathan, Secretary DHR and DG ICMR for the National Cancer Registry Programme and providing a platform to prepare a report of this kind.

We sincerely acknowledge all the Principal Investigators and Co – Principal Investigators of the North Eastern States for their consistent efforts over the years in strengthening cancer registration activities.

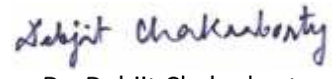
We heartily acknowledge the encouragement and enthusiasm of Dr. Prashant Mathur, Director, ICMR-NCDIR to take this initiative and put an effort to bring out this report.

The mammoth task of running a cancer registry is accomplished only by the sincere and coordinated hard work of all registry staff which include Medical Research Officer, Computer Programmer, Social Investigators and Data Entry Operators. Their contribution is very critical in preparation of this report.

Moreover, we would like to thank our Scientific Advisory Committee and Research Area Panel members on Cancer for guiding continuously on effective implementation of the National Cancer Registry Programme. Their inputs in every aspects of work is very pivotal. This achievement of NCRP in North East has been duly facilitated by the Division of NCD, ICMR New Delhi and ICMR-Regional Medical Research Centre, North East, Dibrugarh.

We acknowledge Dr. A. Nandakumar, former Director- in Charge, ICMR-NCDIR who has laid the foundation of this report by setting PBCRs and HBCRs in North Eastern States decades ago.

Last but not the least, we appreciate the hard work of our scientific, technical and administrative colleagues (Mrs. F. S. Roselind, Dr. Sukanya R, Dr. Meesha Chaturvedi, Mr. K Vaitheeswaran, Mr. Sudarshan K.L., Sathish Kumar K., Mr. Monesh B Vishwakarma, Mr. Stephen S. and others) at ICMR- NCDIR to prepare this high quality report in a such a short period.



Dr. Debjit Chakraborty

(Scientist- B, ICMR- NCDIR)

Mrs. Priyanka Das

(Scientist- C, ICMR- NCDIR)

Summary

More than thirty years journey of National Cancer Registry Programme (NCRP) has not only led to its enrichment and expansion into different parts of the country but also culminated in the establishment of a permanent institute of Indian Council of Medical Research (ICMR) namely National Centre for Disease Informatics and Research which has a very high potential of leading the public health informatics as well as research particularly on cancer and other non-communicable diseases in a developing country like India.

Population Based Cancer Registries (PBCRs) have always remained the corner stone of NCRP particularly from the public health point of view. Perhaps PBCR is the only source which provides authentic data on incidence and mortality of cancer in various parts of the nation for a defined period. As heredity and environment remain the two major determinants of cancer, understanding of wide geopathological variation in a country like India is almost imperative in order to address the problem of cancer. Here lies the importance of PBCR data.

This report on the cancer burden of North eastern states is based on the analysis of the data from 11 PBCRs including two new ones (Naharlagun and Pasighat from Arunachal Pradesh). The coverage of population based cancer registries is around 35% of the population of North Eastern states. Nonetheless, it reflects the cancer profile of the region fairly well owing to representation of all the eight states of North East partially or completely.

Core Focus

Cancer incidence rate is generally expressed as Age Adjusted Incidence Rate (AAR) per 100,000 populations in order to ensure comparability between different states and nations having varied population profile with respect to age groups.

This report provides pooled analysis of cancer problem in the North East in comparison to Rest of India. Higher incidence, low survival, lower detection of localized cases, different cancer pattern etc were observed in North Eastern states which needs to be adequately addressed.

Among males, Aizawl District in Mizoram state shows the highest AAR followed by Papumpare District under Naharlagun PBCR in Arunachal Pradesh. The order is reversed in females, with Papumpare District recording the highest AAR followed by Aizawl District.

State wise analysis will provide specific cancer profile of each states where we can observe an interstate heterogeneity in terms of leading sites, proportion of tobacco related cancer, trend of cancer incidence etc. Additionally, the chapters will include an overall situational analysis of demography, cancer related risk factors, health system and health practices including mortality reporting status of each state. This will provide a multidimensional and holistic view of cancer problem and possible intervention point within each state. This information will facilitate State Health officials and policy makers to develop roadmap for public health programme implementation and evidence to policy translation for cancer as well as other non-communicable disease risk factors.

Thrust Areas for Research, Programme Planning and Policy Making

The unique cancer profile of the north eastern region is characterized by predominance of cancer of upper digestive tract particularly Oesophagus, Stomach, Hypopharynx etc. Cancer of Nasopharynx and cancer of Gall bladder in Nagaland and Kamrup urban district of Assam respectively show highest incidence among all PBCRs in India. Cancers of the Mouth, Lung, Cervix Uteri and Breast continue to remain a major public health threat. In Dibrugarh district of Assam there is high proportion of Breast cancer although the population is predominantly rural. Burden of various risk factors such as tobacco, alcohol etc was very high compounded by lower participation rates in cancer screening programmes.

All these findings require multidisciplinary and multidimensional research for addressing and mitigating the cancer problem in the North East which may be accomplished by a region specific and state specific endeavors. The purpose of this report is to provide a direction to all stakeholders to plan such initiatives.

Awareness generation and availability of efficient screening programme should be two sides of the same coin for early detection and treatment particularly for the sites where these can play a major role to improve the prognosis. Basic information on cancer may be made available to patients attending hospitals with any symptoms as an opportunity for health education. Women attending heath facility for any reproductive health issues could be informed about self-examination for Breast cancer and preventive measures for both Cervical and Breast cancers.

Chapter 1 – CANCER PROFILE OF NORTH EAST INDIA

1.1 The North East

The North Eastern region of India comprise of eight state namely, Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura,

1.2 Number of reported cancers (Reporting years: 2012-14)

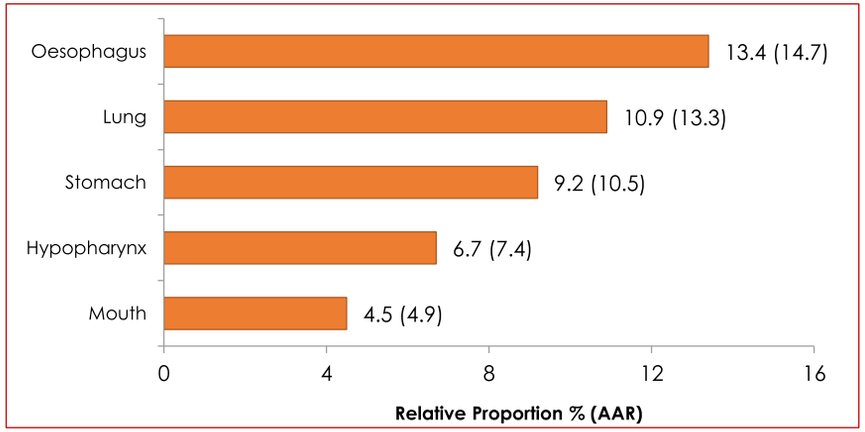
Population Based Cancer Registry	Males	Females	Total
	Number	Number	Number
Assam			
Cachar District	2666	2100	4766
Dibrugarh District	1498	1345	2843
Kamrup Urban District	3071	2392	5463
Manipur State	2081	2542	4623
Mizoram State	2567	2089	4656
Sikkim State	707	678	1385
Meghalaya	2632	1616	4248
Tripura State	3628	2702	6330
Nagaland	815	546	1361
Arunachal Pradesh			
Naharlagun	735	704	1439
Pasighat	175	159	334
Pooled North East	**20575**	**16873**	**37448**

A total of 37448 cancer cases are reported from 11 PBCRs of 8 states during 2012 to 2014. More number of male cases are reported compared to females except in Manipur state. The number of cases ranges from 334 in Pasighat, Arunachal Pradesh to 6330 in Tripura State.

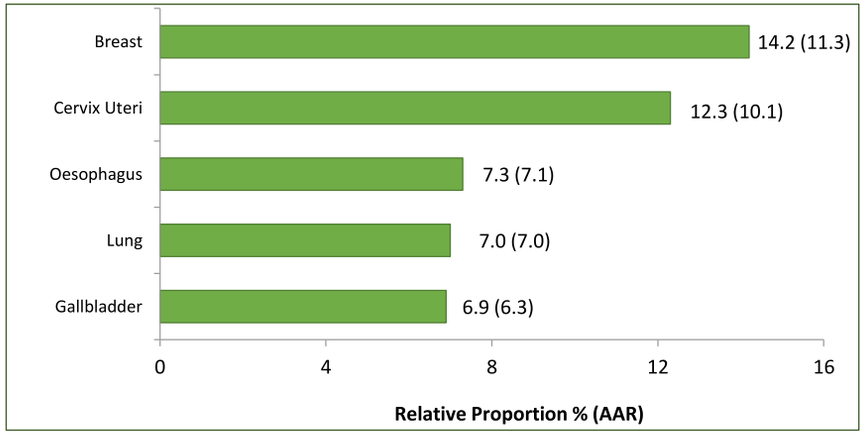
Meghalaya PBCR covers four district of East Khasi Hills, West Khasi Hills, Jaintia Hills and Ri Bhoi. Nagaland PBCR covers two districts of Kohima and Dimapur. In Arunachal Pradesh Naharlagun PBCR covers eight districts while Pasighat PBCR covers two districts.

1.3 Leading Sites of Cancer

Males



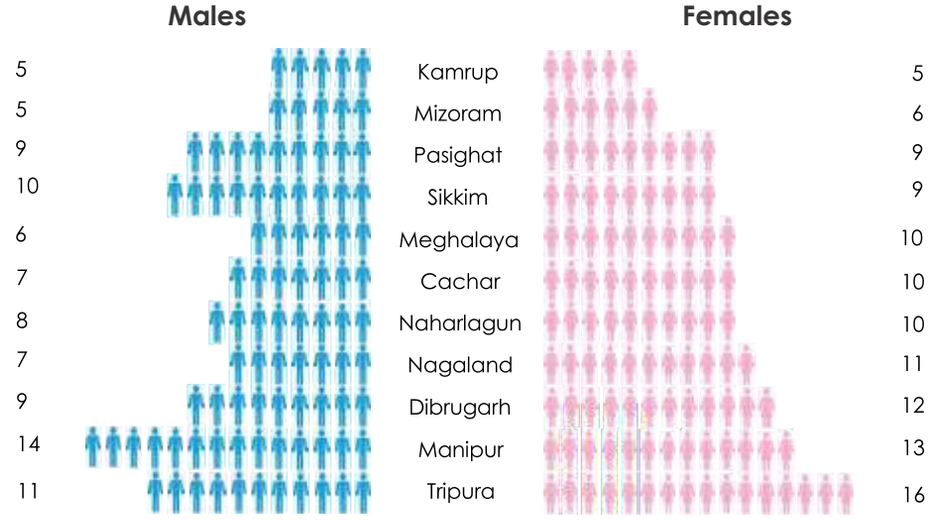
Females



AAR: Age Adjusted Rate

In males, cancer of Oesphagus is the highest followed by cancer of Lung and Stomach. These three cancers contribute one third (33.5%) of all cancers. In females, cancer of Breast is the highest followed by Cervix and Oesophagus. These three cancers contribute one third (33.8%) of all cancers.

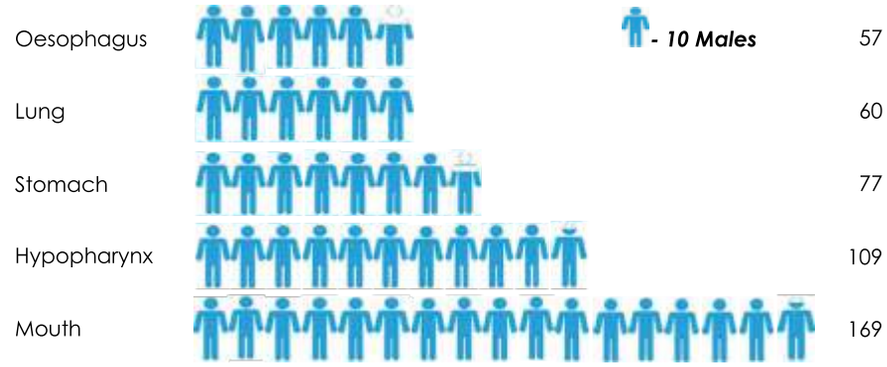
1.4 (i) Possibility of one in number of person developing Cancer in (0-74) years of age– All Sites of Cancer



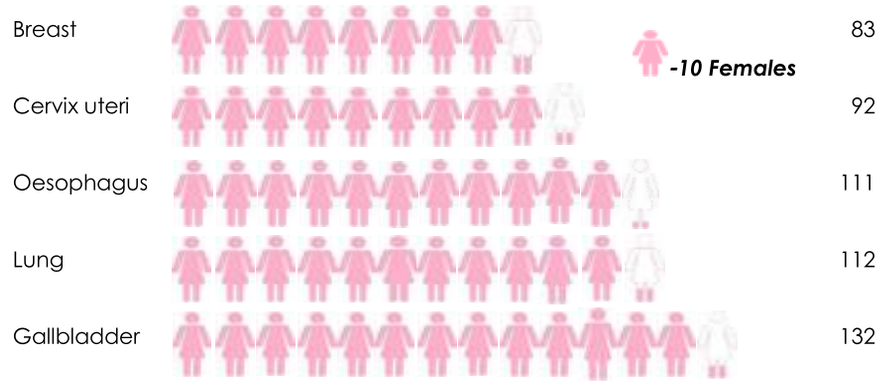
The average risk that a person will develop any cancer in their lifetime (0-74 years) is about 1 in 5 for both sex in Kamrup urban district.

1.4 (ii) Possibility of one in number of persons developing cancer in (0-74) years of age–Pooled North East PBCRs

Males



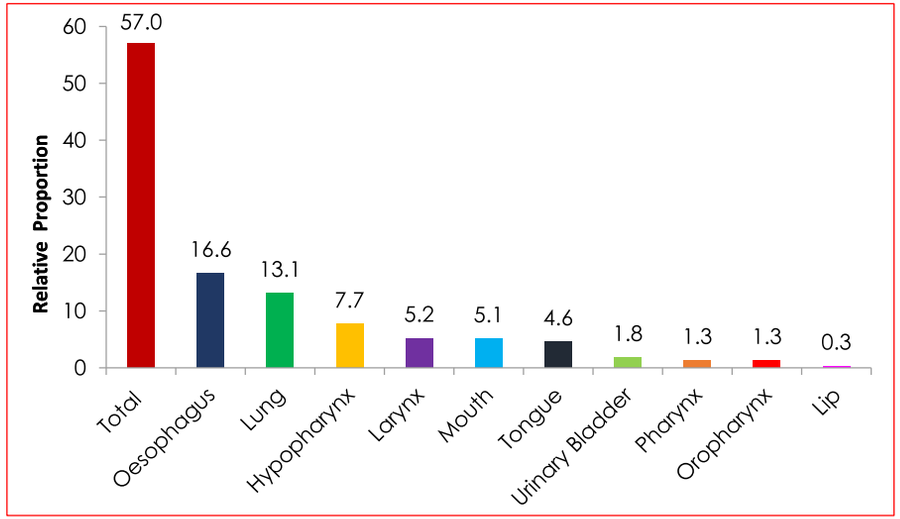
Females



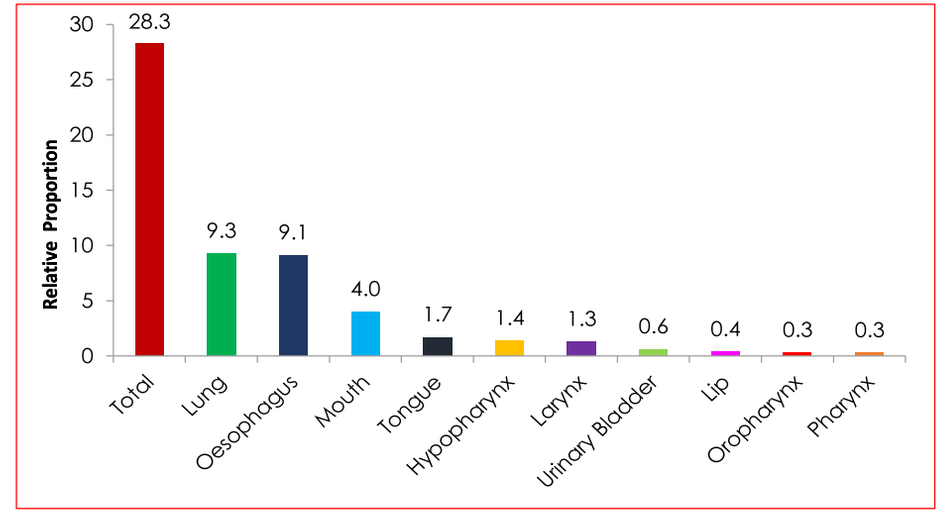
The average risk that a person will develop Oesophagus cancer in their lifetime (0-74 years) is about 1 in 57 for males. Similarly, 1 in 83 females will possibly develop Breast cancer in their lifetime (0-74 years).

1.5 Sites of Cancer known to be associated with use of tobacco

Males

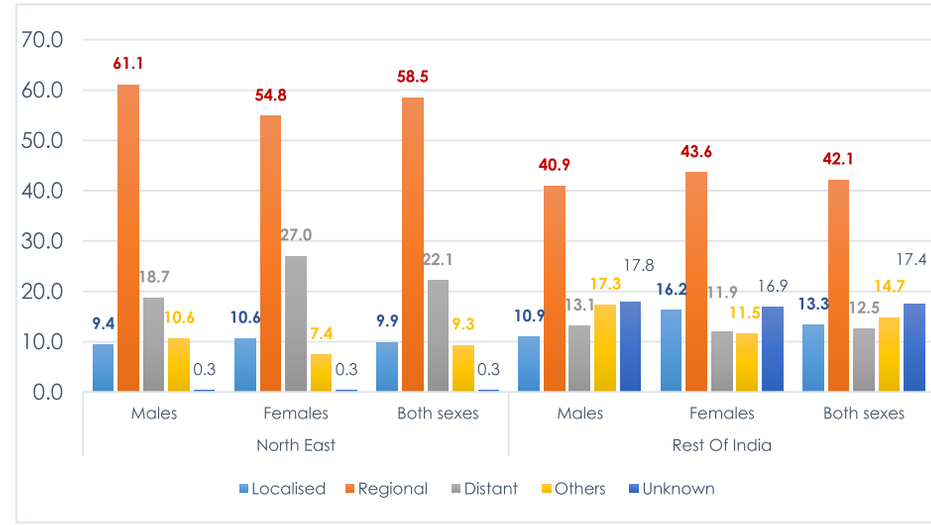


Females



57% of all cancers in males and 28% of all cancers in females are known to be associated with tobacco consumption. Among these Lung and Oesophagus comprised maximum in both the sexes.

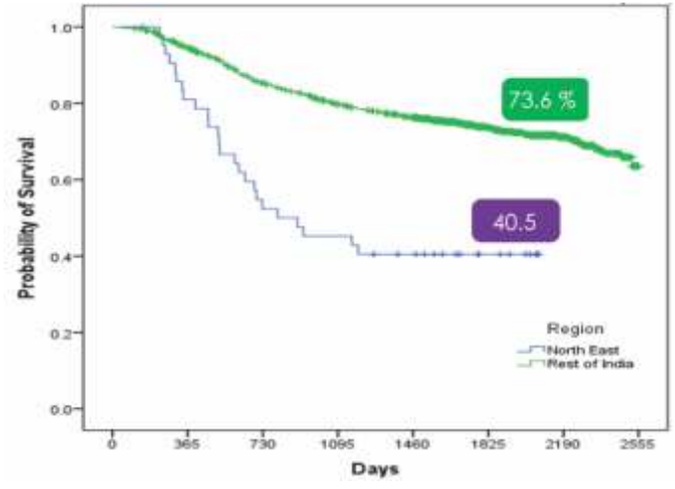
1.6 Proportion (%) of Cancer patients according to Clinical Extent of disease at diagnosis in comparison to rest of India (HBCR:2012-2014)



Proportion of cases with distant metastasis at diagnosis is much higher in North Eastern state compared to Rest of India. This is an important predictor of low survival of Cancer in North East.

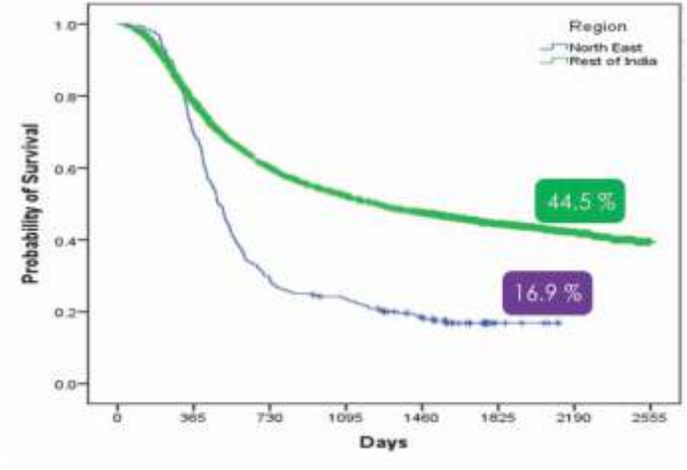
1.7 Survival Analysis (Hospital Based Cancer Registry)

Five Year Cumulative Survival of Head & Neck cancers (Early Stage) by Region



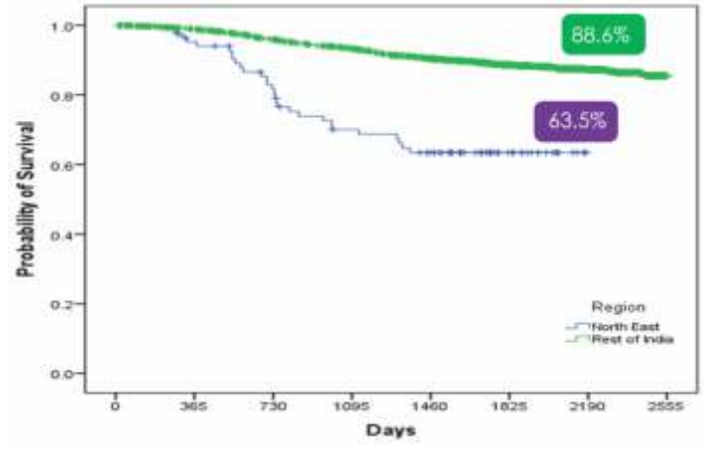
Survival of early stage Head and Neck cancer is lower in North East compared to rest of India. The 5-year Survival is 40.5 % in North East.

Five Year Cumulative Survival of Head & Neck cancers (Locally advanced stage) by Region



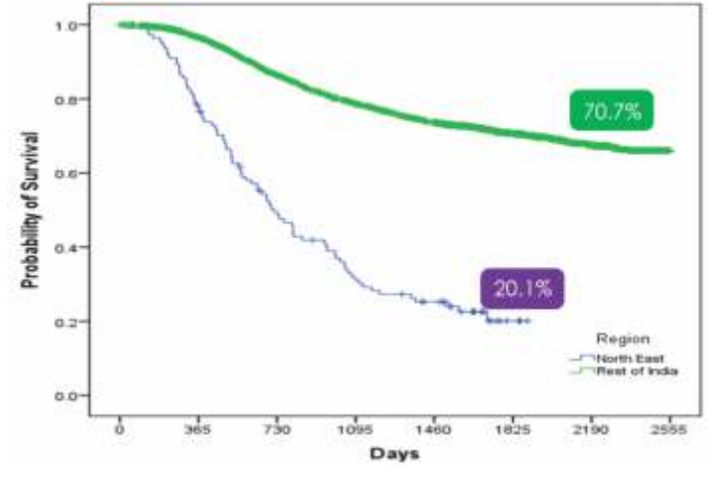
Survival of locally advanced stage Head and Neck cancer is lower in North East compared to rest of India. The 5-year Survival is 16.9% in North East.

Five Year Cumulative Survival of Breast Cancer (Stage II) by Region



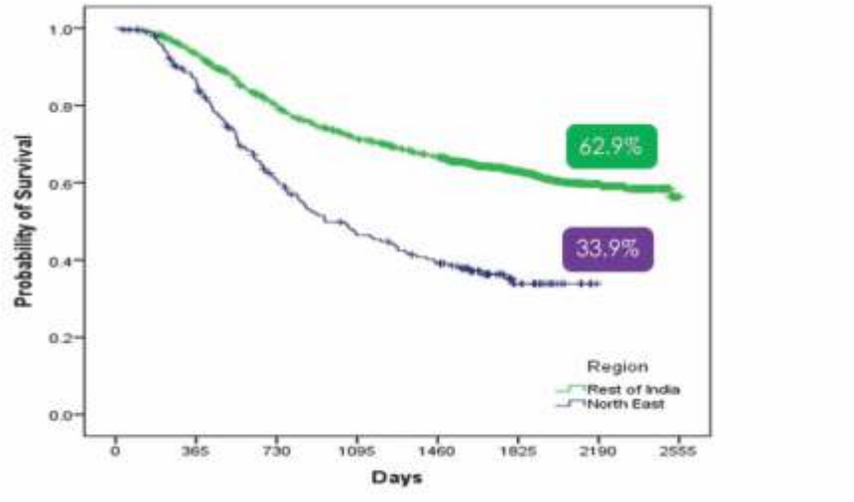
Survival of stage II Breast cancer is lower in North East compared to rest of India. The 5-year Survival is 63.5% in North East.

Five Year Cumulative Survival of Breast Cancer (Stage III) by Region



Survival of stage III Breast cancer is lower in North East compared to rest of India. The 5-year Survival is 20.1%. in North East

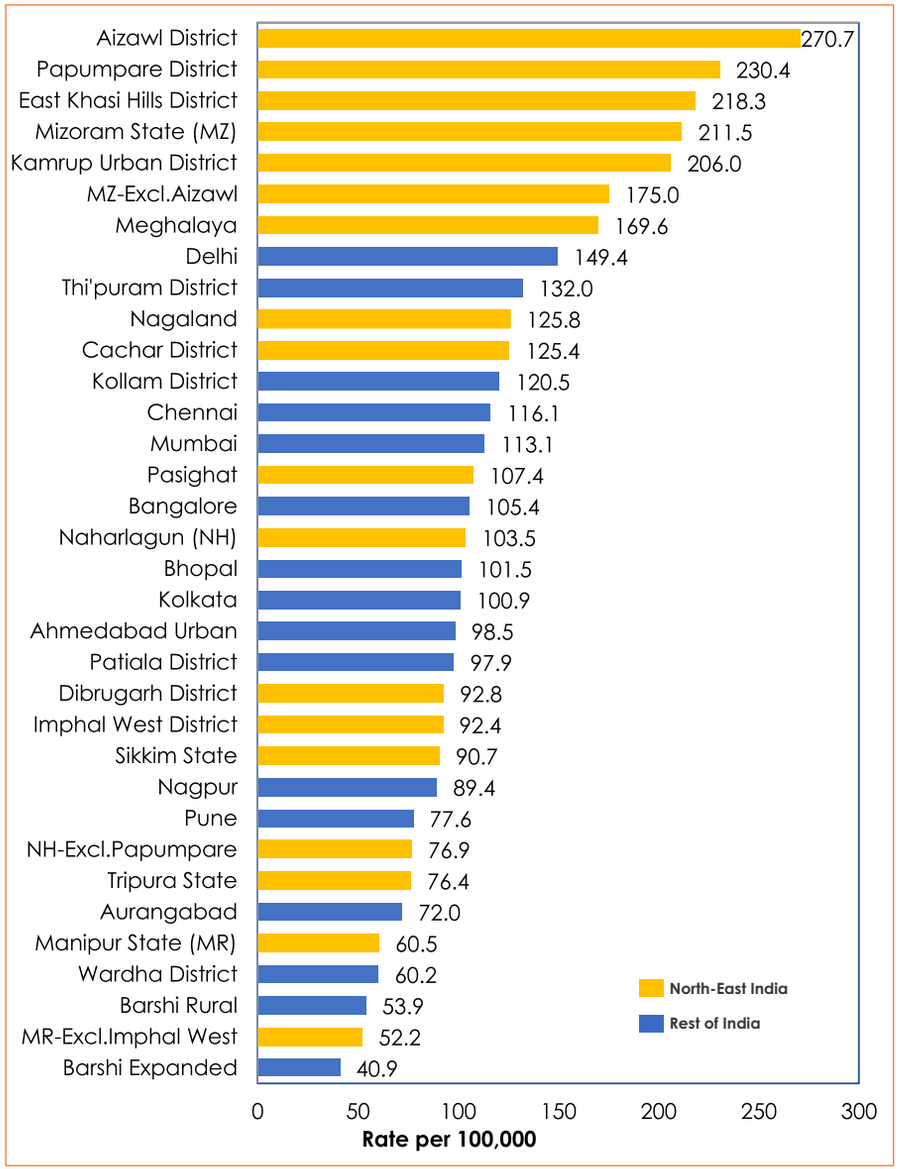
Five Year Cumulative Survival of Cervical cancer with Locally Advanced Stage (IIB-IVA) by Region



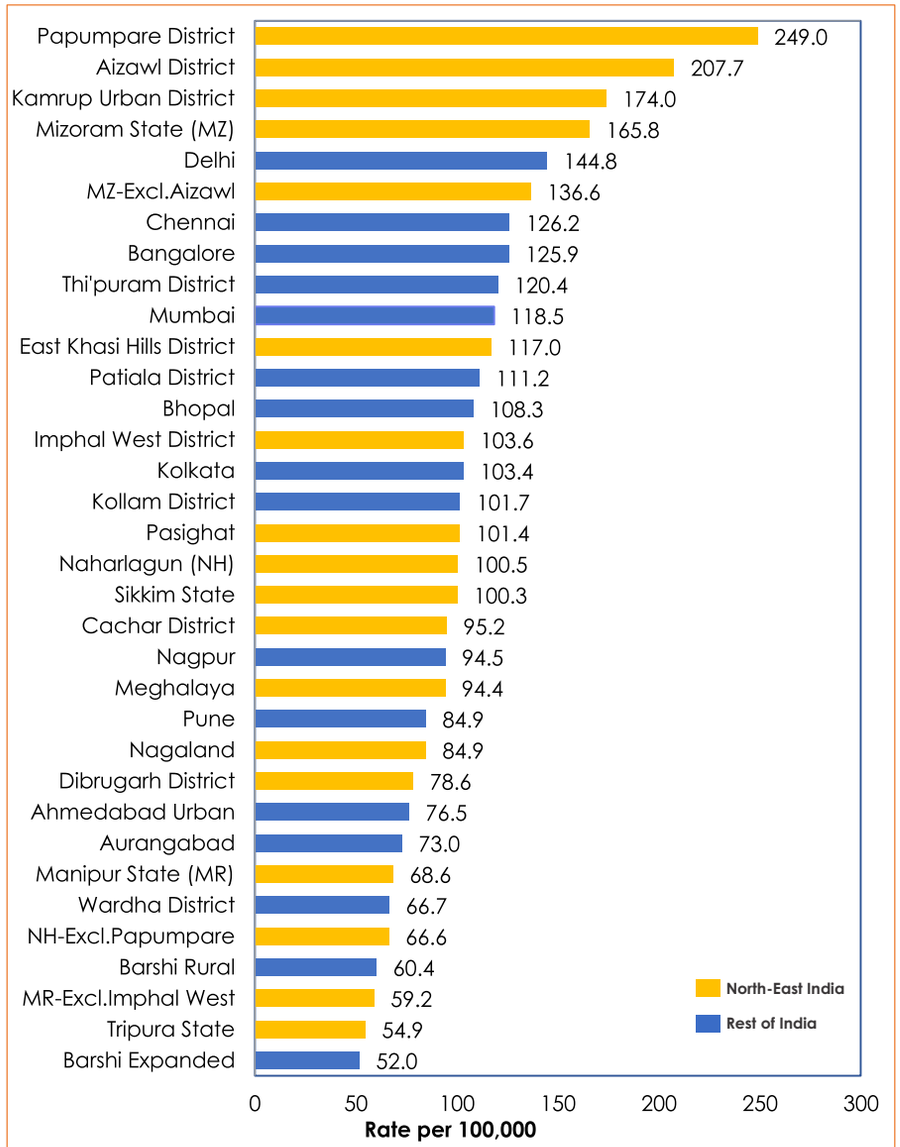
Survival of Locally advanced stage IIB-IVA Cervical cancer is lower in North East compared to rest of India. The 5-year Survival is 33.9% in North East.

1.8 Comparison of Age Adjusted Incidence Rates (AARs) of all PBCRs In North East and Rest of India

All Sites- Males

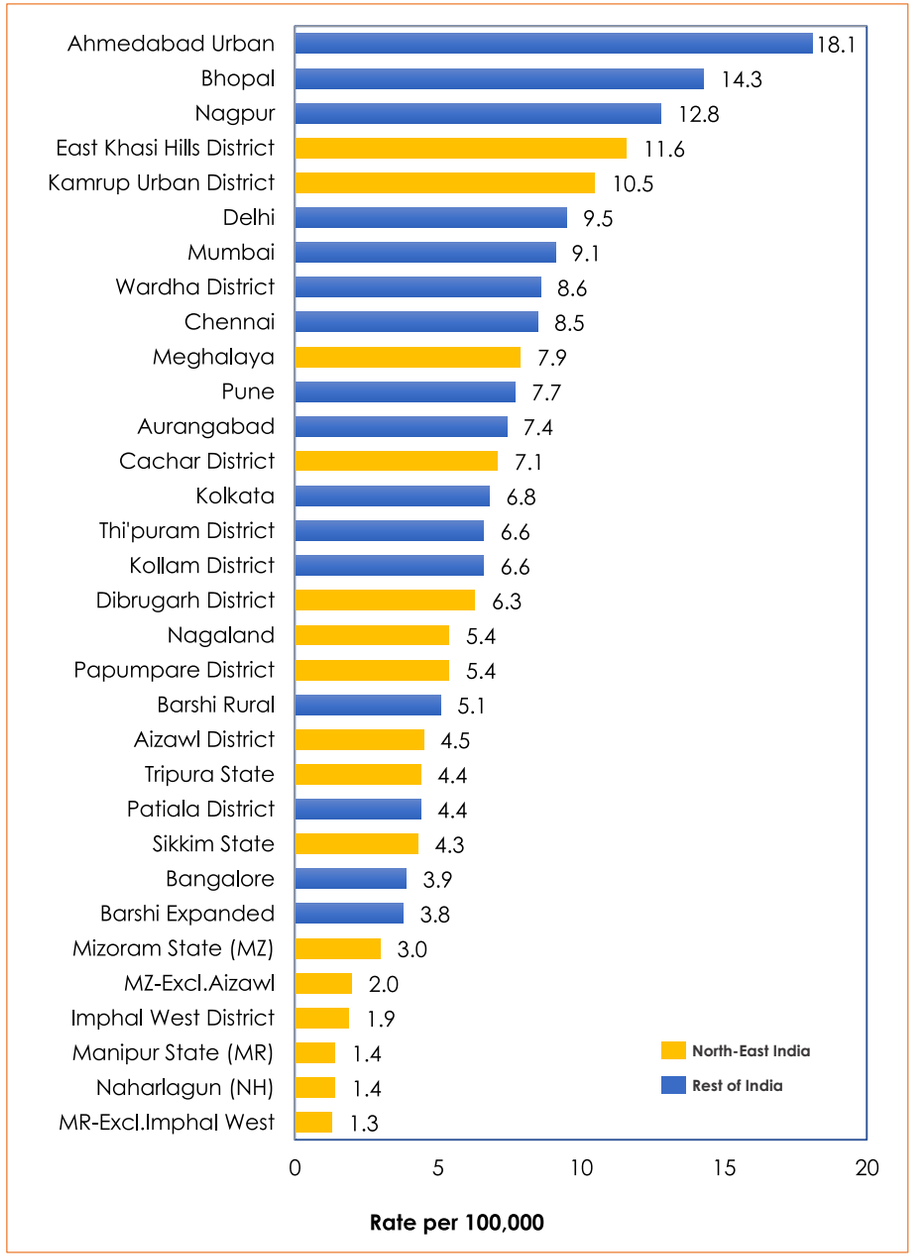


All Sites- Females

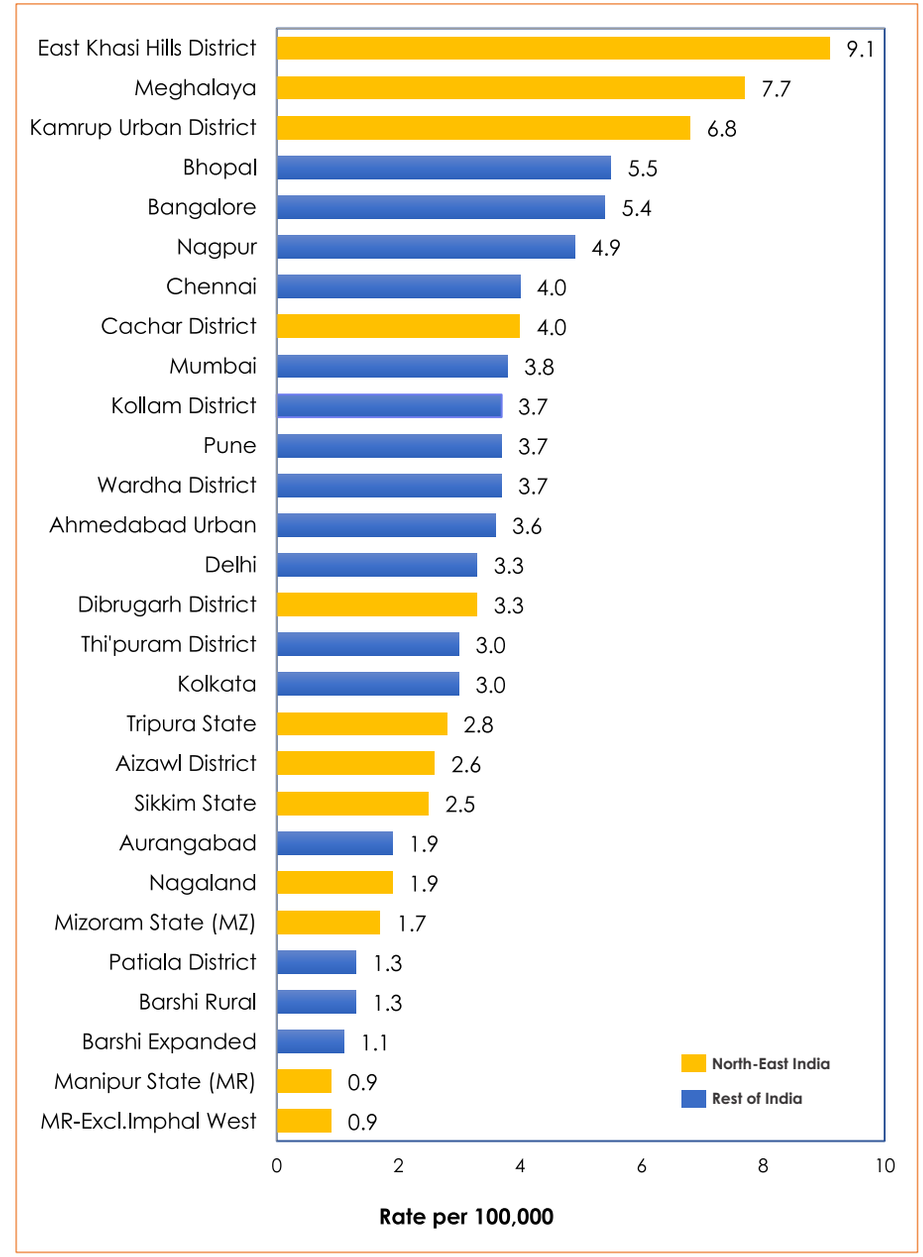


North-East India

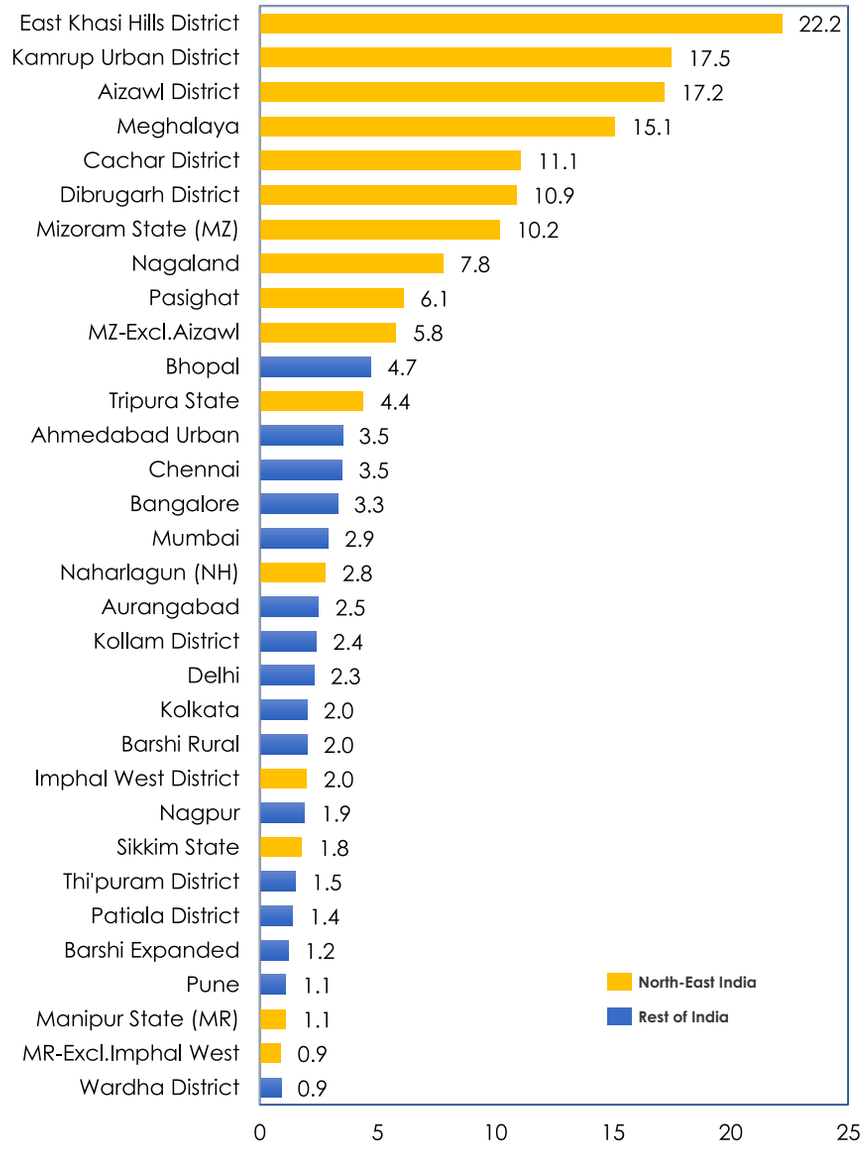
Mouth - Males



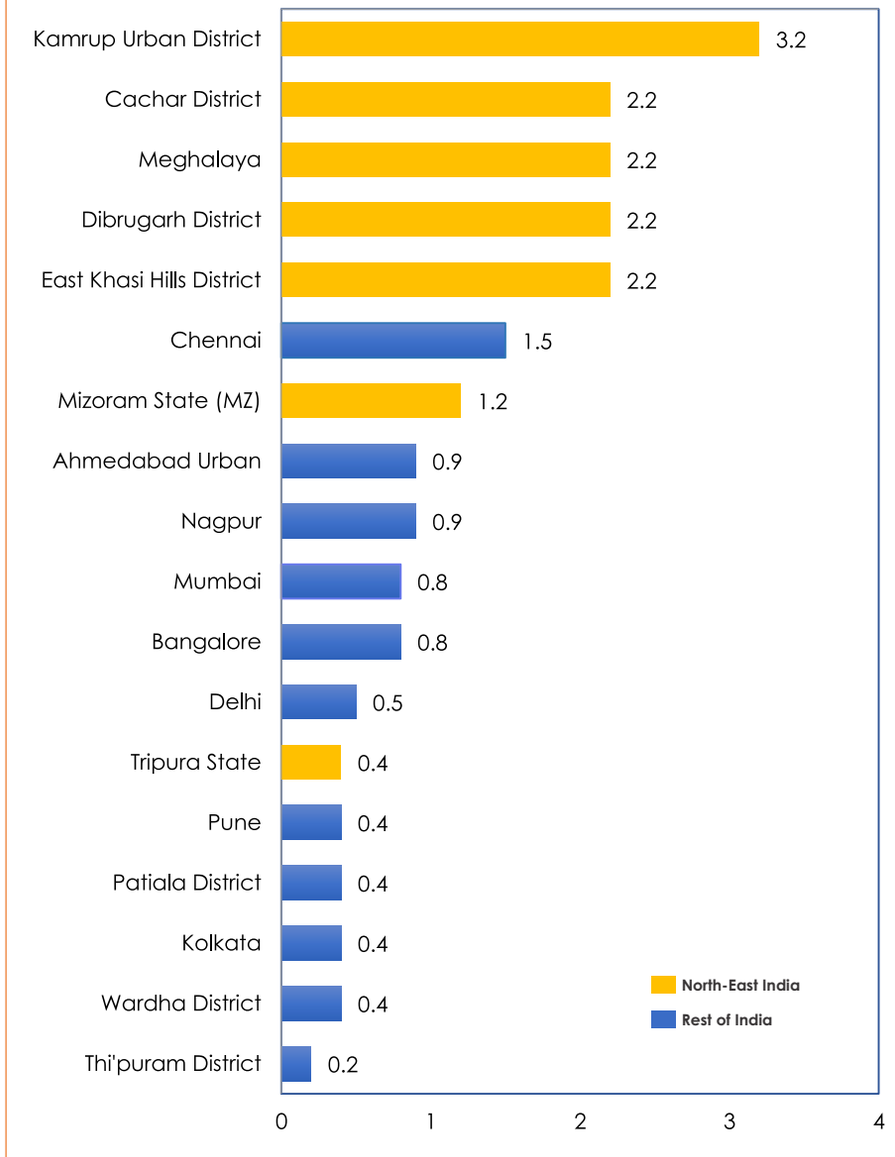
Mouth – Females



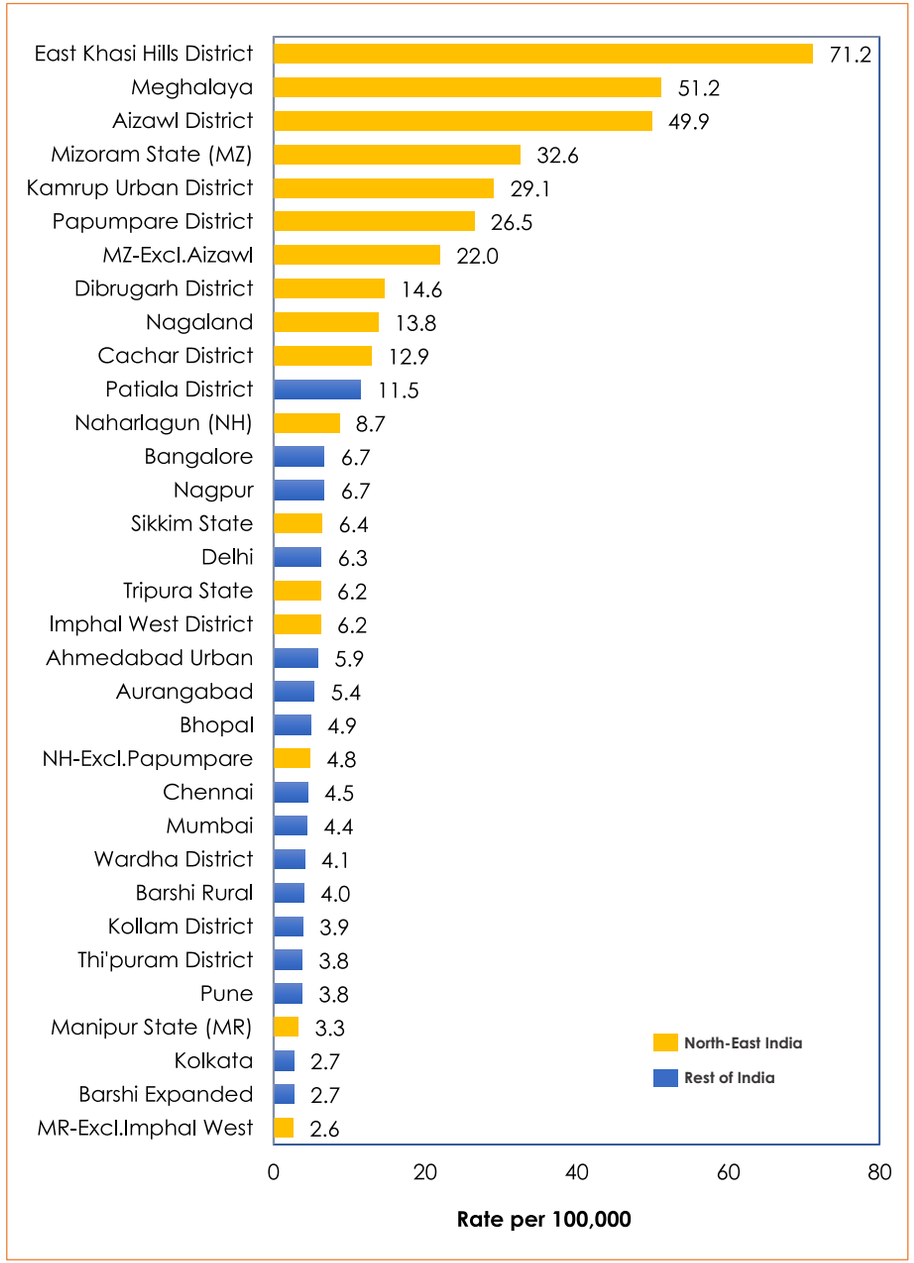
Hypopharynx – Males



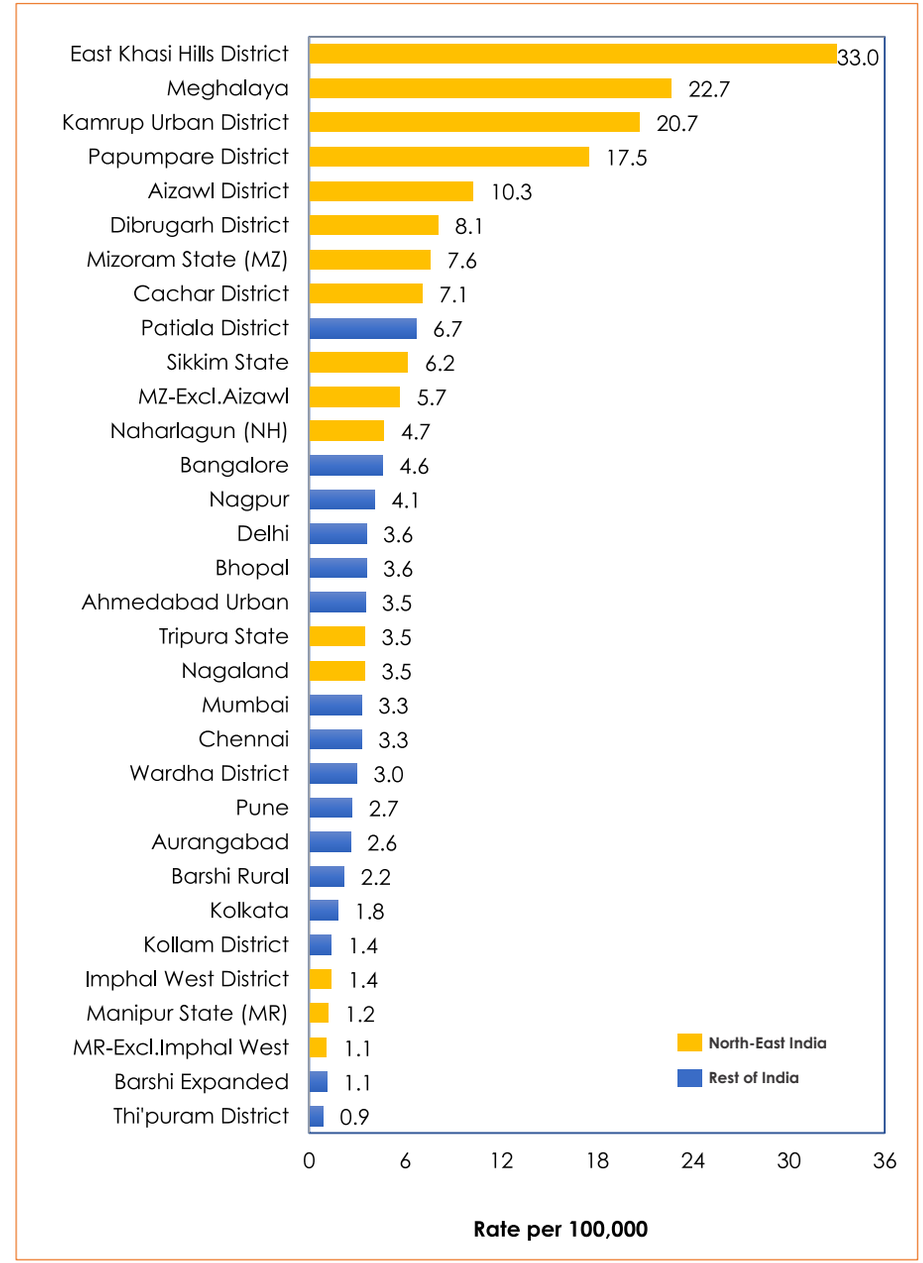
Hypopharynx – Female



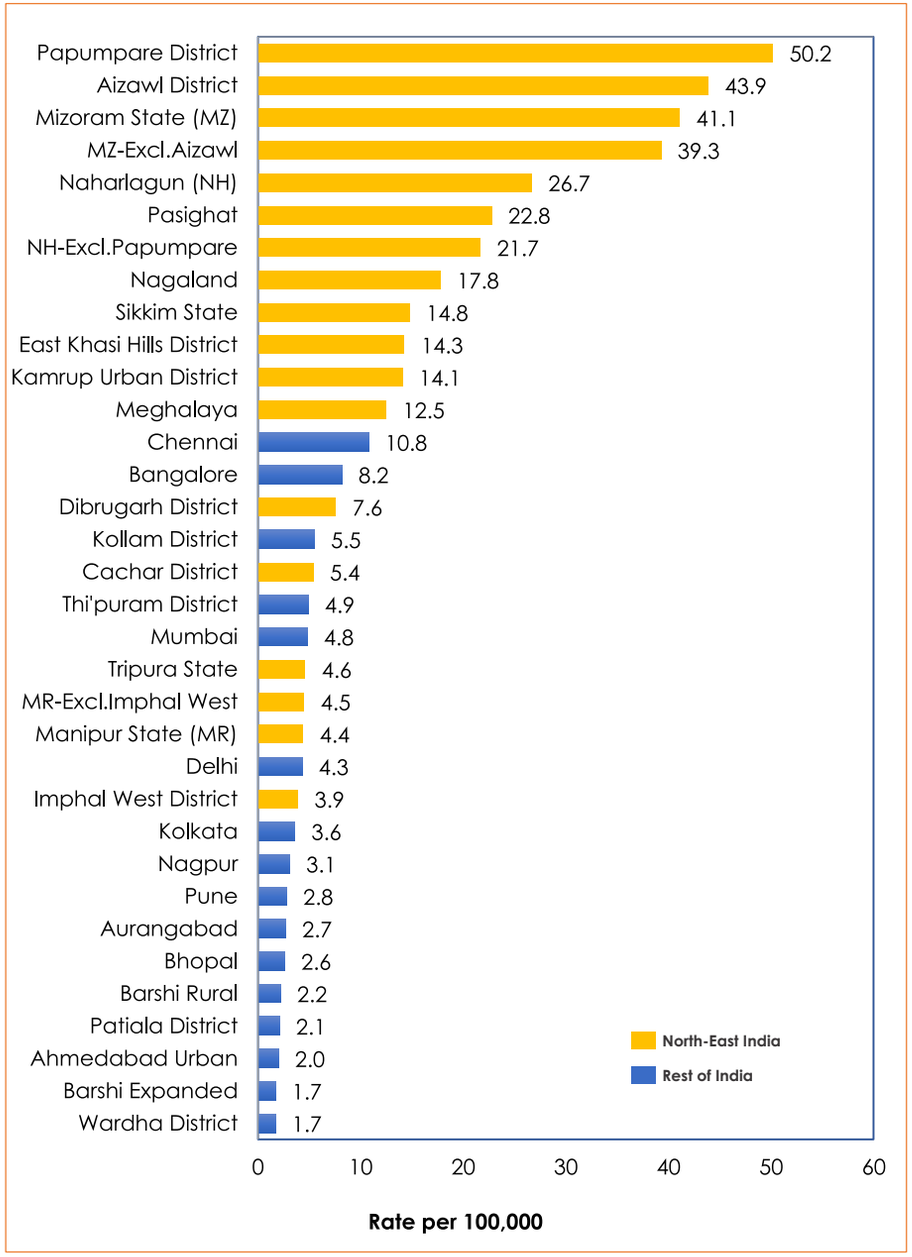
Oesophagus – Males



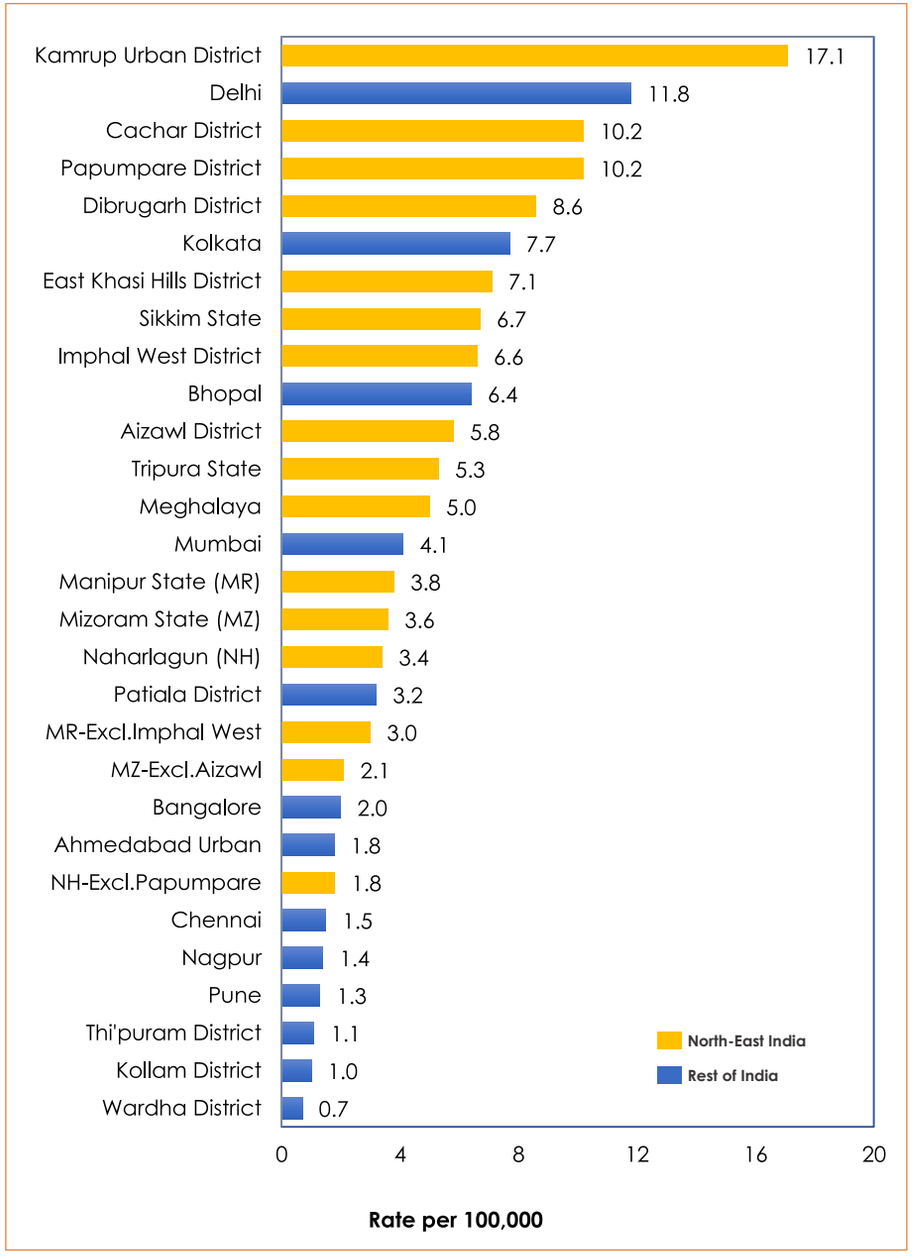
Oesophagus – Females



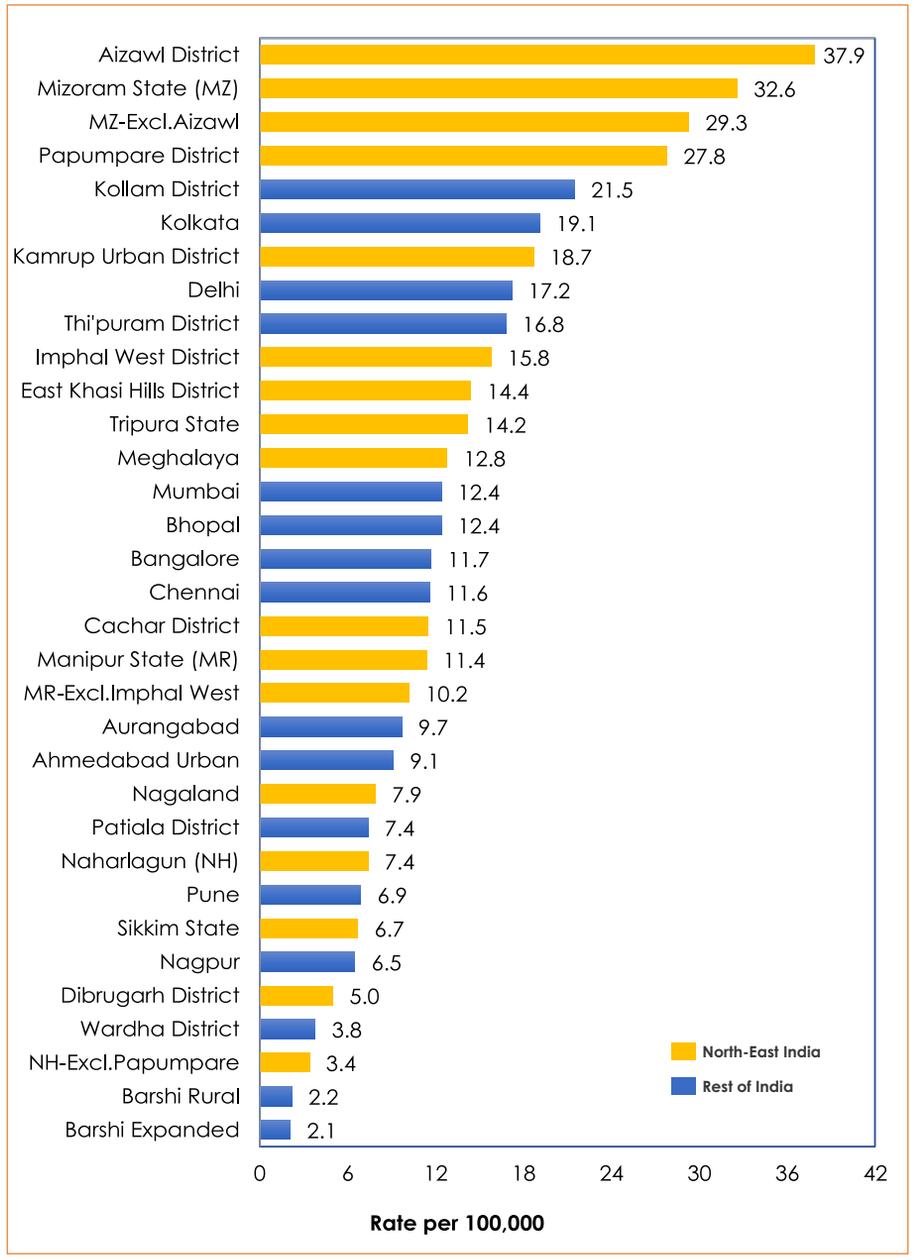
Stomach – Males



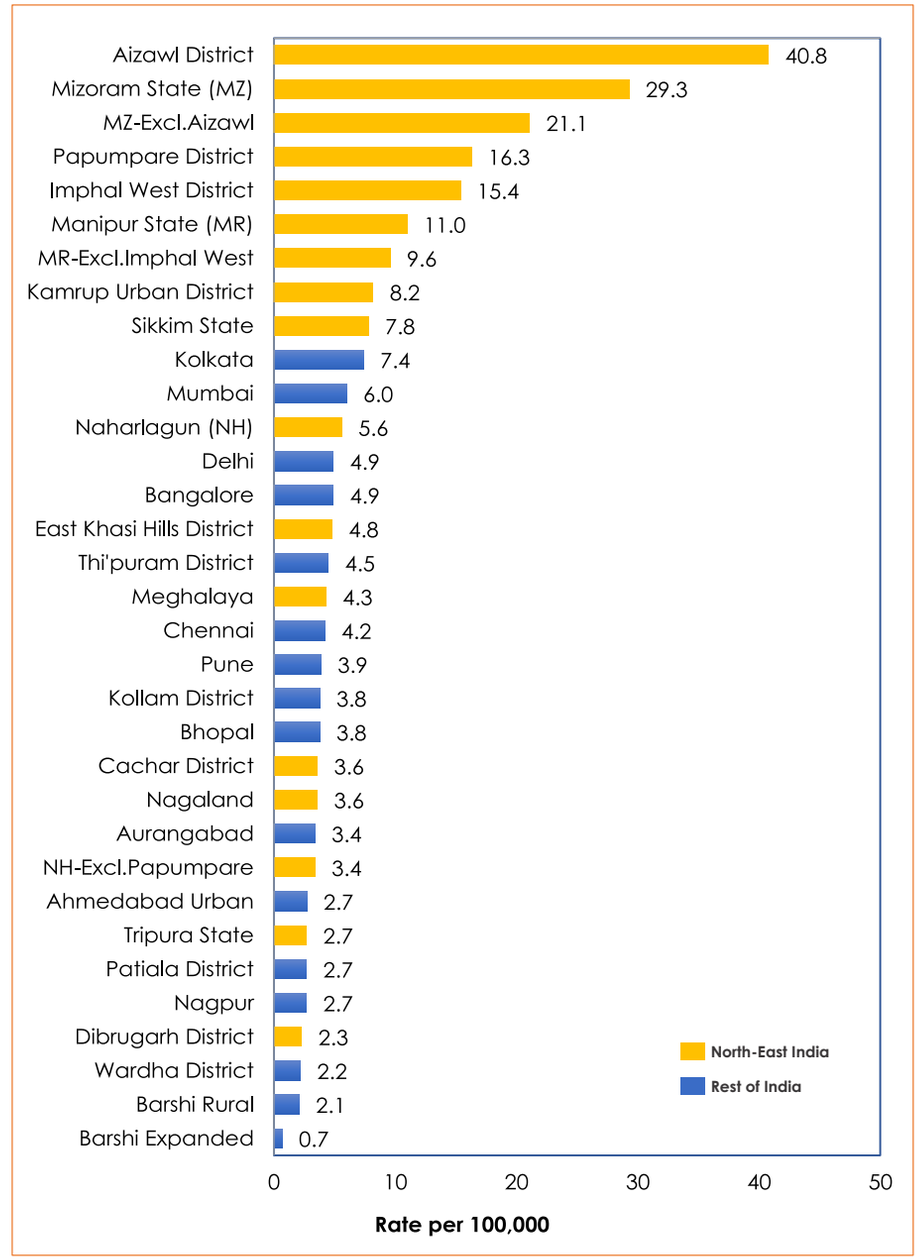
Gall Bladder – Females



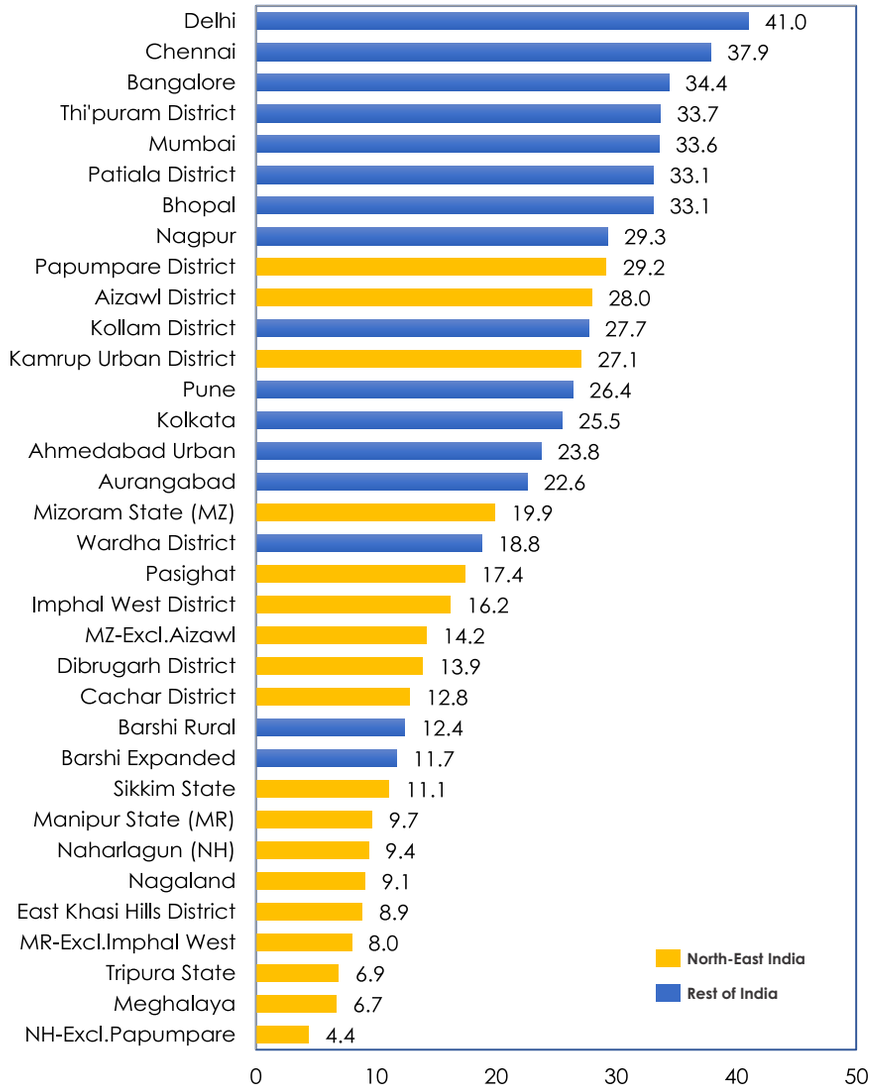
Lung – Males



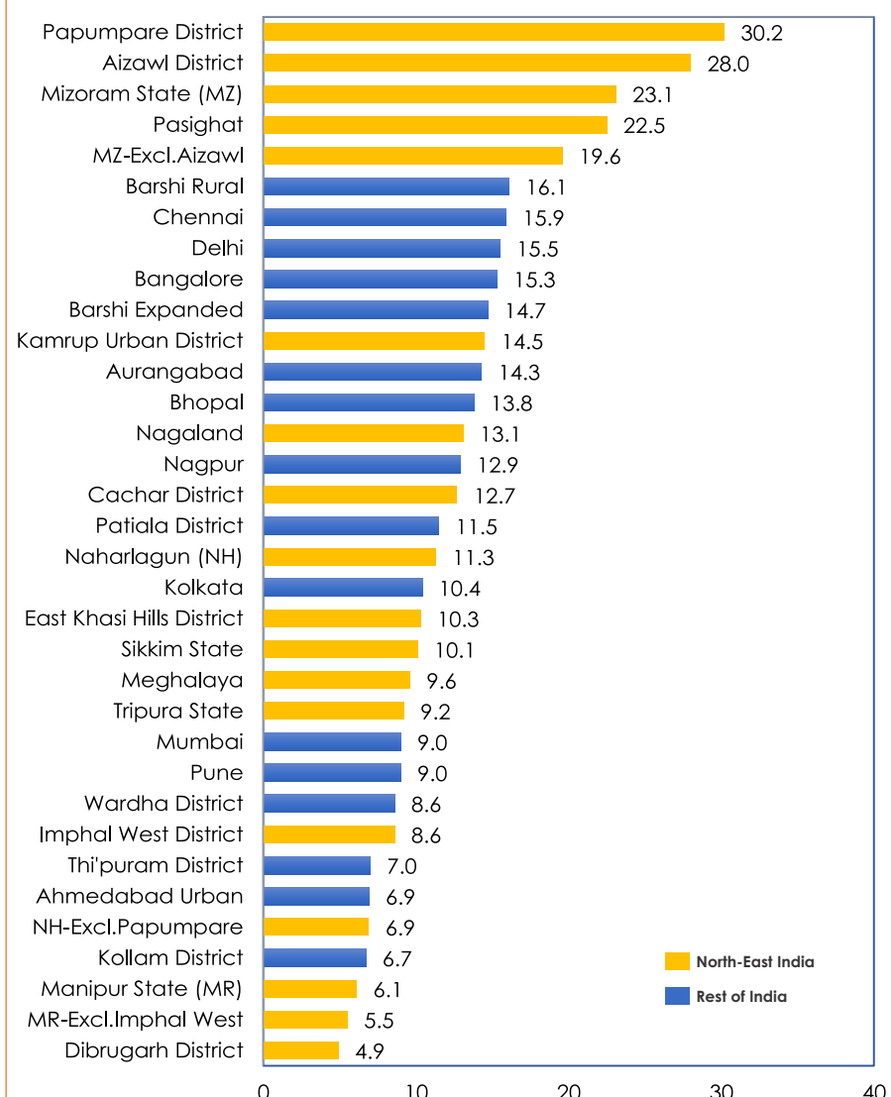
Lung – Females



Breast – Females



Cervix Uteri



MR-Excl: Manipur Excluding; MZ-Excl: Mizoram Excluding; NH-Excl: Naharlagun Excluding; Thi'puram: Thiruvananthapuram

Eight registries of North East are among the top ten PBCRs as per Age Adjusted Indicence Rate of all Cancers in male. Aizwal district from

Mizoram shows the highest incidence rate of all Cancers in male which is nearly double of Delhi (highest incidence among rest of India).

Ten registries of North East are in the top ten PBCRs in India for leading incidences of Oesophagus, Hypopharynx, Stomach in males.

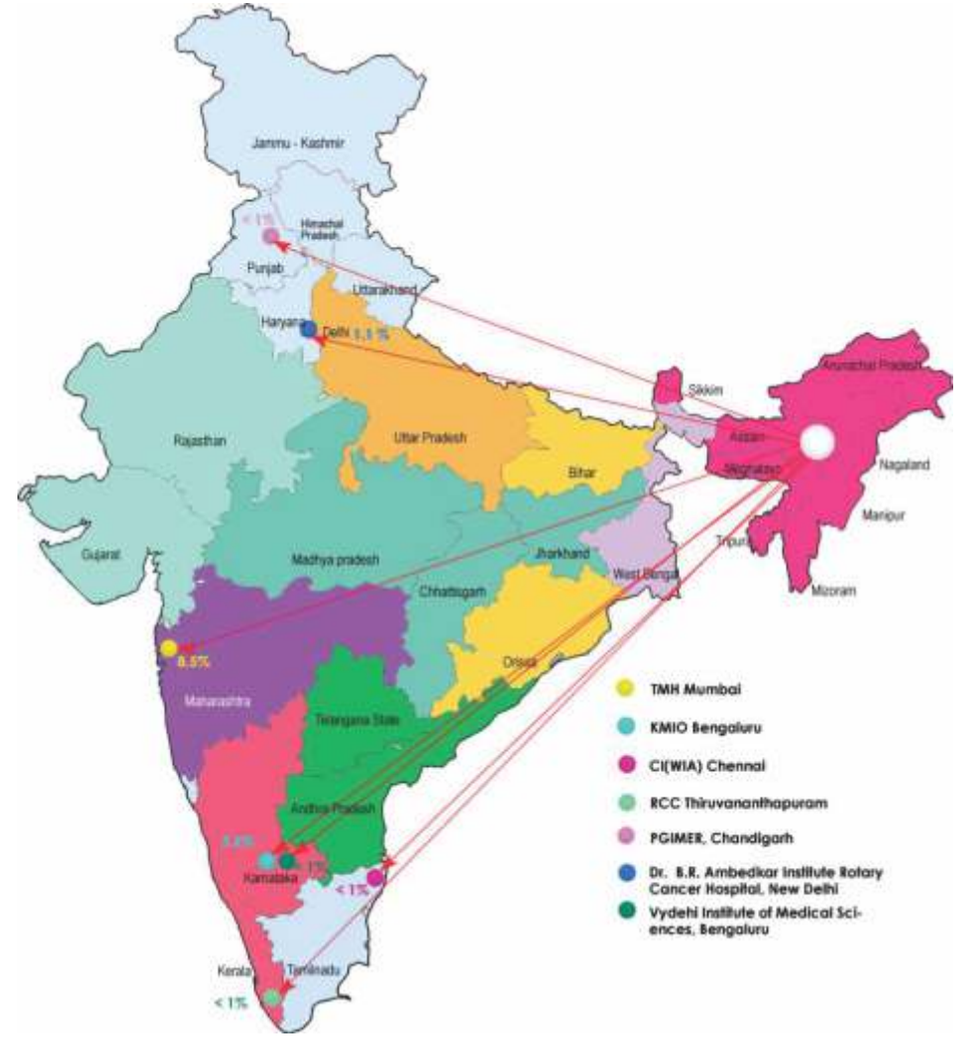
1.9 Number and Proportion of Cancer Patients taking treatment in the institute within and outside North East (HBCR 2012-2014)

State of Residence	Within NE		Outside NE		Total
	Number	%	Number	%	Number
Arunachal Pradesh	149	84.2	28	15.8	177
Assam	8305	93.4	590	6.6	8895
Manipur	103	37.6	171	62.4	274
Meghalaya	157	80.9	37	19.1	194
Mizoram	51	41.8	71	58.2	122
Nagaland	111	21.3	411	78.7	522
Sikkim	1	1.7	59	98.3	60
Tripura	224	63.5	129	36.5	353

NE - North East

Majority of Cancer patients from Sikkim, Nagaland, Manipur, Mizoram are getting treatment in institutes outside North East. The map shows referral flow of Cancer patients from North East to the institutes in different regions of the country.

1.10 Patterns of seeking cancer treatment outside North East



Cancer Notification

North East

1. Tripura 24th September 2008
2. Assam on 9th December 2013 (Kamrup district)
3. Arunachal Pradesh on 29th July 2015
4. Manipur on 22nd February 2017

Rest of India

5. West Bengal in 20th December 2010
6. Punjab 18th October 2011
7. Haryana on 29th October 2014
8. Karnataka on 25th July 2015
9. Gujarat on 20th May 2016

- **Legislative order require initiative from states and cancer registries.**
- **Challenges are there in implementation and monitoring cancer registration even after notifiablilty.**

Advocacy Points

- Incidence of all cancer is higher in North East compared to rest of India.
- Cancer of Oesophagus, Lung, Stomach, Hypopharynx etc., are common in males of North East. In females, cancer Breast, Cervix, Oesophagus and Gall Bladder lead the list.
- 5-year survival rate for Head & Neck, Breast and Cervix cancer is lower in North East compared to Rest of India.
- Cases diagnosed at localized stage are lower compared to rest of India. Screening Programme needs to be strengthened to diagnose more cases at early stages which will improve survival.
- A substantial Proportion of cancer patients from North East are travelling outside North East State for taking treatment and Cancer care. Hence Cancer treatment facilities need to be established and strengthened in all North East state to prevent migration of Cancer patient to outside North East for treatment.
- Possibility developing of cancer is very high ranging from 1 in 5 persons to 1 in 16 persons.
- More than half of the cancer in males and more than 1/4th in females are associated with use of tobacco. Effective tobacco control is likely to reduce a significant burden of cancer.
- Four out of eight states have made cancer a notifiable disease by administrative order. Implementation of legislative order require initiatives from state health authority and cancer registry. Rest four states also need to implement cancer notifiability.

Chapter 2 – ARUNACHAL PRADESH: Cancer & Health Indicator profile

2.1 Demography of the Population Based Cancer Registry

PBCR Name	Naharlagun	Pasighat
PBCR situated in	Tomo Riba State Hospital, Naharlagun	General Hospital, Pasighat
Coverage Area	**Eight Districts:** Tawang, West kameng, East kameng, Upper subansiri, Lower subansiri, Kurngkumey, Papumpare and West siang	**Two Districts:** East Siang and Upper Siang
PBCR Established Year	2011	2011
Number of sources of registration	40	65
Area (in Sq.km)	42095	10193
Urban & Rural covered (%)	25.8 & 74.2	25.4 & 74.6
Population as per 2011 Census		
Males	390350	68815
Females	369665	65719
Total	760015	134534
Major Ethnic groups	Nyishi, Galo, Monpa	Adi, Nepalese, Mishing

Cancer is made notifiable in Arunachal Pradesh from 29th July 2015

2.2 Risk Factor & Health Practices

Risk Factor for Cancer	Urban		Rural		Total	
	Males	Females	Males	Females	Males	Females
Adults (age 15-49 years)						
Literacy (%)	91.4	80.9	81.9	60.1	84.5	65.6
Use of any kind of tobacco (%)	56.6	15.3	61.3	18.6	60.0	17.7
Consumption of alcohol (%)	55.2	22.3	60.5	27.8	59.0	26.3
Proportion attempted to stop smoking or using tobacco in any other form during the past 12 months	34.2	28.3	21.6	15.8	24.9	18.6
Overweight or obese (BMI ≥ 25.0 kg/m^2) (%)	26.0	25.7	18.4	16.3	20.6	18.8
Children under age 6 months exclusively breastfed (%)		51.5		58.1		56.5

Source: NFHS-4 (2015 -16)

Health practices & Health seeking	Urban		Rural		Total	
	Males	Females	Males	Females	Males	Females
Adults (age 15-49 years)						
Comprehensive knowledge of HIV/AIDS (%)	37.7	24.8	23.5	12.9	27.4	16.0
Have Ever Undergone Examinations of Cervix (%)		10.4		7.9		8.5
Have Ever Undergone Examinations of Breast (%)		7.2		5.4		5.9
Institutional births (%)		81.5		44.2		52.3
Population and Household Profile	**Both Sex**					
Households using improved sanitation facility (%)	73.3		57.1		61.3	
Households using clean fuel for cooking (%)	87.4		30.0		45.0	
Households with any usual member covered by a health scheme or health insurance (%)	54.3		59.7		58.3	

Source: NFHS-4 (2015 -16)

2.3 Health Systems at a Glance

Health Facilities	Number
Sub centre	286
Primary Health Centres	117
Community Health Centres	52
Sub Divisional Hospital	0
District Hospitals	14
Mobile Medical Unit	16
AYUSH	24
Cancer treating hospitals *	1
Radiotherapy facilities *	1
Cancer patient welfare schemes *	0
Palliative care centres *	0

*Source: Rural Health Statistics report (2014 -15); * Provided by Cancer registry*

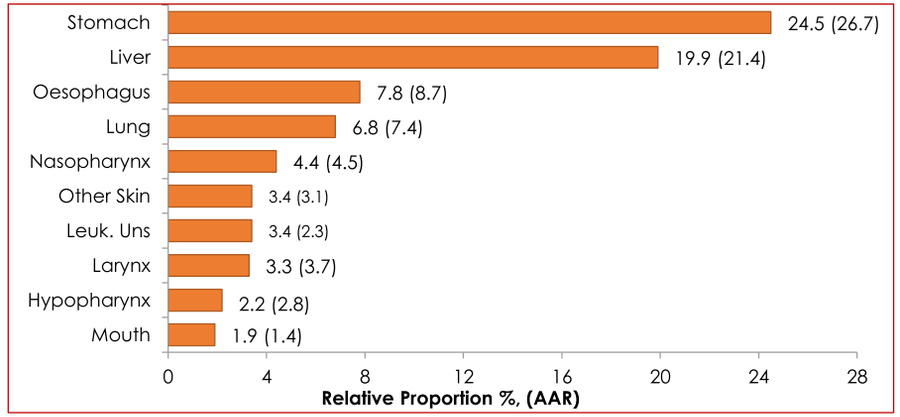
2.4 Number and Age Adjusted Incidence Rate (Reporting years: 2012-14)

Sex	Naharlagun		Papumpare District		Naharlagun excluding Papumpare District		Pasighat	
	Number of New Cancer cases	AAR	Number of New Cancer cases	AAR	Number of New Cancer cases	AAR	Number of New Cancer cases	AAR
Males	735	103.5	299	230.4	436	76.9	175	107.4
Females	704	100.5	333	249.0	371	66.6	159	101.4

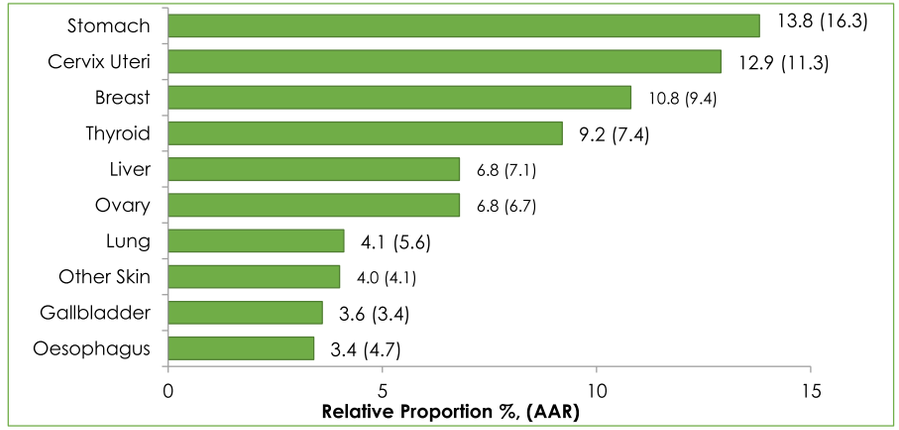
AAR - Age Adjusted Incidence Rate per 1,00,000 population

2.5 Leading Sites of Cancer

Leading Sites of Cancer in Males - Naharlagun



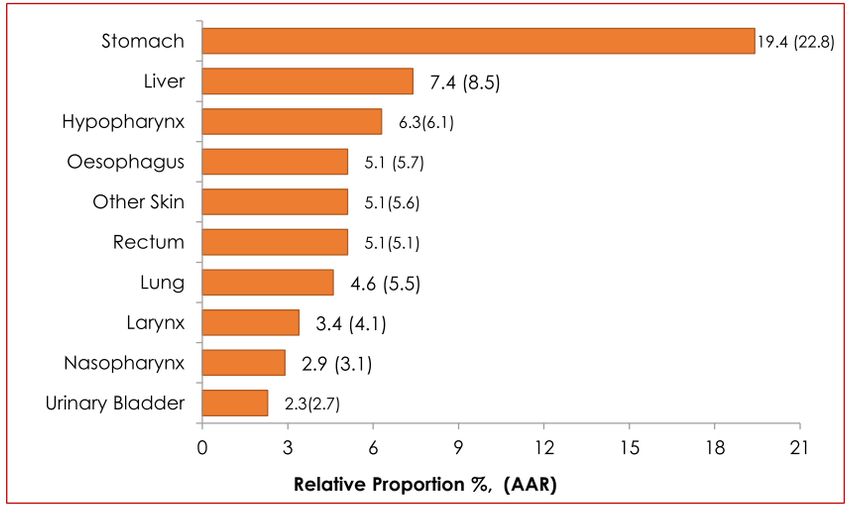
Leading Sites of Cancer in Females- Naharlagun



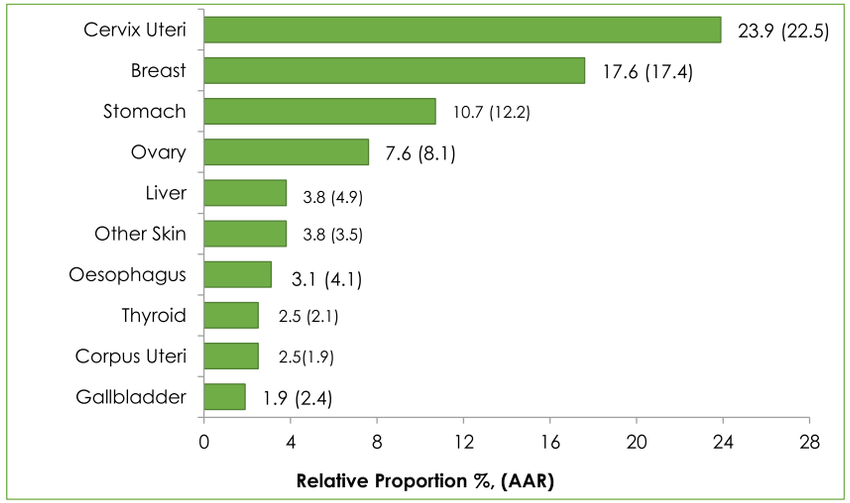
In males, proportion of Stomach cancer is the highest followed by Liver and oesophagus. These three sites contribute more than half (52.2%) of all cancers.

In females, Stomach cancer is the commonest followed by Cervix Uteri and Breast. These three sites contribute more than one third (37.5%) of all cancers.

Leading Sites of Cancer in Males - Pasighat



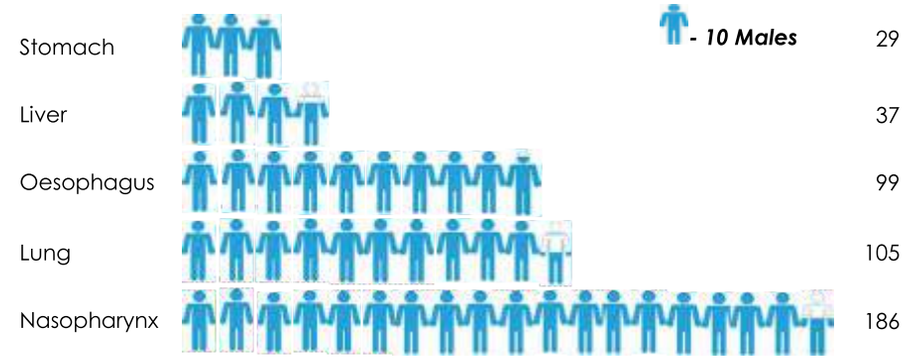
Leading Sites of Cancer in Females – Pasighat



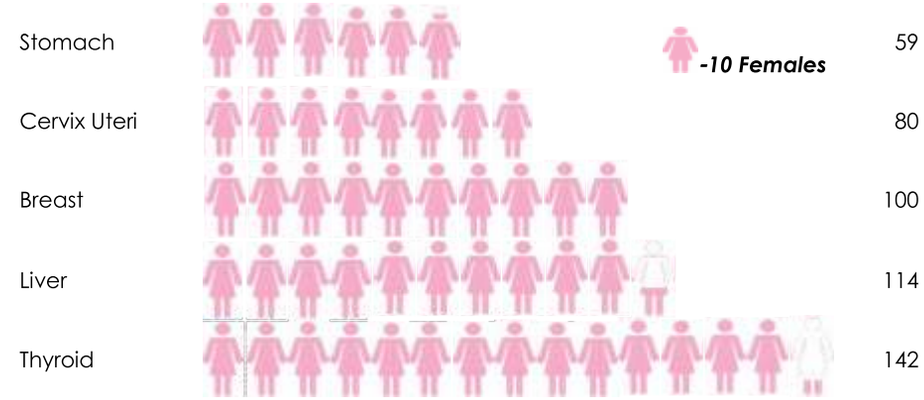
In males, proportion of Stomach cancer is the highest followed by Liver and Hypopharynx. These three sites contribute almost one third (33.1%) of all cancers. In females, Cervix Uteri cancer is the commonest followed by Breast and Stomach. These three sites contribute more than half (52.2%) of all cancers.

2.6 Possibility of one in number of person developing cancer in (0-74) years of age

Males - Naharlagun

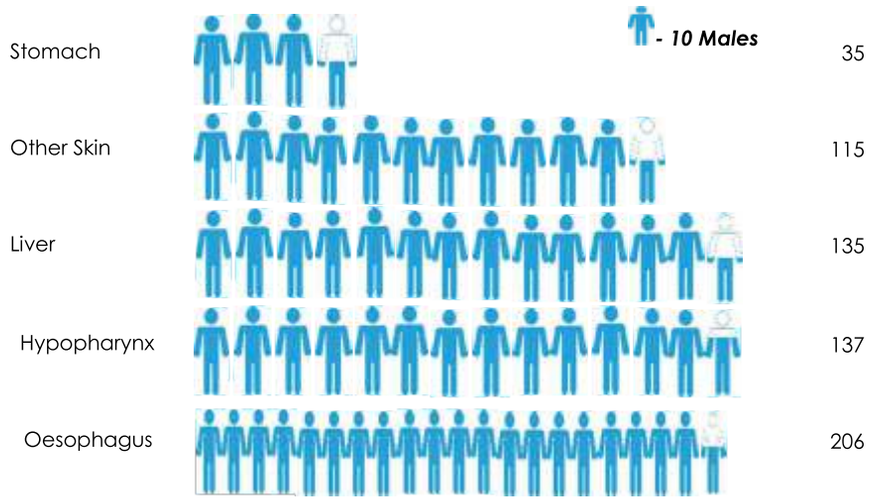


Females - Naharlagun

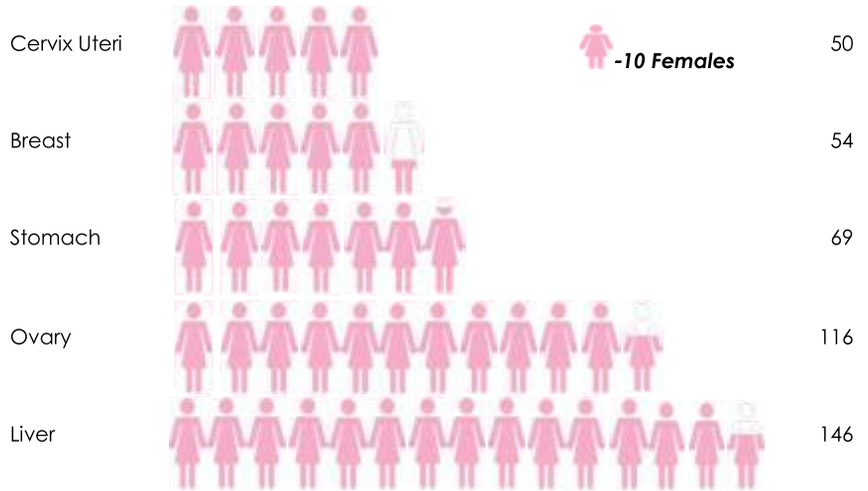


The average risk that a person will develop Stomach cancer in their lifetime (0-74 years) is about 1 in 29 for males. Similarly, 1 in 59 females will possibly develop Stomach cancer in their lifetime (0-74 years).

Males – Pasighat



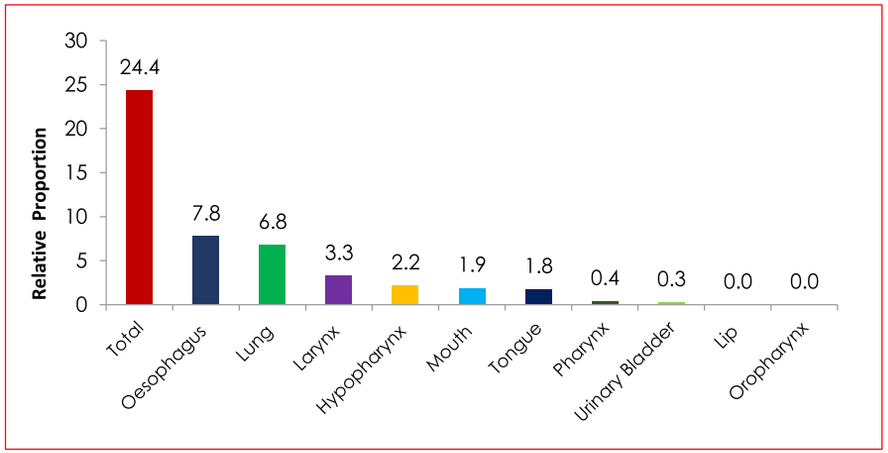
Females – Pasighat



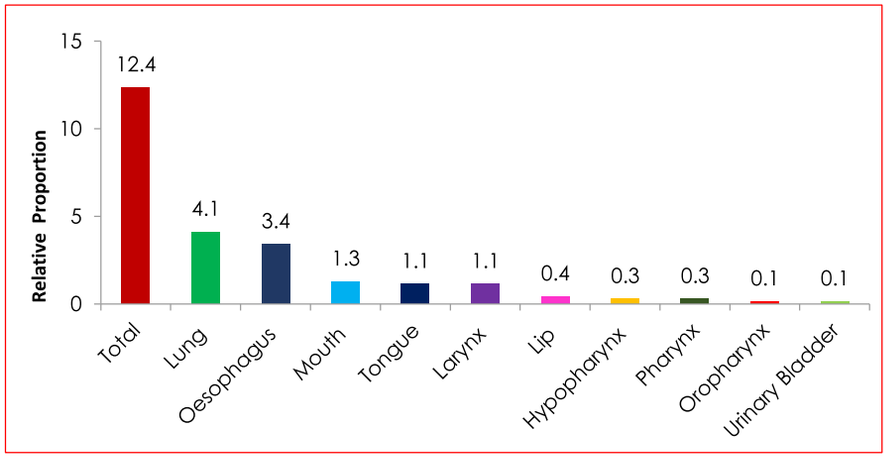
The average risk that a person will develop Stomach cancer in their lifetime (0-74 years) is about 1 in 35 for males. Similarly, 1 in 50 females will possibly develop Cervix Uteri cancer in their lifetime (0-74 years).

2.7 Proportion of Cancer in Sites known to be associated with use of tobacco

Males - Naharlagun



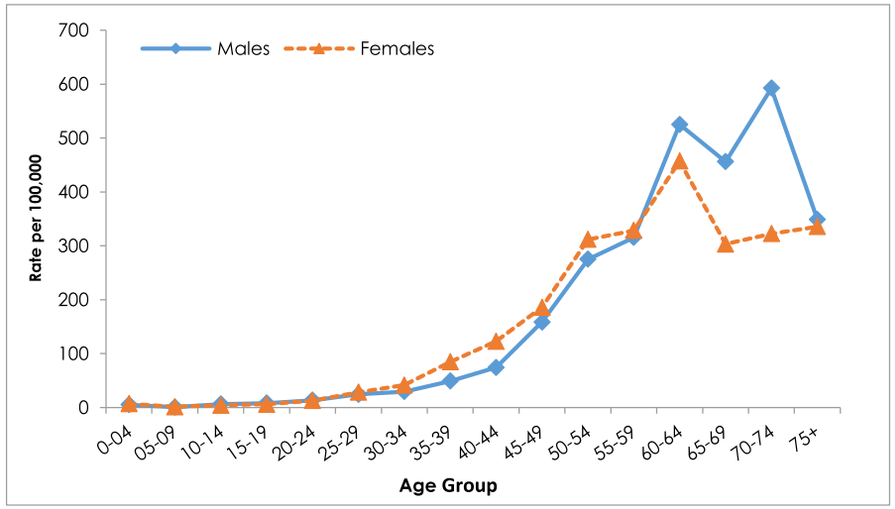
Females - Naharlagun



Around 24% and 12% of all cancers in males and females are respectively associated with the use of tobacco. Among these proportion of Lung, Oesophagus and Mouth are high in both sexes.

2.8 Age Specific Rate (ASpR)

Naharlagun



Age Specific Incidence Rate is highest for males in 70-74 age group. For females, it is observed in 5 years earlier (60-64 yrs). Age specific incidence rates show distinct rise from 30- 34years age onwards in both sexes.

2.9 Ethnicity wise proportion of cancer cases

Naharlagun

Cultural Group	Number	%
Nyishi	478	33.2
Galo	208	14.5
Monpa	109	7.6
Apatani	108	7.5
Tagin	86	6
Adi	85	5.9
Nepalese	85	5.9
Ahom	43	3
Others	159	11
Missing/Unk	78	5.4
Total	**1439**	**100**

Pasighat

Cultural Group	Number	%
Adi	211	63.2
Nepalese	29	8.7
Mishing	8	2.4
Ahom	5	1.5
Boro	4	1.2
Others	39	11.7
Missing/Unknown	38	11.4
Total	**334**	**100**

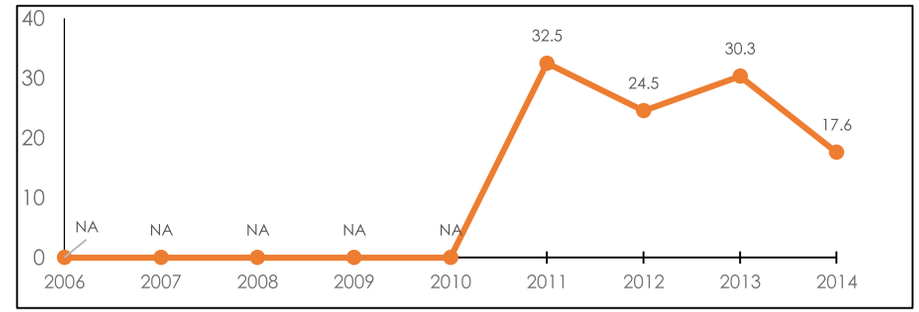
Approximately 33 % of the cancer cases belong to Nyishi in Naharlagun and 63 % of the cancer cases belong to Adi in Pasighat

2.10 Cancer Deaths

Case Fatality Ratio (CFR)			
Naharlagun	**Incidence**	**Death**	**CFR (%)**
Males	735	212	28.8
Females	704	127	18.0
Both Sexes	1439	339	23.6
Pasighat			
Males	175	39	22.3
Females	159	28	17.6
Both Sexes	334	67	20.1

2.11 Status of Medical Certification of Cause of Death *

Implementation status of MCCD	
Existing Allopathic Medical Institutions	188
Medical Institutions Covered under MCCD	156
Medical Institutions reported MCCD data as per the National list	0
Ranking of States/UTs in the medical certification of cause of death,2014	19



NA- Not Available Data

Trend in proportion of medically certified deaths to total registered deaths in Arunachal Pradesh, 2006-14;

Rank	Leading causes of death	Percentage
1	Circulatory System	27.5
2	Digestive system	19.3
3	Certain Infectious & Parasitic Diseases	17.2
4	Certain Conditions Originating in Perinatal Period	7.7
5	Respiratory System	5.8
6	Symptoms, Signs & Abnormal Findings	1.2
7	Injury Poisoning	0.2
8	Neoplasms	0.0
9	Other groups	21.0

** Report on Medical Certification of Cause of Death (MCCD), 2008 -14, Office of the Registrar General of India, Government of India.*

The coverage of institutions and reporting of MCCD have to be improved. Conditions of the Circulatory system is the leading cause of death. Quality of cause of death information can be further improved.

Advocacy Points

- Cancer of Stomach and Liver are most common in men.
- Cancer of Stomach, Cervix and Breast are most common in women.
- Cancer incidence rate is highest in Papumpare district in females and second highest in males among Indian registries.
- One fourth of the cancers in men are associated with the use of tobacco.
- High burden of risk factors such as tobacco, alcohol, obesity etc., need to be addressed through appropriate prevention programme and health education.
- Use of clean fuel needs to be promoted in rural sectors to minimize indoor air pollution
- Coverage of screening for Breast, Cervix and Oral cancer needs to be improved
- Cancer treatment facilities particularly radiotherapy, palliative care etc., need to be established and strengthened Strengthening the reporting of cause of death is required to have accurate mortality estimates.
- Cancer patient welfare and other relevant health insurance scheme need to be in place to improve affordability and access to health care.

Chapter 3 – ASSAM: Cancer & Health Indicator profile

3.1 Demography of the Population Based Cancer Registry

PBCR Name	Cachar District	Dibrugarh District	Kamrup Urban
PBCR situated in	Silchar Medical College, Silchar	Assam Medical College & Hospital, Dibrugarh	Dr B. Borooah Cancer Institute, Guwahati
Coverage Area	Cachar District	Dibrugarh District	Kamrup District Urban and Kamrup Metropolitan District Urban
PBCR Established Year	2007	2003	2003
Number of sources of registration	50	85	120
Area (in Sq.km)	3786	3381	336
Urban & Rural covered (%)	18.2 & 81.8	18.4 & 81.6	100.0 & 0.0
Population as per 2011 Census			
Males	886284	676434	608846
Females	850333	649901	570560
Total	1736617	1326335	1179406
Major Ethnic groups	Kayastha	Ahom, Tea-tribe, Kachari	Kalita, Brahmin, Koibarta

Cancer is made notifiable in Kamrup urban district from 9th December 2013

3.2 Risk Factor & Health Practices

Risk Factor for Cancer	Urban		Rural		Total	
	Males	Females	Males	Females	Males	Females
Adults (age 15-49 years)						
Literacy (%)	93.2	87.0	80.7	69.2	82.8	71.8
Use of any kind of tobacco (%)	63.5	16.6	64.0	20.3	63.9	19.7
Consumption of alcohol (%)	29.7	2.9	36.8	7.7	35.6	6.9
Proportion attempted to stop smoking or using tobacco in any other form during the past 12 months	17.6	16.8	13.4	8.1	14.1	9.2
Overweight or obese (BMI ≥ 25.0 kg/m^2) (%)	24.8	26.1	10.5	10.9	12.9	13.2
Children under age 6 months exclusively breastfed (%)		67.3		63.1		63.5

Source: NFHS-4 (2015 -16)

Health practices & Health seeking	Urban		Rural		Total	
	Males	Females	Males	Females	Males	Females
Adults (age 15-49 years)						
Comprehensive knowledge of HIV/AIDS (%)	30.2	16.0	20.9	8.0	22.4	9.4
Have Ever Undergone Examinations of Cervix (%)		5.9		5.1		5.2
Have Ever Undergone Examinations of Breast (%)		6.2		5.0		5.2
Institutional births (%)		92.9		68.2		70.6
Population and Household Profile	**Both Sex**					
Households using improved sanitation facility (%)	62.2		45.1		47.7	
Households using clean fuel for cooking (%)	76.5		15.6		25.1	
Households with any usual member covered by a health scheme or health insurance (%)	12.6		10.0		10.4	

Source: NFHS-4 (2015 -16)

3.3 Health Systems at a Glance

Health Facilities	Number
Sub centre	4621
Primary Health Centres	1014
Community Health Centres	151
Sub Divisional Hospital	13
District Hospitals	25
Mobile Medical Unit	65
AYUSH	451
Cancer treating hospitals	6
Radiotherapy facilities	6
Cancer patient welfare schemes	9
Palliative care centres	8

Source: Rural Health Statistics report (2014 -15)

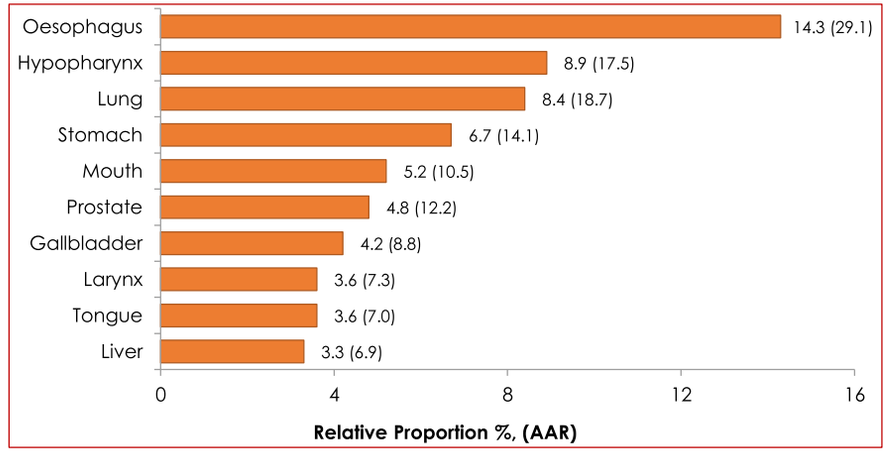
3.4 Number and Age Adjusted Incidence Rate (Reporting years: 2012-14)

Sex	Cachar District		Dibrugarh District		Kamrup Urban	
	Number of New Cancer cases	AAR	Number of New Cancer cases	AAR	Number of New Cancer cases	AAR
Males	2666	125.4	1498	92.8	3071	206.0
Females	2100	95.2	1345	78.6	2392	174.0

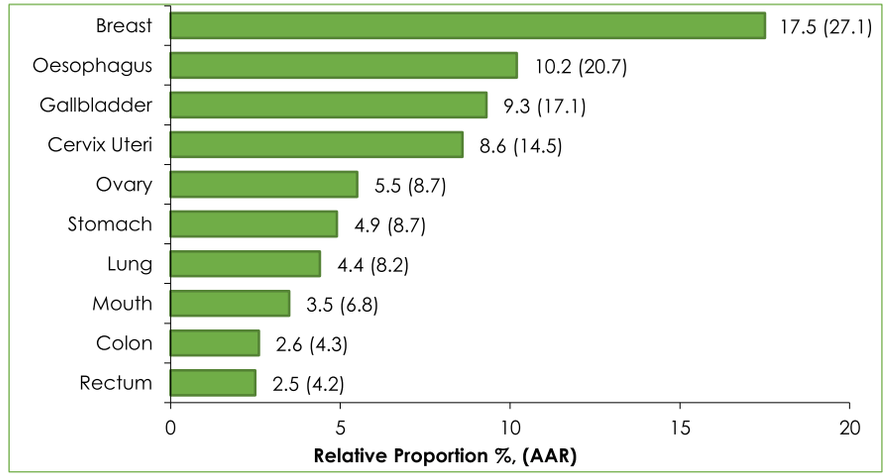
AAR - Age Adjusted Incidence Rate per 1,00,000 population

3.5 Leading Sites of Cancer

Leading Sites of Cancer in Males - Kamrup Urban



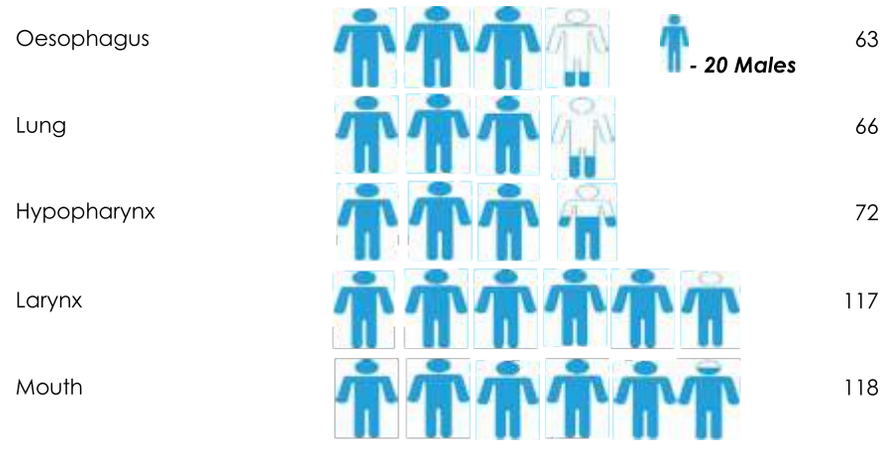
Leading Sites of Cancer in Females - Kamrup Urban



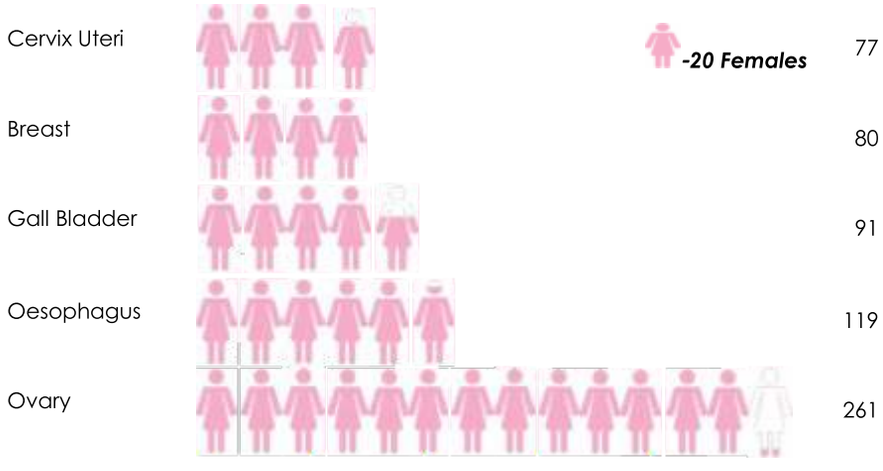
In males, proportion of Oesophagus cancer is the highest followed by Hypopharynx and Lung. These three sites contribute almost one third (32%) of all cancers. In females, Breast cancer is the commonest followed by Oesophagus and Gallbladder. These three sites contribute more than one third (37%) of all cancers.

3.6 Possibility of one in number of person developing cancer in (0-74) years of age – Cachar District

Males



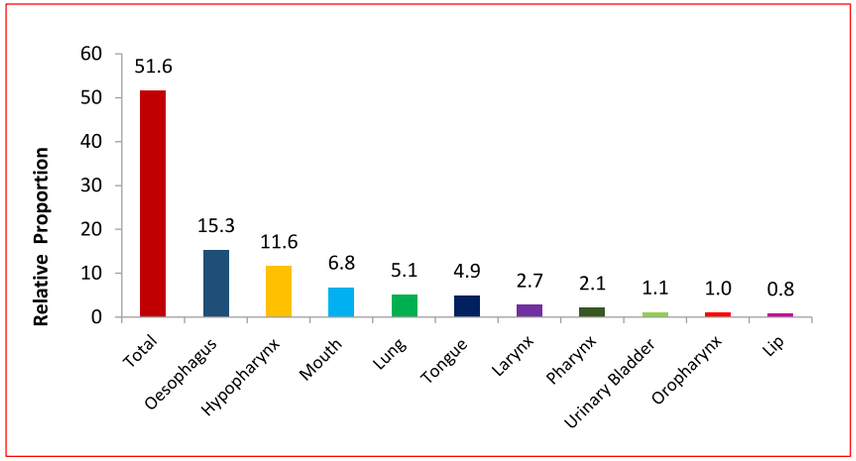
Females



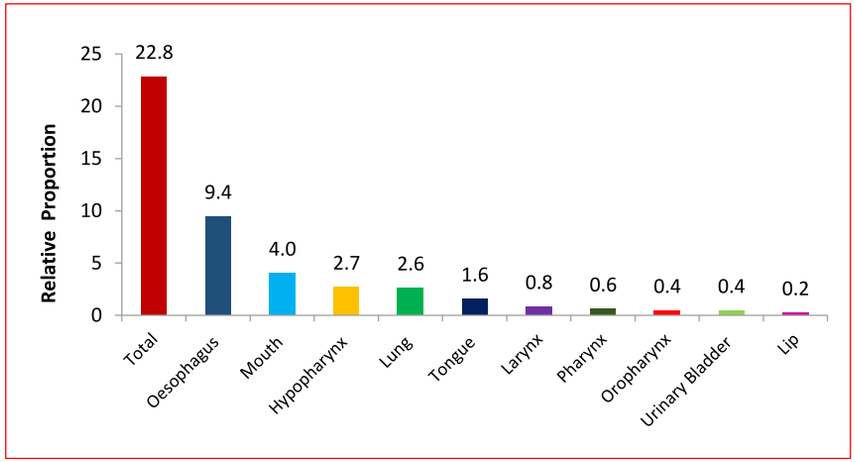
The average risk that a person will develop Oesophagus cancer in their lifetime (0-74 years) is about 1 in 63 for males. Similarly, 1 in 77 females will possibly develop Cervix Uteri cancer in their lifetime (0-74 years).

3.7 Proportion of Cancer in Sites known to be associated with use of tobacco

Males – Dibrugarh District

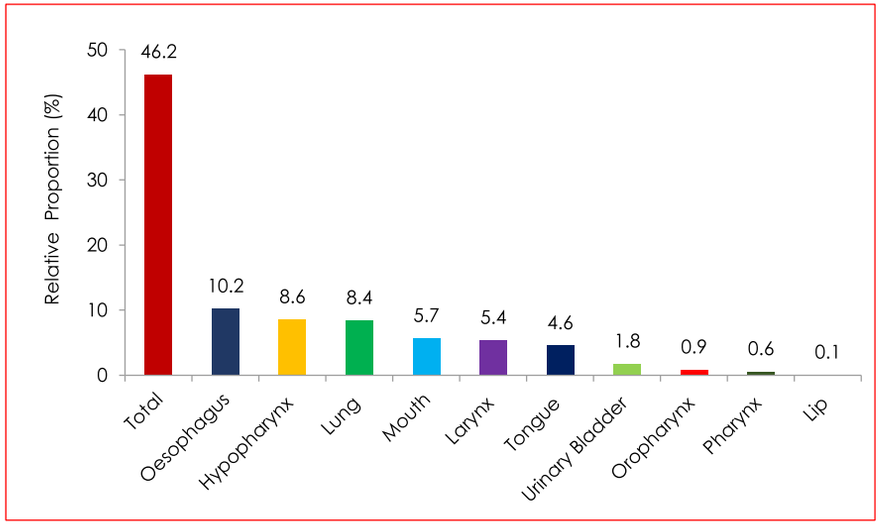


Females– Dibrugarh District

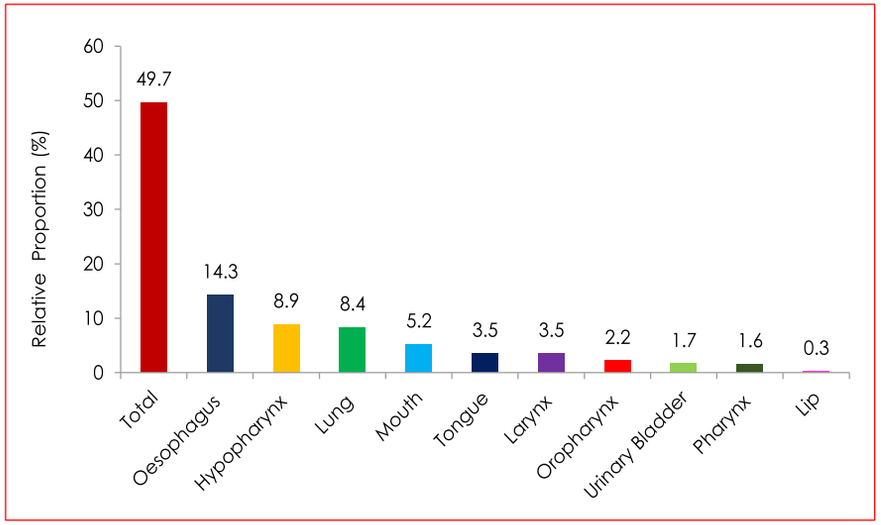


Around 52% and 23% of all cancers in males and females are respectively associated with the use of tobacco. Among these proportion of Oesophagus, Hypopharynx, and Mouth are leading in both sexes.

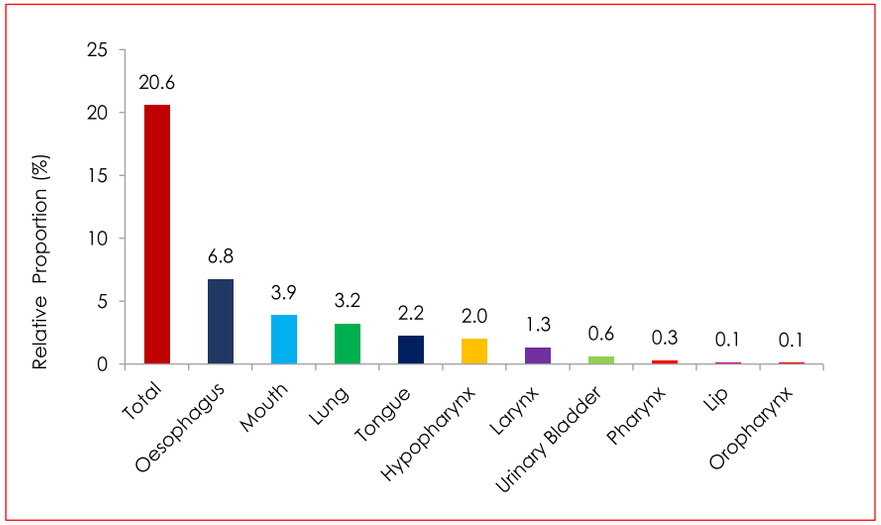
Males– Cachar District



Males– Kamrup Urban

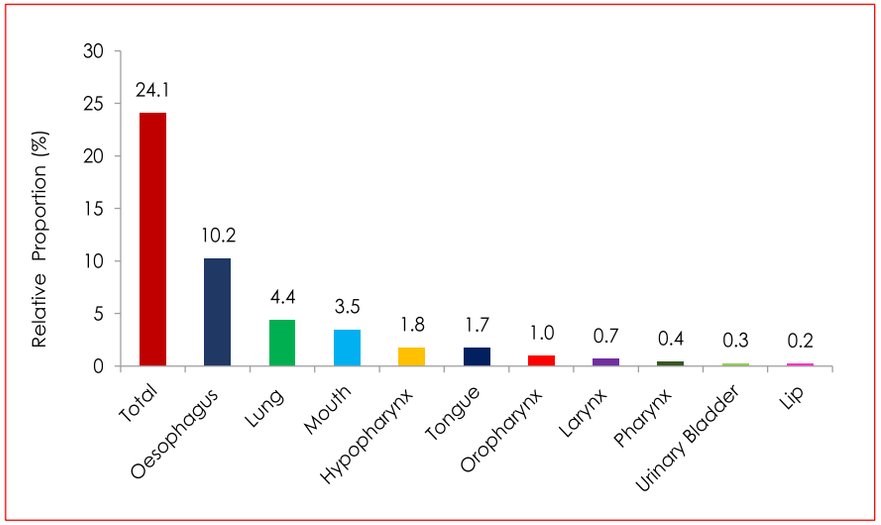


Females– Cachar District



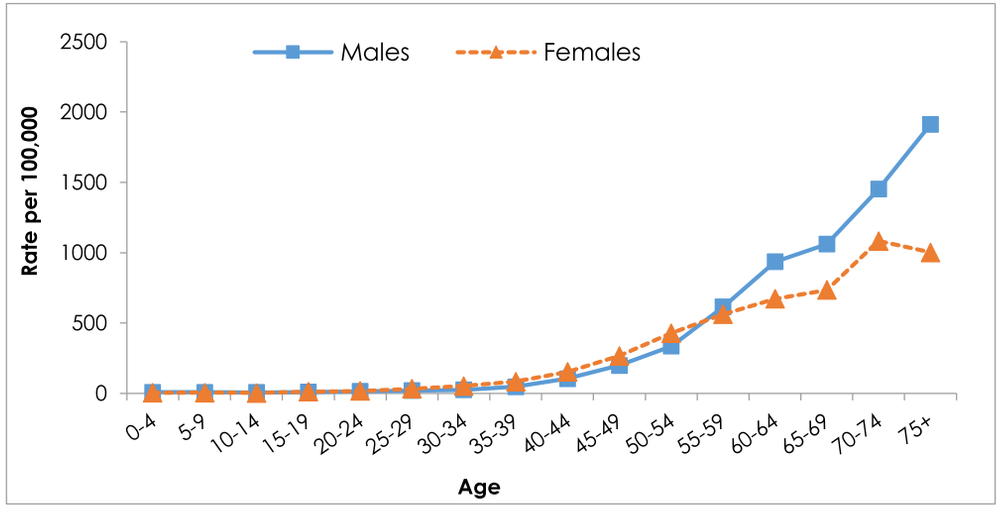
Around 46% and 20% of all cancers in males and females are respectively associated with the use of tobacco. Among these proportion of Oesophagus, Hypopharynx, and Mouth are leading in both sexes.

Females– Kamrup Urban



Around 50% and 24% of all cancers in males and females are respectively associated with the use of tobacco. Among these proportion of Oesophagus, Hypopharynx, and Lung are leading in both sexes.

3.8 Age Specific Rate (ASpR)



3.9 Ethnicity wise proportion of cancer cases

Cachar District

Cultural Group	Number	%
Kayastha	695	14.6
Meitei	202	4.2
Koibarta	180	3.8
Brahmin	168	3.5
Jogi	112	2.3
Bishnupriy	73	1.5
Others	2699	56.6
Missing/Unk	637	13.4
Total	**4766**	**100.0**

Dibrugarh District

Cultural Group	Number	%
Ahom	794	27.9
Tea-tribe	403	14.2
Kachari	208	7.3
Koibarta	94	3.3
Kalita	84	2.9
Brahmin	80	2.8
Kayastha	77	2.7
Nepalese	72	2.5
Muttock	42	1.5
Chutia	39	1.4
Others	561	19.7
Missing-Unk	389	13.7
Total	**2843**	**100.0**

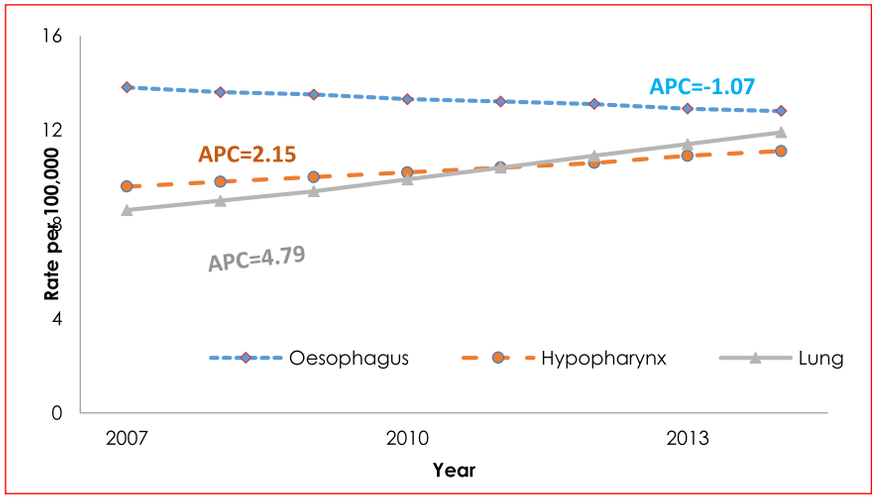
Kamrup Urban

Cultural Group	Number	%
Kalita	734	13.4
Brahmin	469	8.6
Koibarta	410	7.5
Kayastha	236	4.3
Koch	199	3.6
Boro	169	3.1
Ahom	148	2.7
Nepalese	140	2.6
Koet	136	2.5
Marwari	97	1.8
Jogi	83	1.5
Raj Bangsh	61	1.1
Others	1598	29.3
Missing-Unk	983	18.0
Total	**5463**	**100.0**

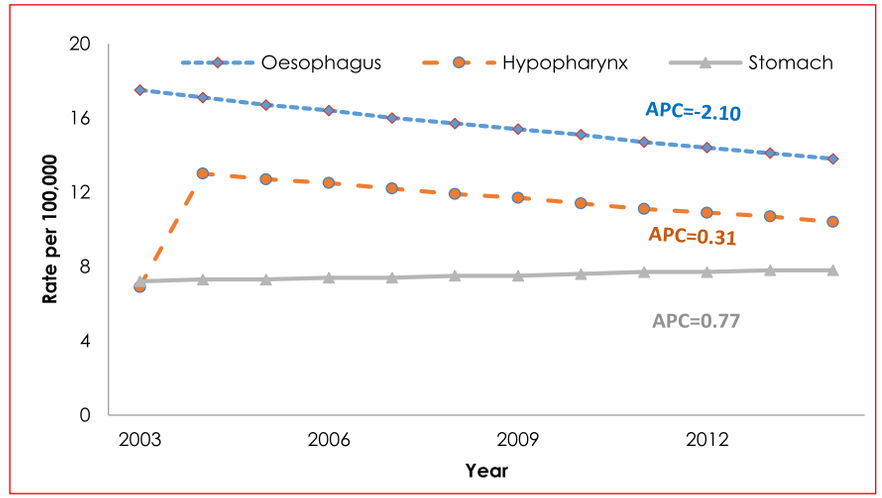
Approximately 15% of the cancer cases belong to Kayastha in Cachar District, 28% of the cancer cases belong to Ahom in Dibrugarh District and 13% of the cancer cases belong to Kalita in Kamrup Urban

3.10 Trends over time in Cancer Incidence

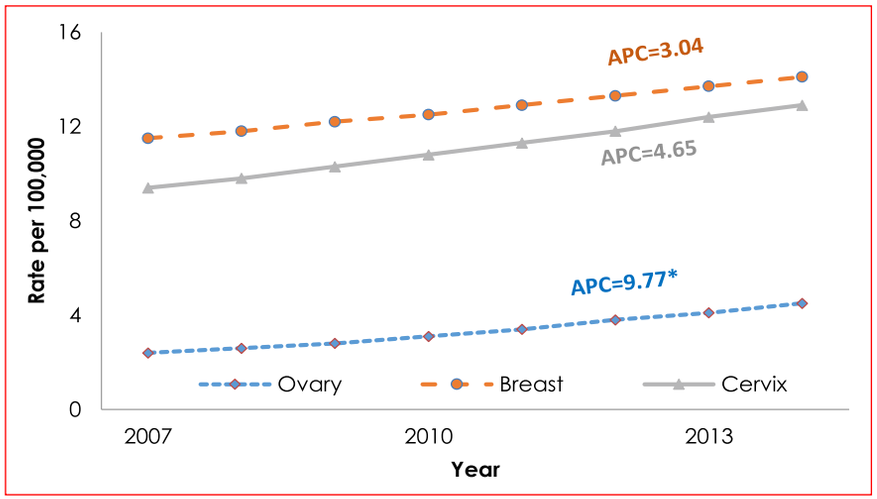
Males - Cachar District



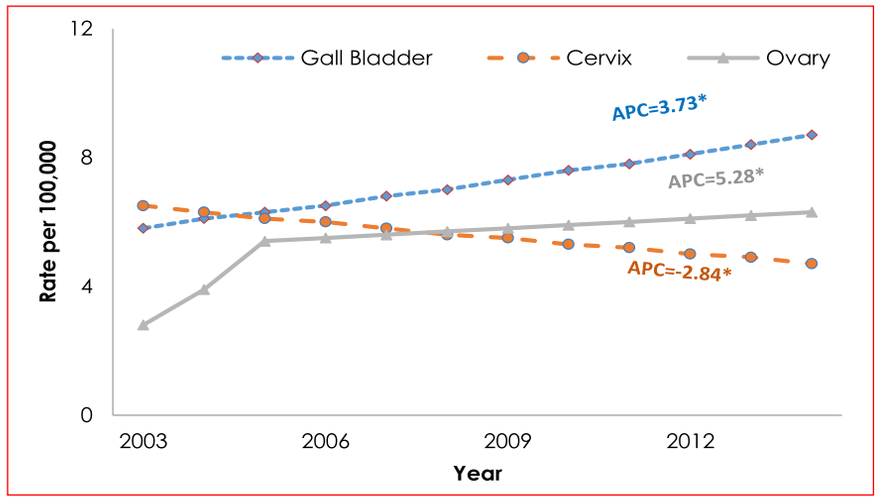
Males - Dibrugarh District



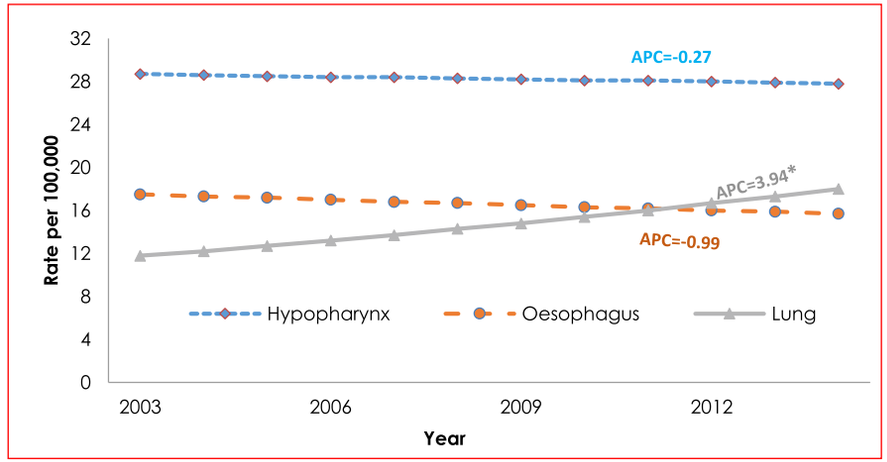
Females - Cachar District



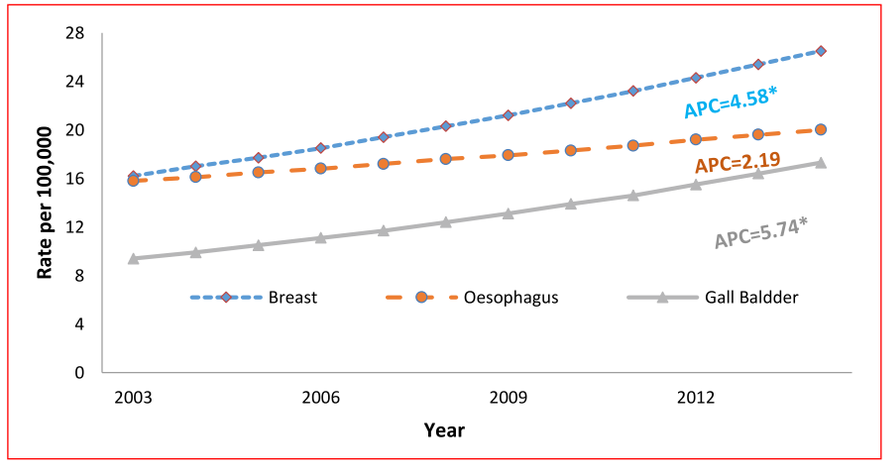
Females - Dibrugarh District



Males - Kamrup Urban



Females - Kamrup Urban



** Significant Joinpoint model & Annual Percent Change (APC) (p<0.05)*

Among males Lung cancer shows statistical significance increase in Kamrup Urban. In Cachar, Incidence rate of Ovarian cancer increased significantly from the year 2007 to 2014. In Dibrugarh, statistically significant increase in incidence rate observed in females for Ovary and Gallbladder cancer whereas Cervical cancer shows statistically significant decreases. In Kamrup urban, Incidence rate of Breast and Gallbladder cancer in females increased significantly from the year 2003 to 2014.

3.11 Cancer Deaths

Cachar District

Case Fatality Ratio (CFR)			
Sex	**Incidence**	**Death**	**CFR (%)**
Males	2666	412	15.5
Females	2100	275	13.1
Both Sexes	4766	687	14.4

Dibrugarh District

Case Fatality Ratio (CFR)			
Sex	**Incidence**	**Death**	**CFR (%)**
Males	1498	433	28.9
Females	1345	252	18.7
Both Sexes	2843	685	24.1

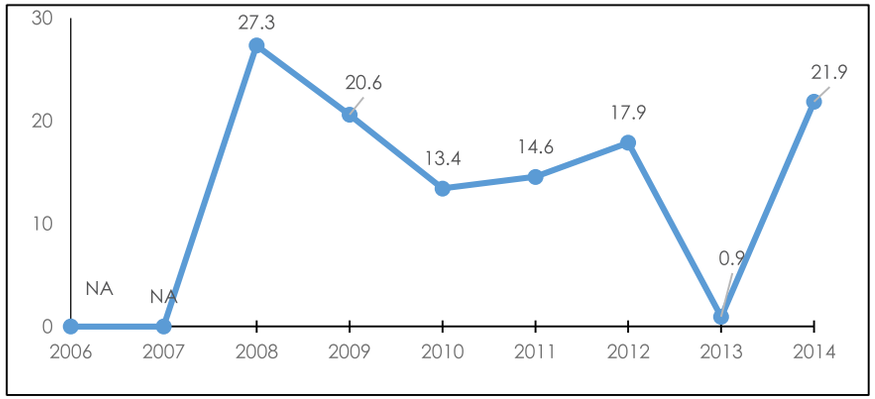
Kamrup Urban

Case Fatality Ratio (CFR)			
Sex	**Incidence**	**Death**	**CFR (%)**
Males	3071	1011	32.9
Females	2392	523	21.9
Both Sexes	5463	1534	28.1

Overall 14 - 28% cancer deaths are reported related to newly diagnosed case of cancer in three PBCRs of Assam.

3.12 Status of Medical Certification of Cause of Death *

Implementation status of MCCD	
Existing Allopathic Medical Institutions	5641
Medical Institutions Covered under MCCD	NA
Medical Institutions reported MCCD data as per the National list	NA
Ranking of States/UTs in the medical certification of cause of death,2014	17



NA- Not Available Data

Trend in proportion of medically certified deaths to total registered deaths in Assam, 2006-14

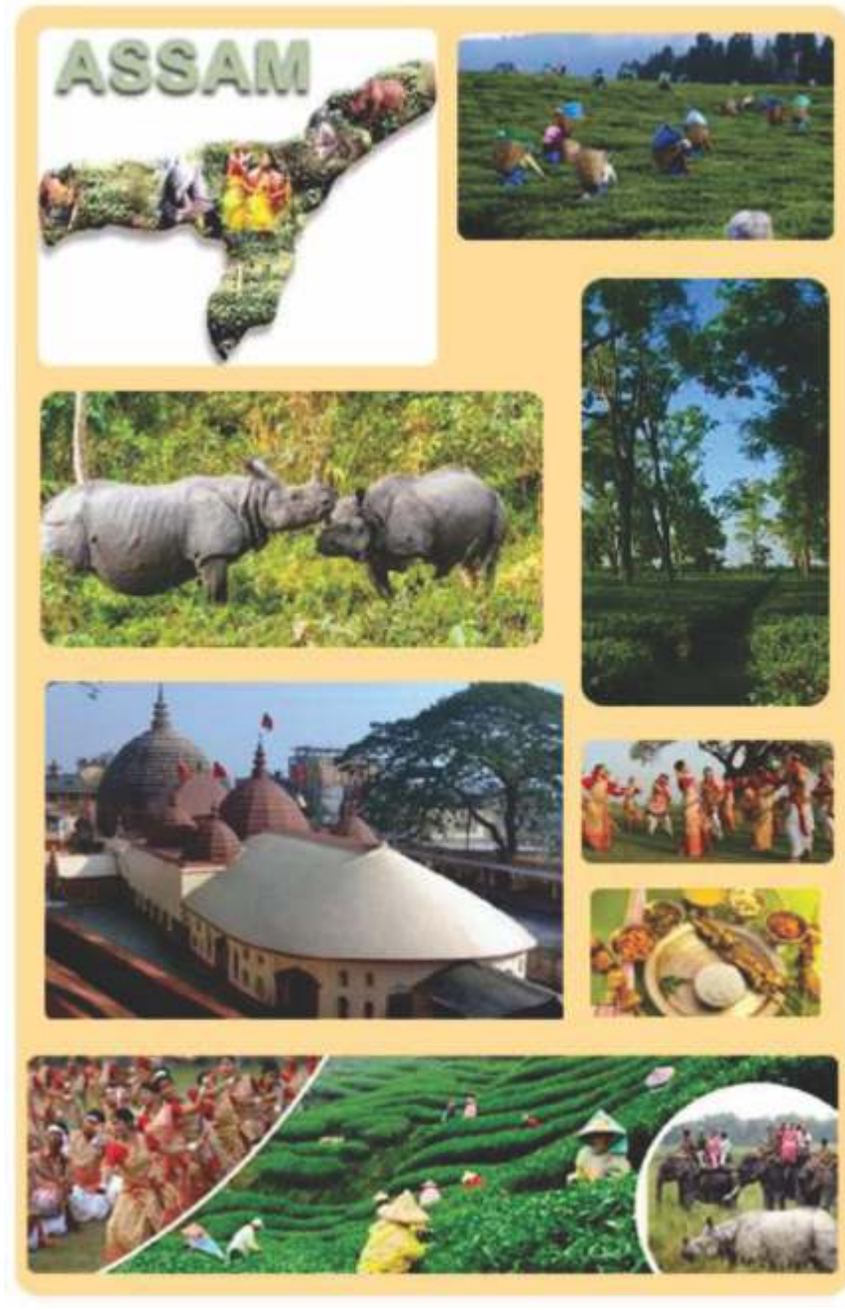
Rank	Leading causes of death	Percentage
1	Neoplasms	22.4
2	Certain Infectious & Parasitic Diseases	21.4
3	Respiratory System	10.5
4	Digestive system	9.7
5	Circulatory System	7.2
6	Injury Poisoning	6.2
7	Certain Conditions Originating in Perinatal Period	2.0
8	Symptoms, Signs & Abnormal Findings	0.0
9	Other groups	20.6

* Report on Medical Certifi*cation of Cause of Death (MCCD), 2008 -14, Office of the Registrar General of India, Government of India.*

Data on the coverage of institutions and reporting of MCCD is not available. Neoplasms is the first leading cause of death. Quality of cause of death information can be further improved.

Advocacy Points

- Cancer of Oesophagus, Hypopharynx and Lung are most common in men
- Cancer of Breast, Gallbladder and Oesophagus are most common in women
- Half of the cancers in men are associated with the use of tobacco in Assam PBCRs.
- In female, cancers of Ovary, Gall bladder and Breast are on the rise.
- High burden of risk factors such as tobacco, alcohol, obesity etc need to be addressed through appropriate prevention programme and health education.
- Use of clean fuel needs to be promoted in rural sectors to minimize indoor air pollution
- Coverage of screening for breast, cervix and oral cancer needs to be improved
- Cancer treatment facilities particularly radiotherapy, palliative care etc need to be established and strengthened
- Cancer patient welfare and other relevant health insurance scheme need to be in place to improve affordability and access to health care.
- Strengthening the reporting of cause of death is required to generate accurate mortality estimates.
- Notifiability of Cancer needs to be considered to ensure completeness of cancer reporting in the state (other than Kamrup district).



Chapter 4 – MANIPUR: Cancer & Health Indicator profile

4.1 Demography of the Population Based Cancer Registry

Manipur State PBCR	
PBCR situated in	Regional Institute of Medical Sciences, Imphal
PBCR Name	Manipur State
Coverage Area	Manipur State
PBCR Established Year	2005
Number of sources of registration	75
Area (in Sq.km)	22327
Urban & Rural covered (%)	29.2 & 70.8
Population as per 2011 Census	
Males	1438586
Females	1417208
Total	2855794
Major Ethnic groups	Meitei, Kuki, Tangkhu
Cancer is made notifiable in Manipur from 22nd February 2017	

4.2 Risk Factor & Health Practices

Risk Factor for Cancer	Urban		Rural		Total	
	Males	Females	Males	Females	Males	Females
Adults (age 15-49 years)						
Literacy (%)	97.4	89.9	95.2	81.7	96.0	85.0
Use of any kind of tobacco (%)	66.1	46.0	73.5	50.7	70.6	48.8
Consumption of alcohol (%)	52.9	6.2	52.3	6.1	52.5	6.1
Proportion attempted to stop smoking or using tobacco in any other form during the past 12 months	30.1	34.4	36.5	28.3	34.2	30.7
Overweight or obese (BMI ≥ 25.0 kg/m^2) (%)	21.8	31.2	18.5	22.4	19.8	26.0
Children under age 6 months exclusively breastfed (%)		78.9		71.3		73.6

Source: NFHS-4 (2015 -16)

Health practices & Health seeking	Urban		Rural		Total	
	Males	Females	Males	Females	Males	Females
Adults (age 15-49 years)						
Comprehensive knowledge of HIV/AIDS (%)	65.0	45.8	53.5	37.4	57.9	40.7
Have Ever Undergone Examinations of Cervix (%)		17.4		17.1		17.2
Have Ever Undergone Examinations of Breast (%)		5.7		3.3		4.3
Institutional births (%)		86.3		60.5		69.1
Population and Household Profile	**Both Sex**					
Households using improved sanitation facility (%)	47.8		51.3		49.9	
Households using clean fuel for cooking (%)	63.3		28.0		42.1	
Households with any usual member covered by a health scheme or health insurance (%)	3.5		3.7		3.6	

Source: NFHS-4 (2015 -16)

4.3 Health Systems at a Glance

Health Facilities	Number
Sub centre	421
Primary Health Centres	85
Community Health Centres	17
Sub Divisional Hospital	1
District Hospitals	7
Mobile Medical Unit	9
AYUSH	72
Cancer treating hospitals *	1
Radiotherapy facilities *	0
Cancer patient welfare schemes *	0
Palliative care centres *	1

Source: Rural Health Statistics report (2013 -14); * Provided by Cancer registry

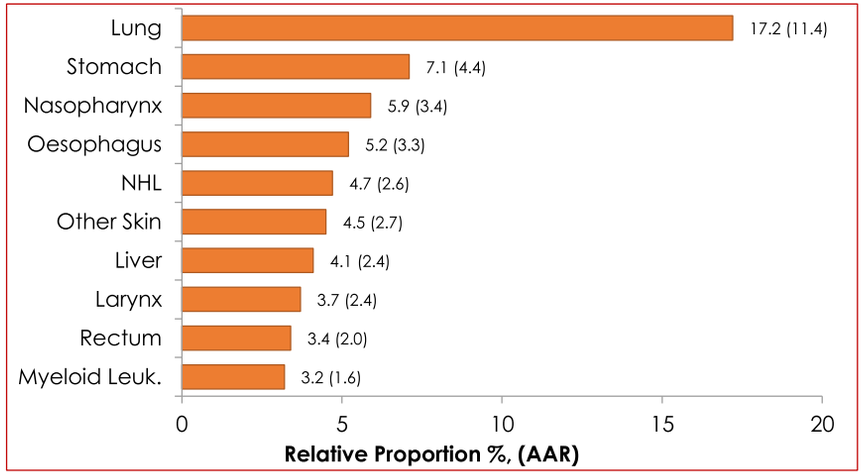
4.4 Number and Age Adjusted Incidence Rate (Reporting years: 2012-14)

Sex	Manipur State		Imphal District		Manipur excluding Imphal District	
	Number of New Cancer cases	AAR	Number of New Cancer cases	AAR	Number of New Cancer cases	AAR
Males	2081	60.5	640	92.4	1441	52.2
Females	2542	68.6	823	103.6	1719	59.2

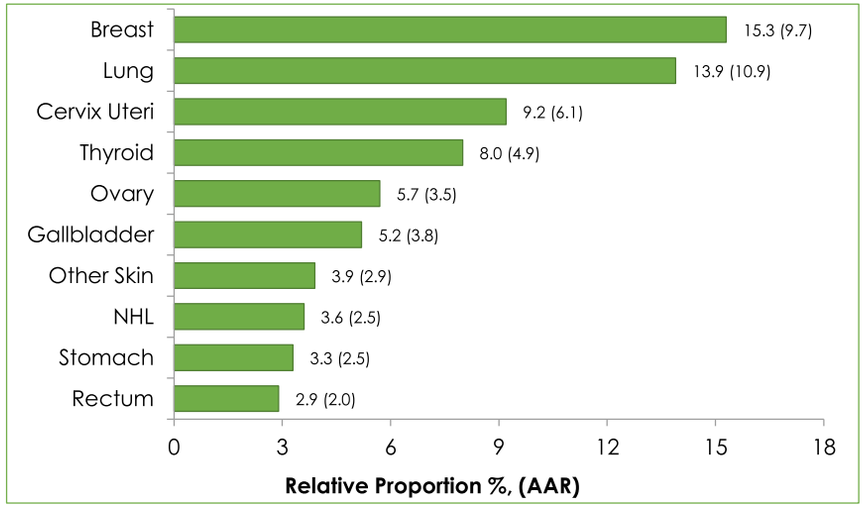
AAR - Age Adjusted Incidence Rate per 1,00,000 population

4.5 Leading Sites of Cancer

Leading Sites of Cancer in Males



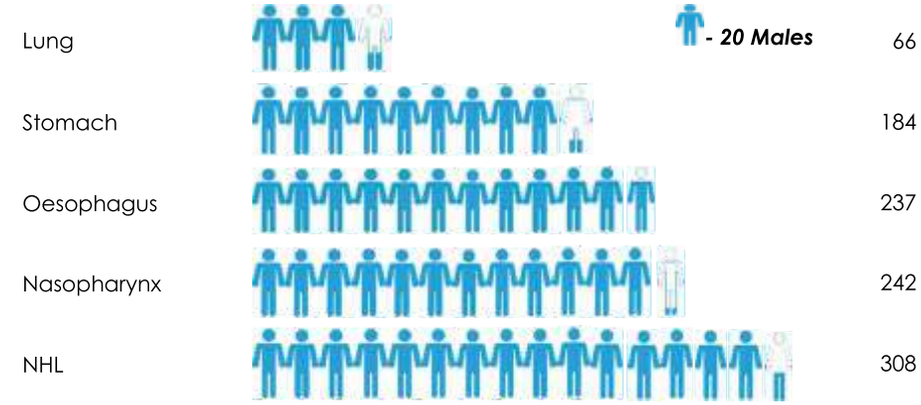
Leading Sites of Cancer in Females



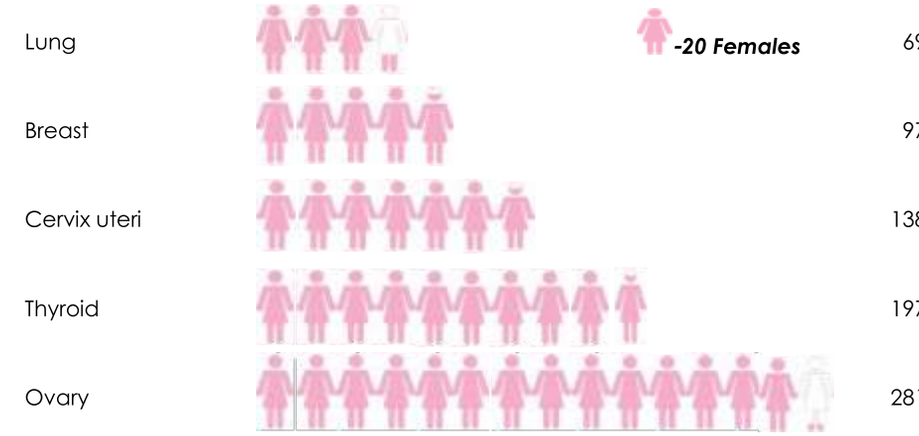
In males, proportion of Lung cancer is the highest followed by Stomach and Nasopharynx. These three sites contribute almost one third (30%) of all cancers. In females, Breast cancer is the commonest followed by Lung and Cervix Uteri. These three sites contribute more than one third (38%) of all cancers.

4.6 Possibility of one in number of person developing cancer in (0-74) years of age

Males



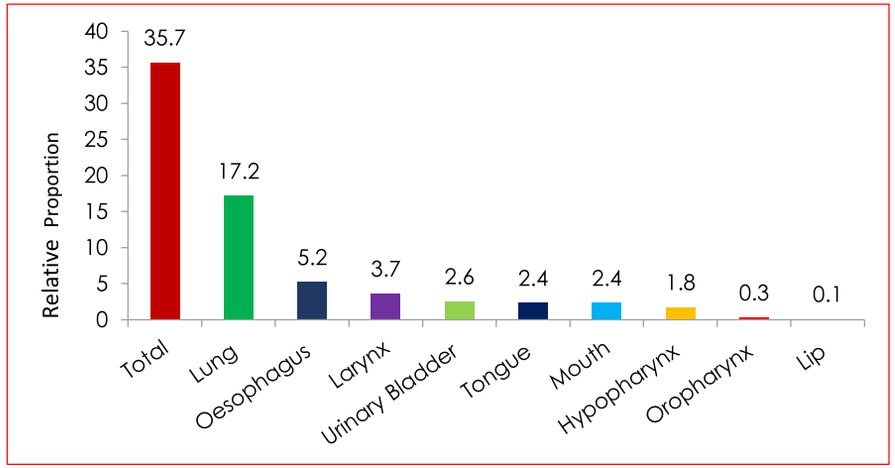
Females



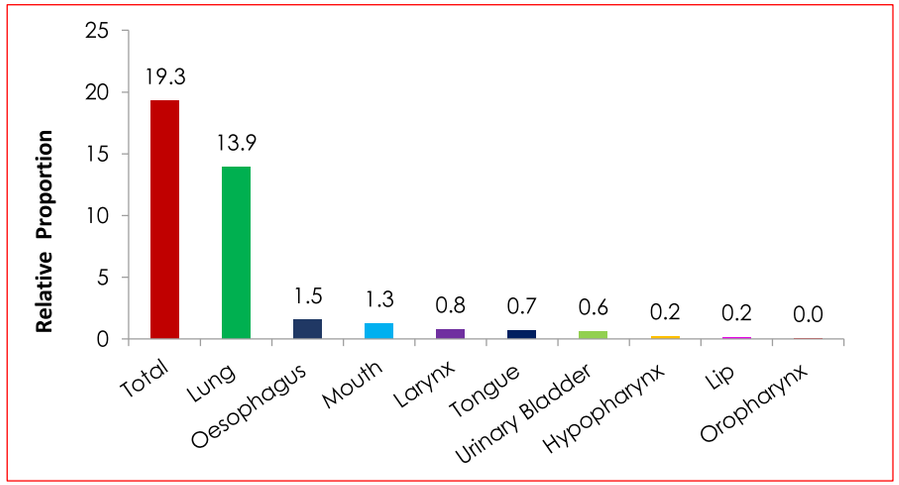
The average risk that a person will develop Lung cancer in their lifetime (0-74 years) is about 1 in 66 for males and 1 in 69 for females.

4.7 Proportion of Cancer in Sites known to be associated with use of tobacco

Males

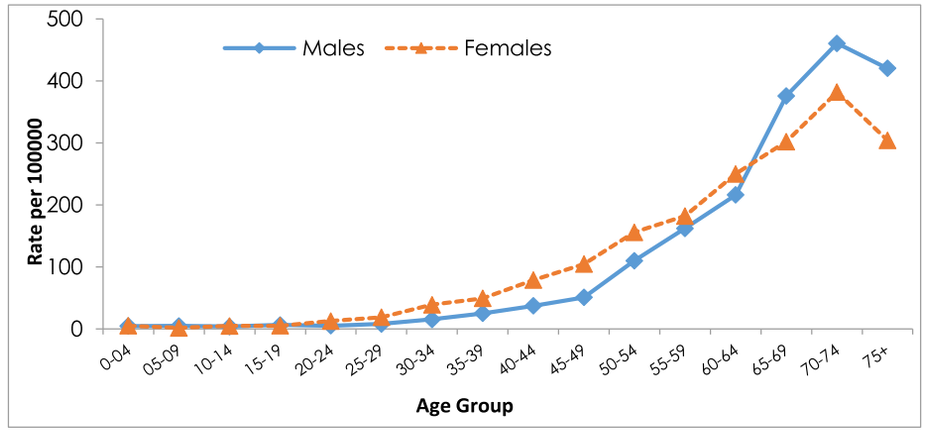


Females



Around 36% and 19% of all cancers in males and females are respectively associated with the use of tobacco. Among these proportion of Lung and Oesophagusare are leading in both sexes.

4.8 Age Specific Rate (ASpR)



Age Specific Incidence Rate is highest for both sexes in 70-74 age group. Age specific incidence rates show distinct rise from 30-34years age onwards.

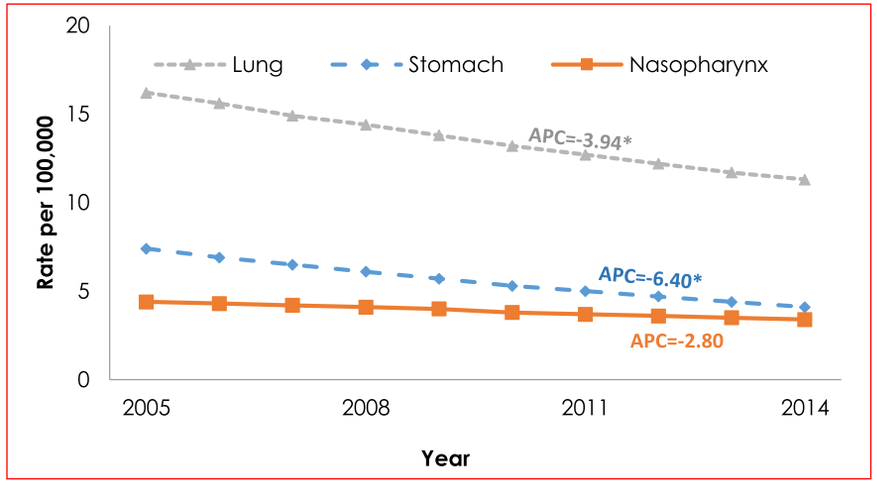
4.9 Ethnicity wise proportion of cancer cases

Cultural Group	Number	%
Meitei	2705	58.5
Kuki	338	7.3
Tangkhu	281	6.1
Rongmei	154	3.3
Paite	122	2.6
Hmar	102	2.2
Naga	66	1.4
Nepalese	65	1.4
Mao	51	1.1
Anal	46	1.0
Others	312	6.7
Missing/Unknown	381	8.2
Total	**4623**	**100.0**

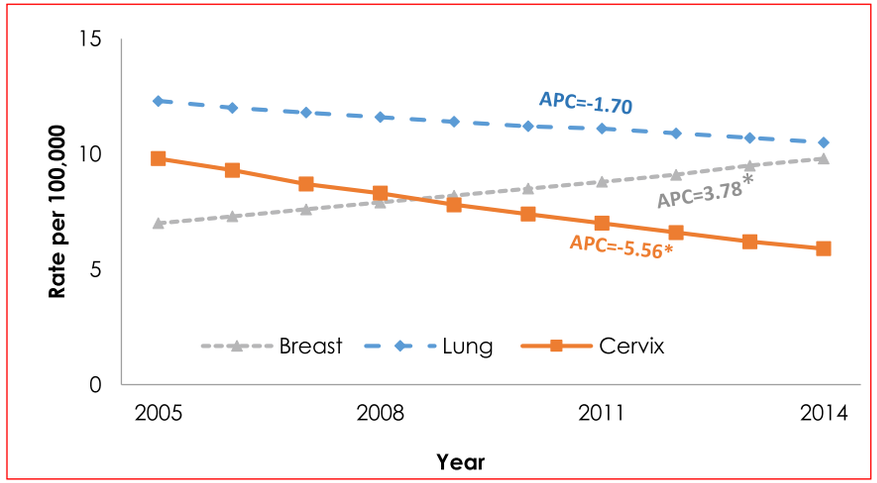
Approximately 59% of the cancer cases belong to Meitei.

4.10 Trends over time in Cancer Incidence

Males



Females



** Significant Joinpoint model & Annual Percent Change (APC) (p<0.05)*

In Males, cancers of Stomach, Nasopharynx and Lung are decreasing over the years; similarly, in females Breast cancers is increasing and Cervix & Lung Cancers are decreasing. Trends of lung and Stomach cancers in male and Breast and Cervix cancers in female are statistically significant.

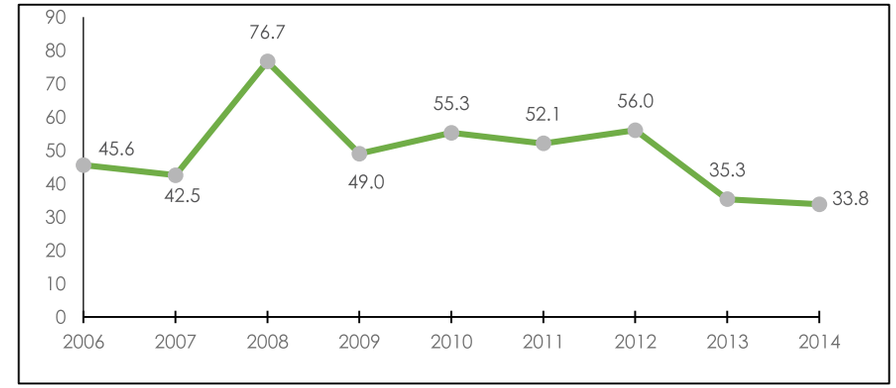
4.11 Cancer Deaths

Case Fatality Ratio (CFR)			
Manipur State	**Incidence**	**Death**	**CFR (%)**
Males	2081	560	26.9
Females	2542	495	19.5
Both Sexes	4623	1055	22.8

Approximately 23% cancer deaths are reported related to newly diagnosed case of cancer.

4.12 Status of Medical Certification of Cause of Death *

Implementation status of MCCD	
Existing Allopathic Medical Institutions	114
Medical Institutions Covered under MCCD	38
Medical Institutions reported MCCD data as per the National list	21
Ranking of States/UTs in the medical certification of cause of death,2014	14



Trend in proportion of medically certified deaths to total registered deaths in Sikkim, 2006-14

Rank	Cause of death	Percentage
1	Circulatory System	23.9
2	Symptoms, Signs & Abnormal Findings	15.4
3	Digestive system	14.2
4	Certain Infectious & Parasitic Diseases	10.2
5	Respiratory System	6.8
6	Neoplasms	5.5
7	Certain Conditions Originating in Perinatal Period	4.7
8	Injury Poisoning	4.5
9	Other groups	14.9

** Report on Medical Certification of Cause of Death (MCCD), 2008 -14, Office of the Registrar General of India, Government of India.*

The coverage of institutions and reporting of MCCD have to be improved. Conditions of the Circulatory system is the leading cause of death. Quality of cause of death information has to be further improved as the group 'Symptoms, signs and Abnormal findings' has been reported as the second leading cause.

Advocacy Points

- Cancer of Lung, Stomach, Liver and Nasopharynx are most common in men.
- Cancer of Breast, Lung and Cervix are most common in women
- More than one third of cancers in men and nearly one fifth of cancers in women are associated with the use of tobacco.
- Cancer cases start rising from 30 -34 years and reach peak at 70 -74 years affecting the economically productive age group.
- High burden of risk factors such as tobacco, alcohol, obesity etc needs to be addressed through appropriate prevention programme and health education.
- Use of clean fuel needs to be promoted in rural sectors to minimize indoor air pollution.
- Coverage of screening for Breast and Cervix cancer needs to be improved.
- Cancer treatment facilities particularly radiotherapy, palliative care etc need to be established and strengthened.
- Strengthening the reporting of cause of death is required to generate accurate mortality estimates.
- Cancer patient welfare and other relevant health insurance scheme need to be in place to improve affordability and access to health care.

Chapter 5 – Meghalaya: Cancer & Health Indicator profile

5.1 Demography of the Population Based Cancer Registry

Meghalaya PBCR	
PBCR situated in	Civil Hospital, Shillong
PBCR Name	Meghalaya
Coverage Area	Four Districts- East khasi hills, West khasi hills, Ri bhoi and Janitia hills
State	Meghalaya
PBCR Established Year	2010
Number of sources of registration	35
Area (in Sq.km)	14262
Urban & Rural covered (%)	24.9 & 75.1
Population as per 2011 Census	
Males	933280
Females	930067
Total	1863347
Major Ethnic groups	Nepalese, Chamars

Cancer is still not been made notifiable in Meghalaya

5.2 Risk Factor and Health Practices

Risk Factor for Cancer	Urban		Rural		Total	
	Males	Females	Males	Females	Males	Females
Adults (age 15-49 years)						
Literacy (%)	95.7	93.4	80.8	79.6	84.0	82.8
Use of any kind of tobacco (%)	65.9	28.6	73.9	33.5	72.2	32.3
Consumption of alcohol (%)	40.7	3.1	45.7	1.8	44.6	2.1
Proportion attempted to stop smoking or using tobacco in any other form during the past 12 months	29.3	48.3	14.9	24.6	17.8	29.4
Overweight or obese (BMI ≥ 25.0 kg/m^2) (%)	17.1	18.4	8.1	10.2	10.1	12.2
Children under age 6 months exclusively breastfed (%)		34.7		36.0		35.8

Health practices & Health seeking	Urban		Rural		Total	
	Males	Females	Males	Females	Males	Females
Adults (age 15-49 years)						
Comprehensive knowledge of HIV/AIDS (%)	25.7	18.2	10.9	11.7	14.1	13.3
Have Ever Undergone Examinations of Cervix (%)		23.2		18.7		19.8
Have Ever Undergone Examinations of Breast (%)		15.9		11.4		12.4
Institutional births (%)		88.1		45.7		51.4
Population and Household Profile	**Both Sex**					
Households using improved sanitation facility (%)	67.9		58.1		60.3	
Households using clean fuel for cooking (%)	65.7		9.3		21.8	
Households with any usual member covered by a health scheme or health insurance (%)	23.2		37.9		34.6	

Source: NFHS-4 (2015 -16)

5.3 Health Systems at a Glance

Health Facilities	Number
Sub centre	428
Primary Health Centres	110
Community Health Centres	27
Sub Divisional Hospital	1
District Hospitals	12
Mobile Medical Unit	7
AYUSH	67
Cancer treating hospitals *	7
Radiotherapy facilities *	1
Cancer patient welfare schemes *	0
Palliative care centres *	1

*Source: Rural Health Statistics report (2014 -15); * Provided by Cancer registry*

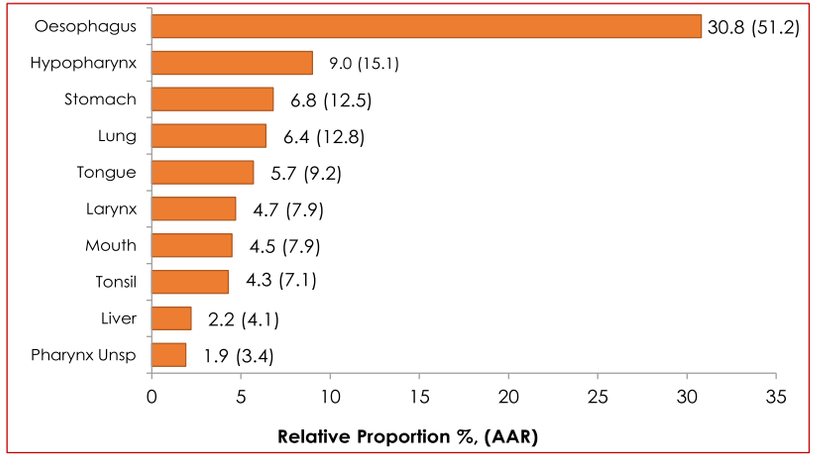
5.4 Number and Age Adjusted Incidence Rate (Reporting years: 2012-14)

Sex	Meghalaya State		East Khasi Hills District	
	Number of New Cancer cases	AAR	Number of New Cancer cases	AAR
Males	2632	169.6	1624	218.3
Females	1616	94.4	988	117.0

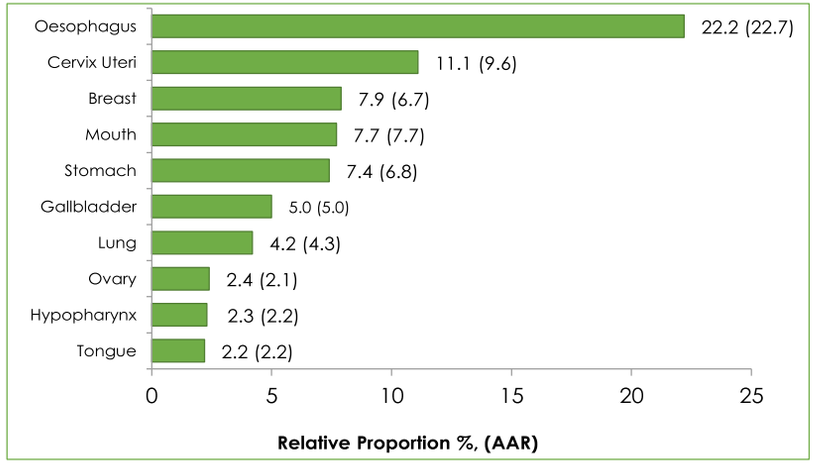
AAR - Age Adjusted Incidence Rate per 1,00,000 population

5.5 Leading Sites of Cancer

Leading Sites of Cancer in Males



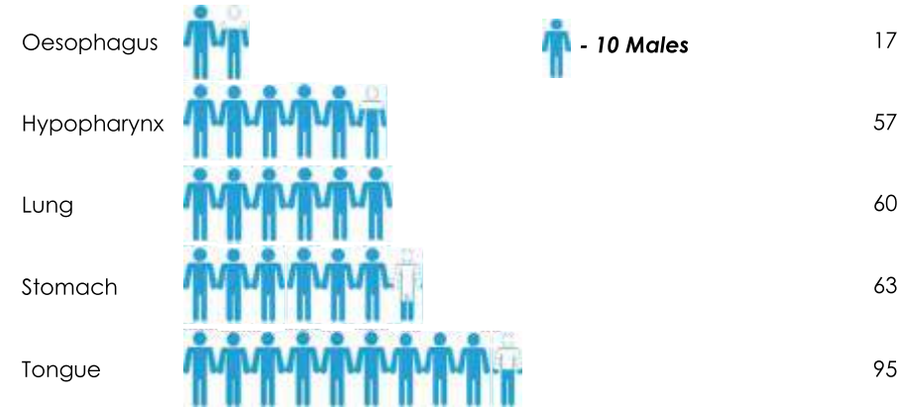
Leading Sites of Cancer in Females



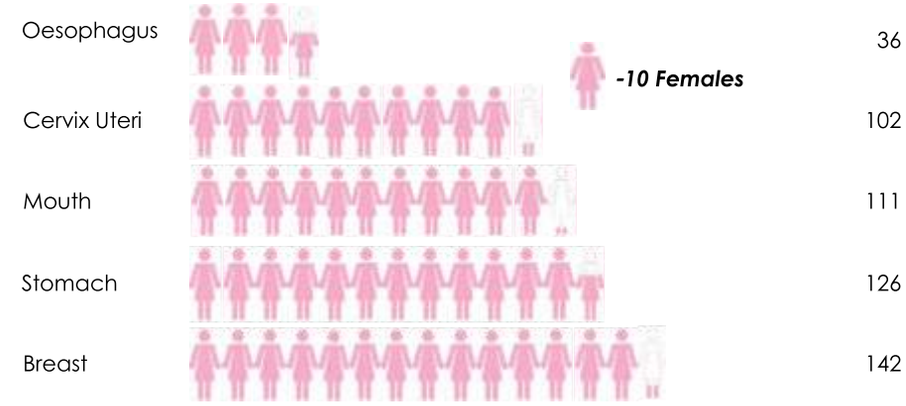
In males, proportion of Oesophageal cancer is the highest followed by Hypopharynx and Stomach. These three sites contribute almost half (47%) of all cancers. In females, Oesophageal cancer is the highest followed by Cervix Uteri and Breast. These three sites contribute more than one third (42%) of all cancers.

5.6 Possibility of one in number of person developing cancer in (0-74) years of age

Males



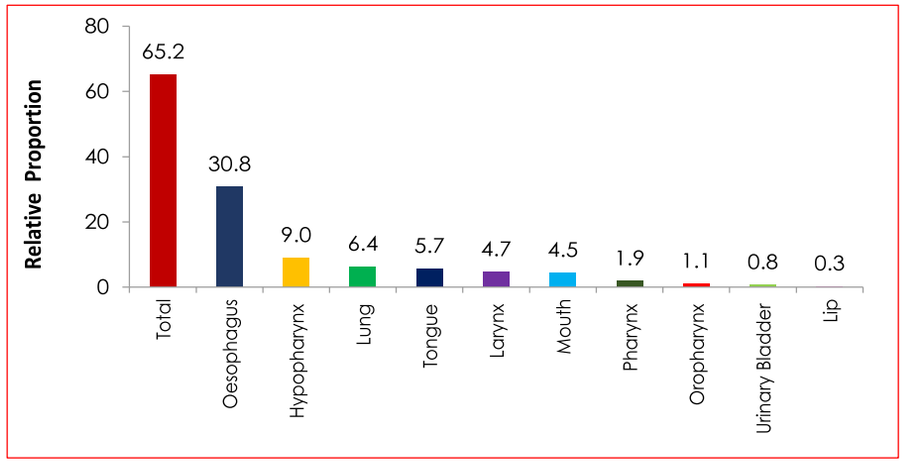
Females



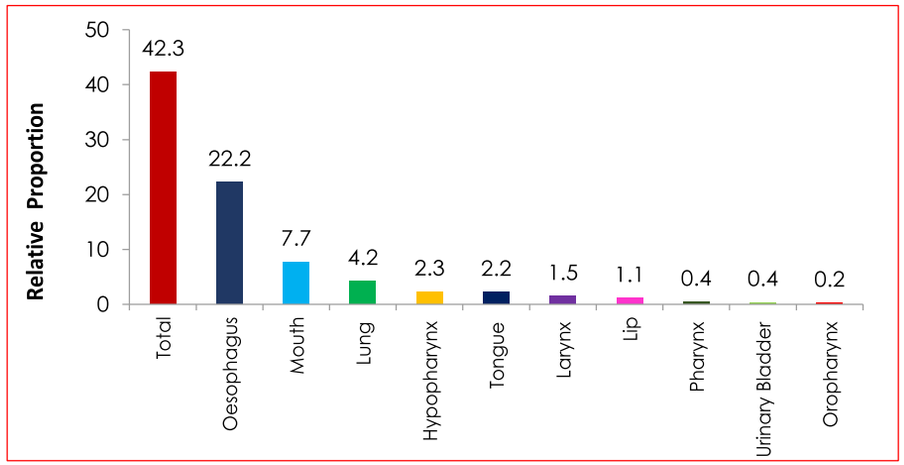
The average risk that a person will develop Oesophageal cancer in their lifetime (0-74 years) is about 1 in 17 for males and 1 in 36 for females.

5.7 Proportion of Cancer in Sites known to be associated with use of tobacco

Males

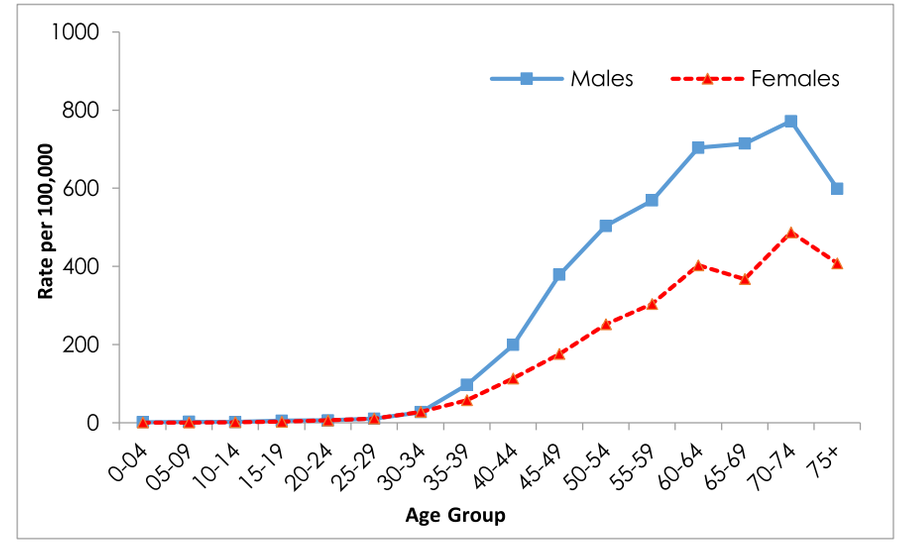


Females



Around 65% and 42% of all cancers in males and females are respectively associated with the use of tobacco. Among these proportion of Oesophagus, Hypopharynx and Mouth are high in both sexes.

5.8 Age Specific Rate (ASpR)



Age Specific Incidence Rate is highest for both sex in 70-74 age group. Age specific incidence rates show distinct rise from 35- 39 years age onwards in both sexes.

5.9 Ethnicity wise proportion of cancer cases

Cultural Group	Number	Proportion
Nepalese	209	4.9
Chamars	62	1.5
Others	708	16.7
Missing/Unknown	3269	77.0
Total	**4248**	**100.0**

5.10 Cancer Deaths

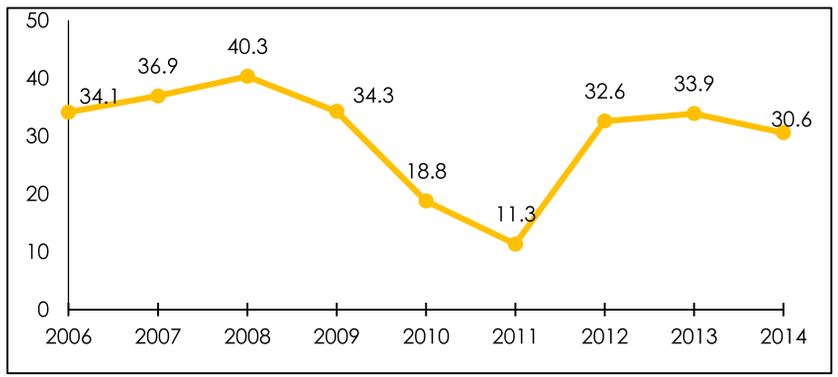
Case Fatality Ratio (CFR)

Case Fatality Ratio (CFR)			
Sex	**Incidence case**	**Death**	**CFR (%)**
Males	2632	1027	39.0
Females	1616	591	36.6
Both Sexes	4248	1618	38.1

Approximately 38% cancer deaths are reported related to newly diagnosed case of cancer.

5.11 Status of Medical Certification of Cause of Death *

Implementation status of MCCD	
Existing Allopathic Medical Institutions	171
Medical Institutions Covered under MCCD	154
Medical Institutions reported MCCD data as per the National list	71
Ranking of States/UTs in the medical certification of cause of death,2014	16



Trend in proportion of medically certified deaths to total registered deaths in Meghalaya,2006-2014

Rank	Cause of death	Percentage
1	Certain Infectious & Parasitic Diseases	17.5
2	Circulatory System	17.1
3	Certain Conditions Originating in Perinatal Period	15.4
4	Digestive system	10.6
5	Neoplasms	9.0
6	Respiratory System	6.4
7	Symptoms, Signs & Abnormal Findings	6.2
8	Injury Poisoning	3.7
9	Other groups	14.1

** Report on Medical Certification of Cause of Death (MCCD), 2008 -14, Office of the Registrar General of India, Government of India.*

The coverage of institutions and reporting of MCCD have to be improved. Conditions of the Circulatory system (2ND) and Neoplasms (5TH) are leading causes of death. Quality of cause of death information has to be further improved.

Advocacy Points

- Cancer of Oesophagus, Hypopharynx and Stomach are most common in men
- Cancer of Oesophagus, Cervix and Breast are most common in women
- Almost two third of cancers in men and more than one third of cancers in women are associated with the use of tobacco
- Cancer cases start rising from 35 years and reach peak at 70-74 years affecting the economically productive age group
- High burden of risk factors such as tobacco, alcohol etc needs to be addressed through appropriate prevention programme and health education.
- Use of clean fuel needs to be promoted in rural sectors to minimize indoor air pollution
- Coverage of screening for breast and cervix cancers needs to be improved
- Cancer treatment facilities particularly radiotherapy, palliative care etc need to be established and strengthened
- Cancer patient welfare and other relevant health insurance scheme needs to be in place to improve affordability and access to health care.
- Strengthening the reporting of cause of death is required to generate accurate mortality estimates.
- Notifiability of Cancer needs to be considered to ensure completeness of cancer reporting in the state.

Chapter 6 – MIZORAM: Cancer & Health Indicator profile

6.1 Demography of the Population Based Cancer Registry

Mizoram State PBCR	
PBCR situated in	Civil Hospital, Aizawl
PBCR Name	Mizoram
Coverage Area	Mizoram State
PBCR Established Year	2003
Number of sources of registration	45
Area (in Sq.km)	21087
Urban & Rural covered (%)	52.1 & 47.9
Population as per 2011 Census	
Males	555339
Females	541867
Total	1097206
Major Ethnic groups	Mizo, Anal, Chakma, Mara
Cancer is still not been made notifiable in Mizoram	

6.2 Risk Factor & Health Practices

Risk Factor for Cancer	Urban		Rural		Total	
	Males	Females	Males	Females	Males	Females
Adults (age 15-49 years)						
Literacy (%)	99.3	98.6	96.3	85.4	98.2	93.5
Use of any kind of tobacco (%)	82.0	59.2	77.7	59.3	80.4	59.2
Consumption of alcohol (%)	52.3	6.7	44.9	2.2	49.6	5.0
Proportion attempted to stop smoking or using tobacco in any other form during the past 12 months	43.0	45.8	38.7	33.1	41.5	40.9
Overweight or obese (BMI ≥ 25.0 kg/m^2) (%)	28.1	26.8	9.9	12.3	21.0	21.1
Children under age 6 months exclusively breastfed (%)		59.8		61.7		60.6

Source: NFHS-4 (2015 -16)

Health practices & Health seeking	Urban		Rural		Total	
	Males	Females	Males	Females	Males	Females
Adults (age 15-49 years)						
Comprehensive knowledge of HIV/AIDS (%)	71.8	70.9	62.1	58.7	68.2	66.4
Have Ever Undergone Examinations of Cervix (%)		24.4		15.4		20.9
Have Ever Undergone Examinations of Breast (%)		9.2		4.8		7.5
Institutional births (%)		97.2		61.0		80.1
Population and Household Profile	**Both Sex**					
Households using improved sanitation facility (%)	90.9		73.1		83.5	
Households using clean fuel for cooking (%)	92.8		29.9		66.6	
Households with any usual member covered by a health scheme or health insurance (%)	42.3		49.9		45.4	

Source: NFHS-4 (2015 -16)

6.3 Health Systems at a Glance

Health Facilities	Number
Sub centre	370
Primary Health Centres	57
Community Health Centres	9
Sub Divisional Hospital	2
District Hospitals	8
Mobile Medical Unit	9
AYUSH	5
Cancer treating hospitals *	5
Radiotherapy facilities *	1
Cancer patient welfare schemes *	3
Palliative care centres *	2

*Source: Rural Health Statistics report (2014 -15); * Provided by Cancer registry*

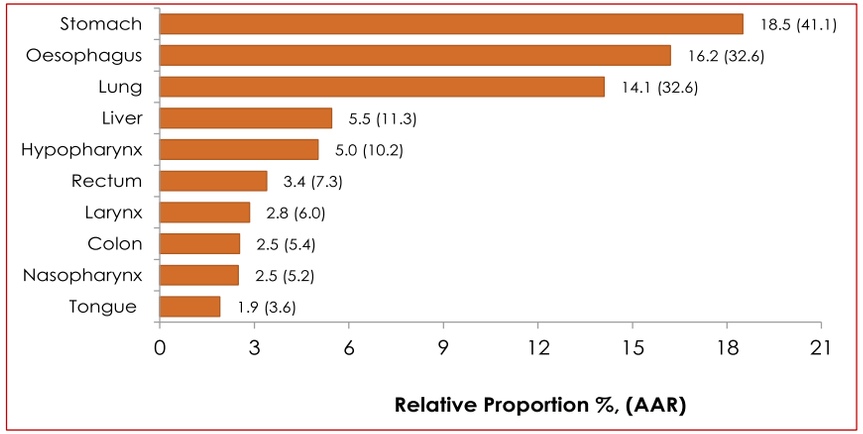
6.4 Number and Age Adjusted Incidence Rate (Reporting years: 2012-14)

Sex	Mizoram State		Aizawl District		Mizoram Excluding Aizawl District	
	Number of New Cancer cases	AAR	Number of New Cancer cases	AAR	Number of New Cancer cases	AAR
Males	2567	211.5	1275	270.7	1292	175.0
Females	2089	165.8	1066	167.3	1023	136.6

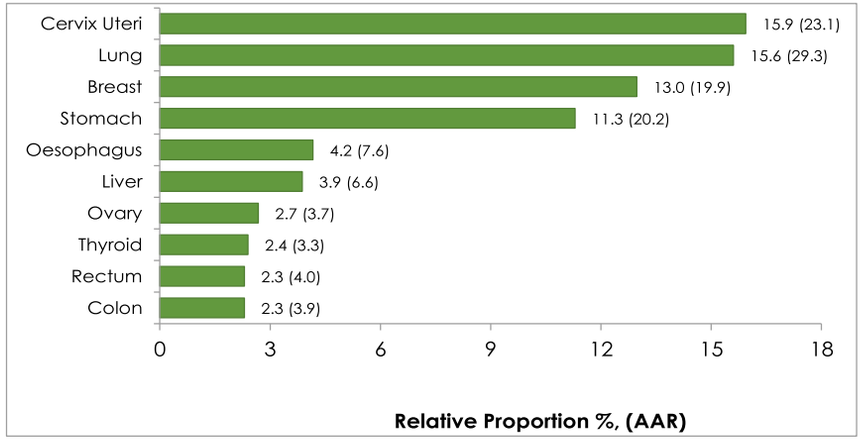
AAR - Age Adjusted Incidence Rate per 1,00,000 population

6.5 Leading Sites of Cancer

Leading Sites of Cancer in Males



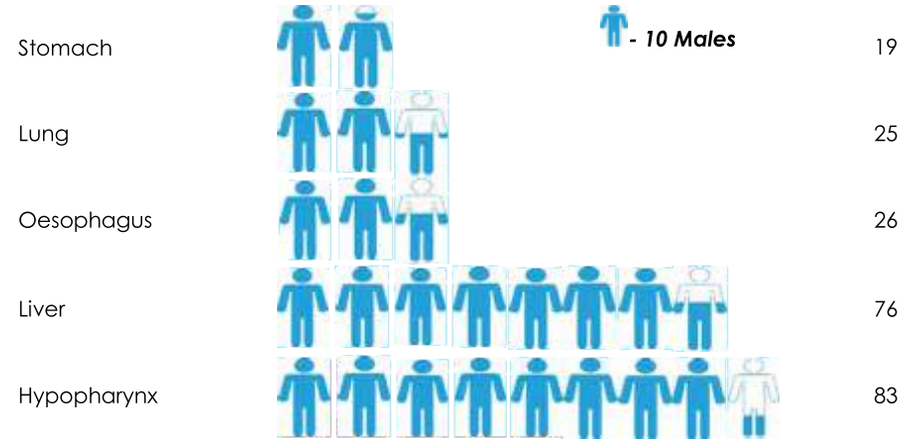
Leading Sites of Cancer in Females



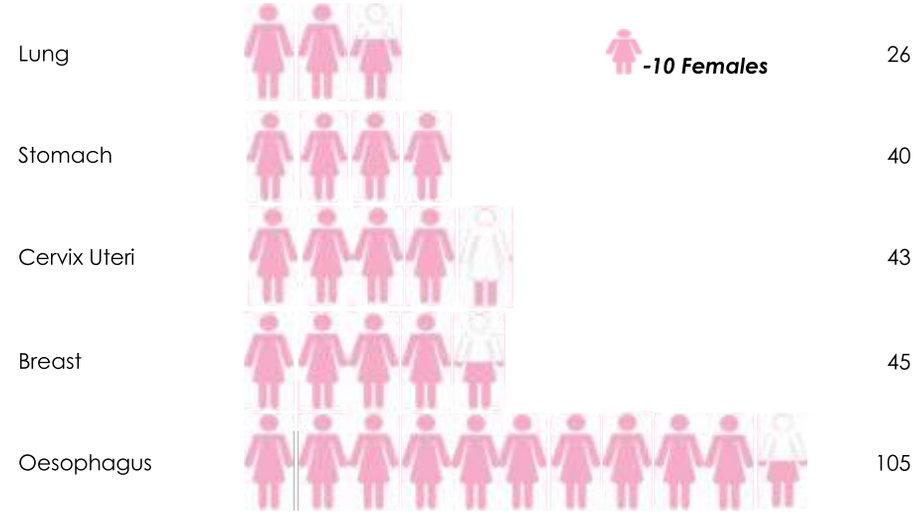
In males, proportion of Stomach cancer is the highest followed by Oesophagus and Lung. These three sites contribute almost half (49%) of all cancers. In females, Cervix Uteri cancer is the highest followed by Lung and Breast. These three sites contribute almost 45% of all cancers.

6.6 Possibility of one in number of person developing cancer in (0-74) years of age

Males



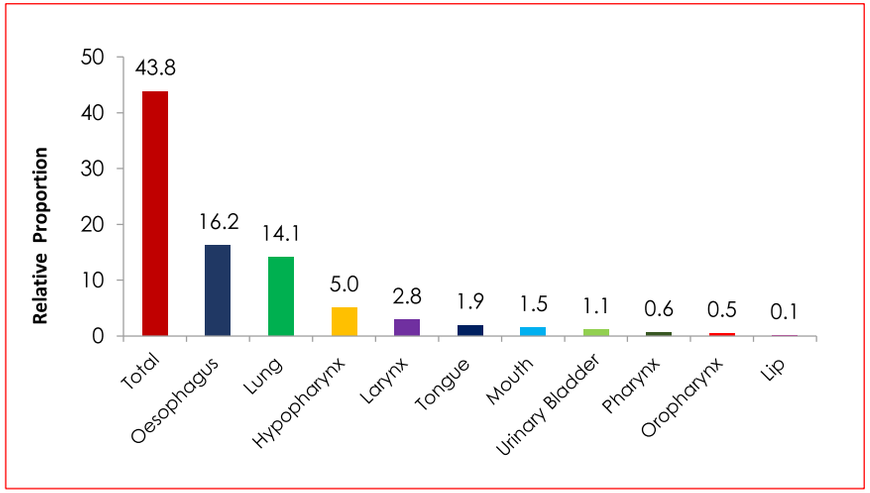
Females



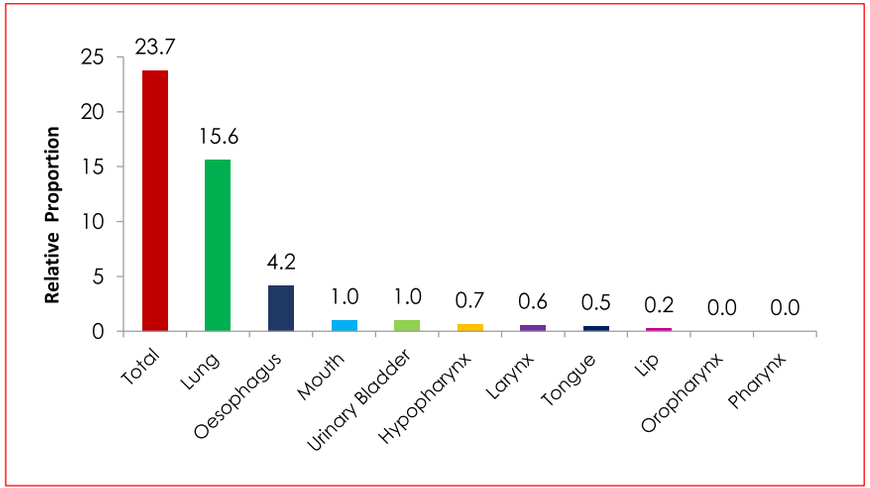
The average risk that a person will develop Stomach cancer in their lifetime (0-74 years) is about 1 in 19 for males. Similarly, 1 in 26 females will possibly develop Lung cancer in their lifetime (0-74 years).

6.7 Proportion of Cancer in Sites known to be associated with use of tobacco

Males

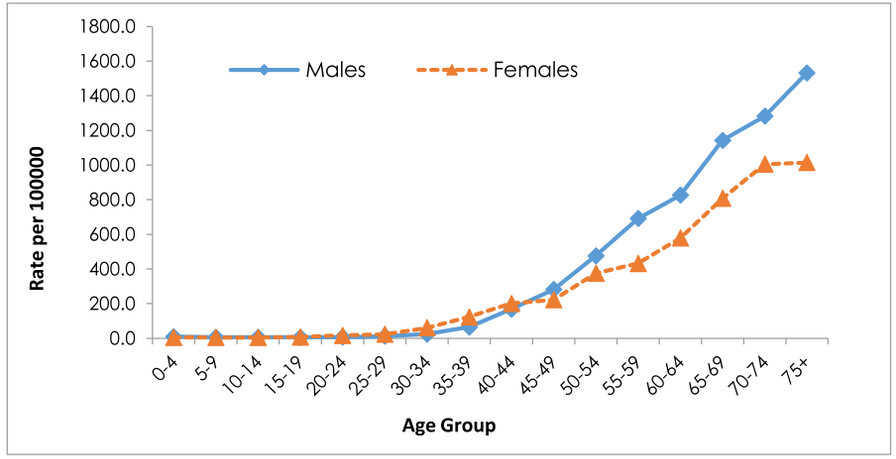


Females



Around 44% and 24% of all cancers in males and females are respectively associated with the use of tobacco. Among these proportion of Oesophagus and Lung are leading in both sexes.

6.8 Age Specific Rate (ASpR)



Age Specific Incidence Rate is highest for males in 75 years + age group. For females, it is observed in 5 years earlier. Age specific incidence rates show distinct rise from 35- 39 years age onwards in both sexes.

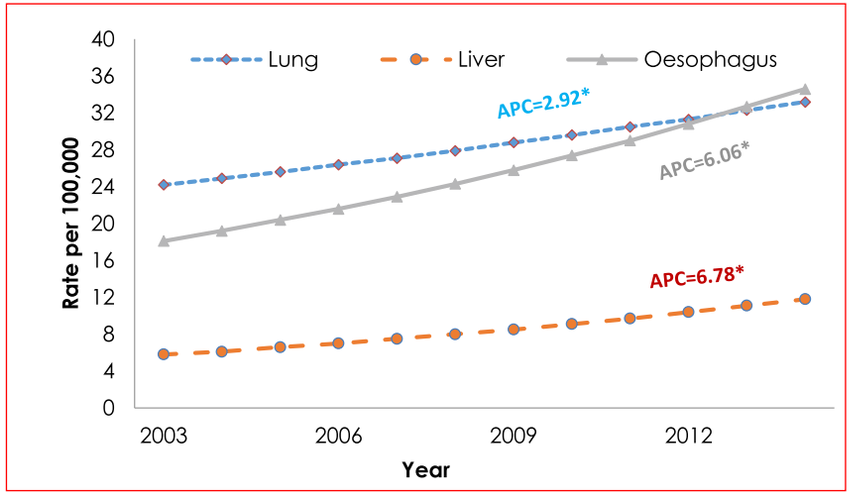
6.9 Ethnicity wise proportion of cancer cases

Cultural Group	Number	%
Mizo	4264	91.6
Anal	116	2.5
Chakma	67	1.4
Mara	57	1.2
Others	81	1.7
Missing/Unk	71	1.5
Total	4656	100.0

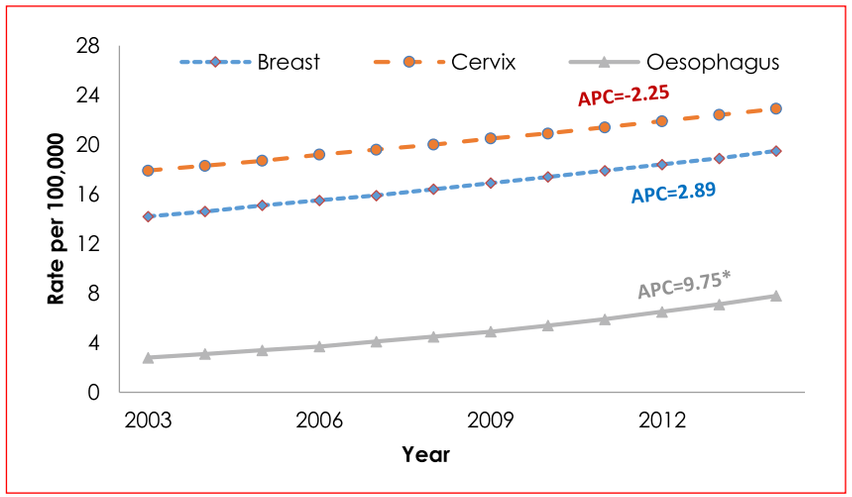
Almost 92% of the cancer cases belong to Mizo.

6.10 Trends over time in Cancer Incidence

Males



Females



** Significant Joinpoint model & Annual Percent Change (APC) (p<0.05)*

In Males, cancers of Lung, Liver and Oesophagus are significantly increasing over the years; similarly, in females cancer of Oesophagus is showing an increasing trend which is statistically significant.

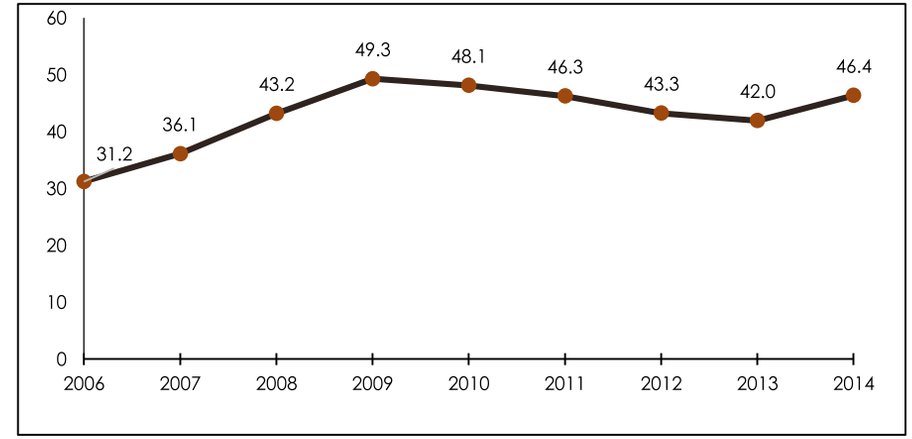
6.11 Cancer Deaths

Case Fatality Ratio (CFR)	Mizoram State			Aizawl District			Mizoram Excluding Aizawl District		
Sex	Incidence case	Death	CFR (%)	Incidence case	Death	CFR (%)	Incidence case	Death	CFR (%)
Males	2567	1346	52.4	1275	647	50.7	1275	647	50.7
Females	2089	830	39.7	1066	410	38.5	1066	410	38.5
Both Sexes	4656	2176	46.7	2341	1057	45.2	2341	1057	45.2

Approximately 47% cancer deaths are reported related to newly diagnosed case of cancer.

6.12 Status of Medical Certification of Cause of Death *

Implementation status of MCCD	
Existing Allopathic Medical Institutions	134
Medical Institutions Covered under MCCD	84
Medical Institutions reported MCCD data as per the National list	53
Ranking of States/UTs in the medical certification of cause of death,2014	9



Trend in proportion of medically certified deaths to total registered deaths in Mizoram, 2006-14

Rank	Cause of death	%
1	Certain Infectious & Parasitic Diseases	18.7
2	Circulatory System	14.7
3	Digestive system	14.3
4	Respiratory System	12.5
5	Certain Conditions Originating in Perinatal Period	12.1
6	Neoplasms	7.7
7	Injury Poisoning	3.5
8	Symptoms, Signs & Abnormal Findings	3.1
9	Other groups	13.2

** Report on Medical Certification of Cause of Death (MCCD), 2008 -14, Office of the Registrar General of India, Government of India.*

The coverage of institutions and reporting of MCCD have to be improved. Conditions of the Circulatory system (1st) and Neoplasms (6th) are leading causes of death. Quality of cause of death information has to be further improved.

Advocacy Points

- Cancer of Stomach, Oesophagus and Lung are most common in men.
- Cancer of Cervix, Lung and Breast are most common in women.
- More than one third of cancers in men and more than one fifth cancers in women are associated with the use of tobacco.
- Cancer cases start rising from 35 years and reach peak at 75 years affecting the economically productive age group.
- High burden of risk factors such as tobacco, alcohol, obesity etc. need to be addressed through appropriate prevention programme and health education.
- Use of clean fuel needs to be promoted in rural sectors to minimize indoor air pollution.
- Coverage of screening for breast and cervix cancer needs to be improved.
- Cancer treatment facilities particularly radiotherapy, palliative care etc. need to be further strengthened.
- Cancer patient welfare and other relevant health insurance scheme needs to be utilized further to improve affordability and access to health care.
- Strengthening the reporting of cause of death is required to generate accurate mortality estimates.
- Notifiability of Cancer needs to be considered to ensure completeness of cancer reporting in the state.

Chapter 7 – NAGALAND: Cancer & Health Indicator profile

7.1 Demography of the Population Based Cancer Registry

Nagaland PBCR	
PBCR situated in	Naga Hospital Authority, Kohima
PBCR Name	Nagaland
Coverage Area	Two Districts - Kohima and Dimapur
PBCR Established Year	2010
Number of sources of registration	50
Area (in Sq.km)	2390
Urban & Rural covered (%)	49.3 & 50.7
Population as per 2011 Census	
Males	336360
Females	310439
Total	646799
Major Ethnic groups	Naga, Nepalese, Ahom

Cancer is still not been made notifiable in Nagaland

7.2 Risk Factor & Health Practices

Risk Factor for Cancer	Urban		Rural		Total	
	Males	Females	Males	Females	Males	Females
Adults (age 15-49 years)						
Literacy (%)	93.2	89.9	80.6	75.1	85.6	81.0
Use of any kind of tobacco (%)	70.8	33.1	68.5	23.9	69.4	27.5
Consumption of alcohol (%)	41.5	4.7	37.3	2.4	39.0	3.3
Proportion attempted to stop smoking or using tobacco in any other form during the past 12 months	47.3	43.9	38.0	46.7	41.8	45.4
Overweight or obese (BMI ≥ 25.0 kg/m^2) (%)	16.6	20.7	12.3	13.2	14.0	16.2
Children under age 6 months exclusively breastfed (%)		41.1		45.5		44.5

Source: NFHS-4 (2015 -16)

Health practices & Health seeking	Urban		Rural		Total	
	Males	Females	Males	Females	Males	Females
Adults (age 15-49 years)						
Comprehensive knowledge of HIV/AIDS (%)	29.2	15.8	20.5	9.6	23.9	12.2
Have Ever Undergone Examinations of Cervix (%)		17.7		12.5		14.6
Have Ever Undergone Examinations of Breast (%)		2.7		1.5		2.0
Institutional births (%)		56.3		24.0		32.8
Population and Household Profile	**Both Sex**					
Households using improved sanitation facility (%)	68.2		79.0		75.2	
Households using clean fuel for cooking (%)	67.1		14.4		32.8	
Households with any usual member covered by a health scheme or health insurance (%)	4.3		7.0		6.1	

Source: NFHS-4 (2015 -16)

7.3 Health Systems at a Glance

Health Facilities	Number
Sub centre	396
Primary Health Centres	128
Community Health Centres	21
Sub Divisional Hospital	0
District Hospitals	11
Mobile Medical Unit	11
AYUSH	8
Cancer treating hospitals *	11
Radiotherapy facilities *	1
Cancer patient welfare schemes *	0
Palliative care centres *	1

Source: Rural Health Statistics report (2014 -15); * Provided by Cancer registry

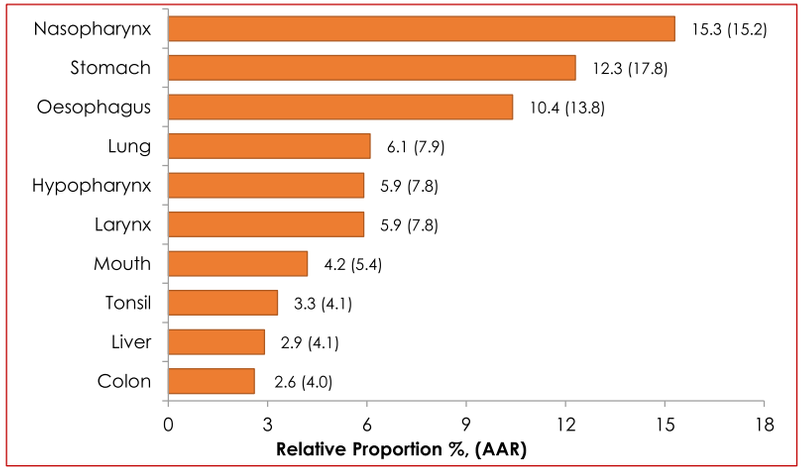
7.4 Number and Age Adjusted Incidence Rate (Reporting years: 2012-14)

Sex	Number of New Cancer cases	AAR
Males	815	125.8
Females	546	84.9

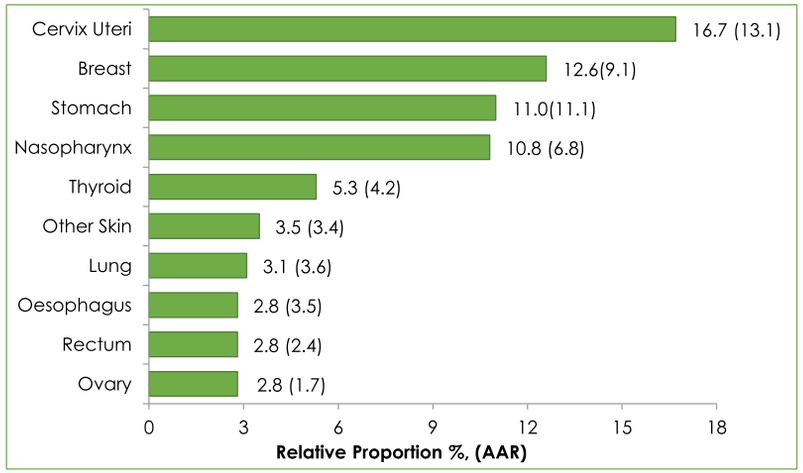
AAR - Age Adjusted Incidence Rate per 1,00,000 population

7.5 Leading Sites of Cancer

Leading Sites of Cancer in Males



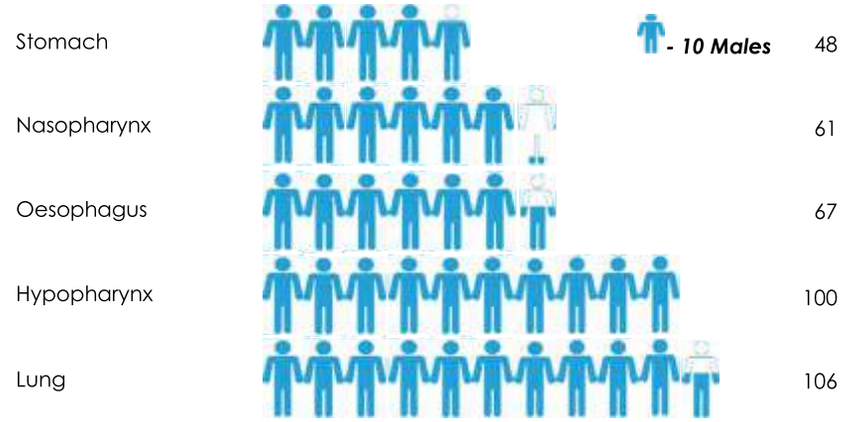
Leading Sites of Cancer in Females



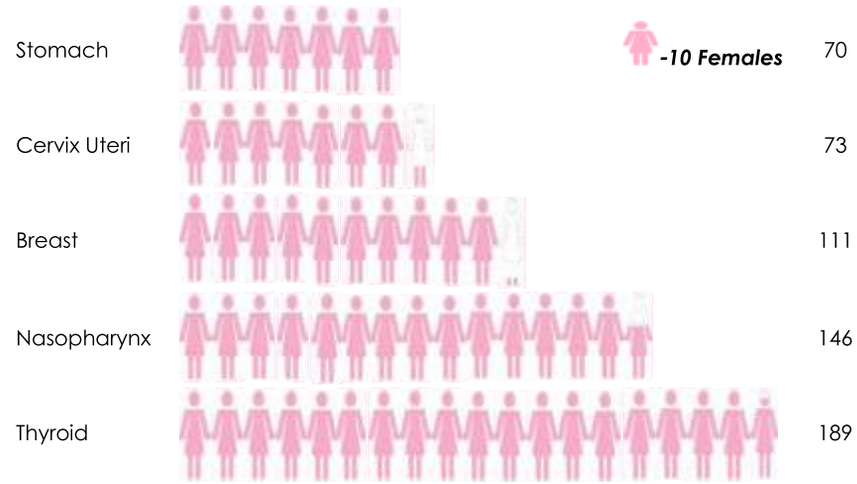
In males, proportion of Nasopharynx cancer is the highest followed by Stomach and Oesophagus. These three sites contribute more than one third (38%) of all cancers. In females, Cervix Uteri cancer is the highest followed by Breast and Stomach. These three sites contribute more than one third (41%) of all cancers.

7.6 Possibility of one in number of person developing cancer in (0-74) years of age

Males



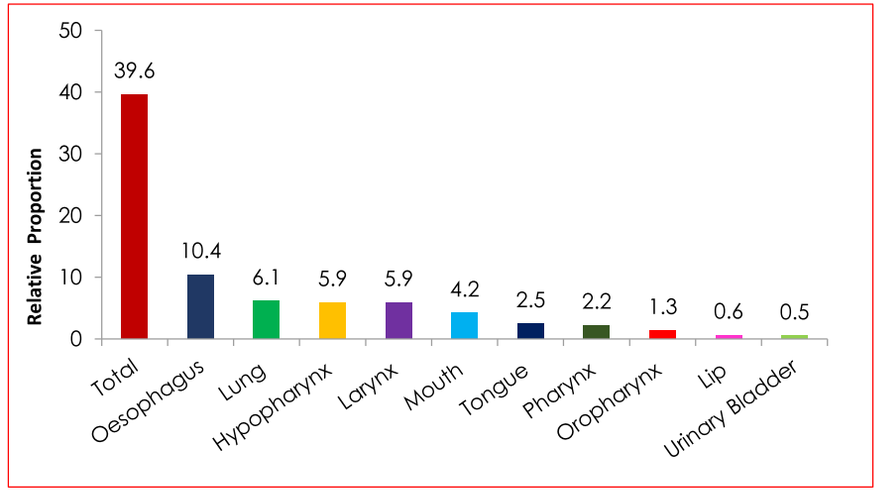
Females



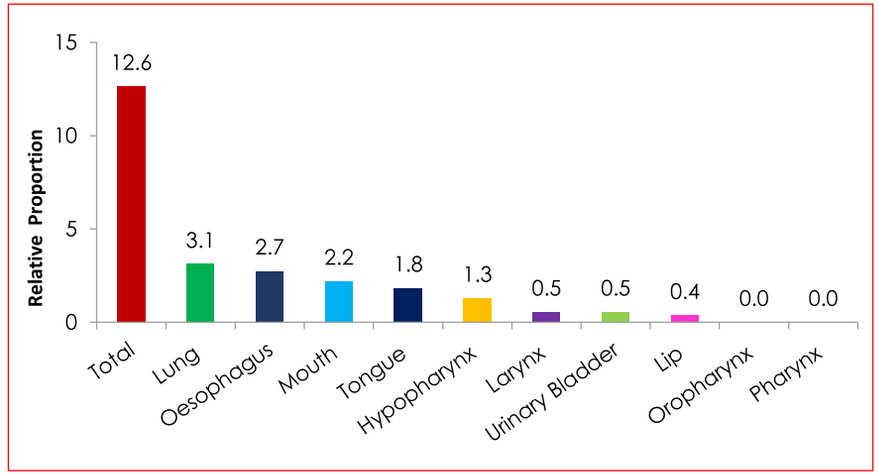
The average risk that a person will develop stomach cancer in their lifetime (0-74 years) is about 1 in 48 for males and 1 in 70 for females.

7.7 Proportion of Cancer in Sites known to be associated with use of tobacco

Males

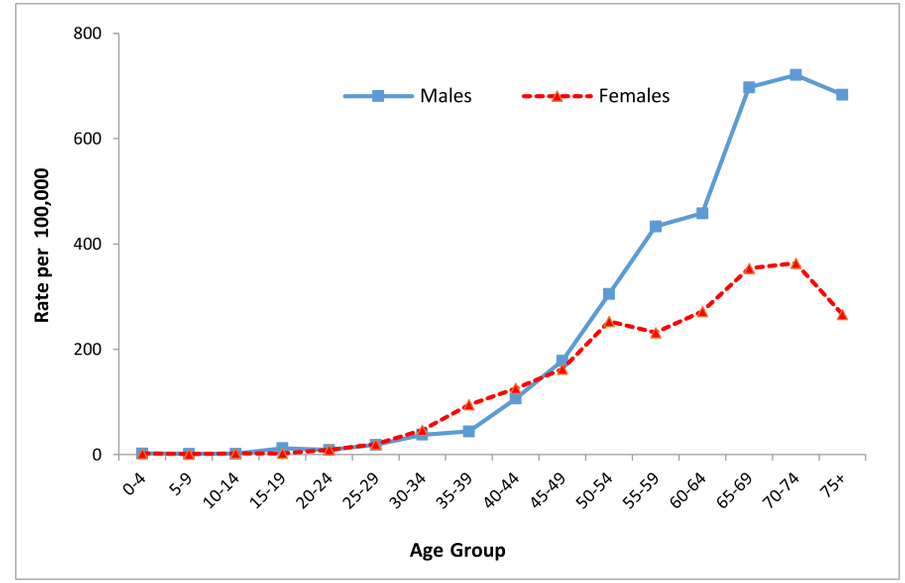


Females



Around 40% and 13% of all cancers in males and females are respectively associated with the use of tobacco. Among these proportion of Oesophagus and Lung are leading in both sexes.

7.8 Age Specific Rate (ASpR)



Age Specific Incidence Rate is rising sharply from ages 25–29 to 70–74 (males) and from ages 20–24 to 70–74 (females) followed by a decline

7.9 Ethnicity wise proportion of cancer cases

Cultural Group	Number	Proportion
Naga	1004	73.8
Nepalese	36	2.6
Ahom	35	2.6
Mao	30	2.2
Bhutias	28	2.1
Chamars	21	1.5
Kuki	15	1.1
Others	80	5.9
Missing/Unknown	112	8.2
Total	**1361**	**100.0**

Approximately 3/4th of the cancer cases belong to Naga.

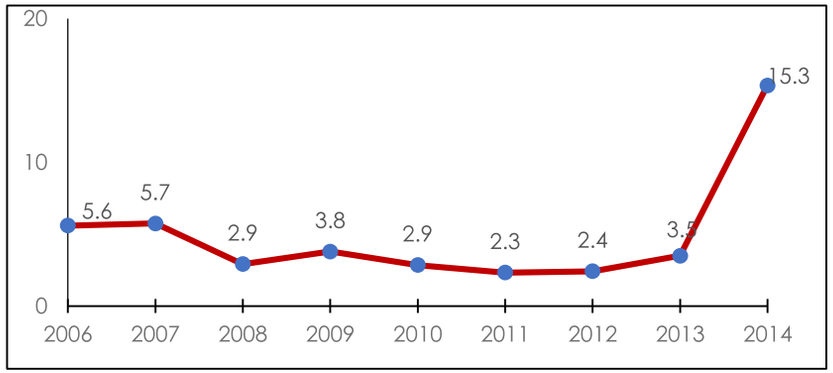
7.10 Cancer Deaths

Case Fatality Ratio (CFR)			
Sex	**Incidence case**	**Death**	**CFR (%)**
Males	815	153	18.8
Females	546	55	10.1
Both Sexes	1361	208	15.3

Approximately 15% cancer deaths are reported related to newly diagnosed case of cancer.

7.11 Status of Medical Certification of Cause of Death *

Implementation status of MCCD	
Existing Allopathic Medical Institutions	216
Medical Institutions Covered under MCCD	59
Medical Institutions reported MCCD data as per the National list	23
Ranking of States/UTs in the medical certification of cause of death,2014	20



Trend in proportion of medically certified deaths to total registered deaths in Sikkim, 2006-14

Rank	Cause of death	Percentage
1	Circulatory System	16.8
2	Respiratory System	11.6
3	Certain Infectious & Parasitic Diseases	10.9
4	Injury Poisoning	10.9
5	Digestive system	9.6
6	Neoplasms	7.9
7	Certain Conditions Originating in Perinatal Period	3.6
8	Symptoms, Signs & Abnormal Findings	0.0
9	Other groups	28.7

** Report on Medical Certification of Cause of Death (MCCD), 2008 -14, Office of the Registrar General of India, Government of India.*

Nagaland ranks way below in MCCD reporting and the coverage of institutions and reporting of MCCD have to be improved. Death registration should also be strengthened. Conditions of the Circulatory system is the leading cause of death. Quality of cause of death information has to be further improved.

Advocacy Points

- Cancer of Nasopharynx, Stomach, and oesophagus are most common in men.
- Cancer of Cervix, Breast, and Stomach are most common in women.
- More than one third of cancers in men are associated with the use of tobacco.
- Cancer cases start rising from 25 years and reach peak at 70-74 years affecting the economically productive age group.
- High burden of risk factors such as tobacco, alcohol etc need to be addressed through appropriate prevention programme and health education.
- Use of clean fuel needs to be promoted in rural sectors to minimize indoor air pollution.
- Coverage of screening for breast, cervix and oral cancers needs to be improved.
- Cancer treatment facilities particularly radiotherapy, palliative care etc need to be established and strengthened.
- Cancer patient welfare and other relevant health insurance scheme needs to be in place to improve affordability and access to health care.
- Strengthening the reporting of cause of death is required to generate accurate mortality estimates.
- Notifiability of Cancer needs to be considered to ensure completeness of cancer reporting in the state.

Chapter 8 – SIKKIM: Cancer & Health Indicator profile

8.1 Demography of the Population Based Cancer Registry

Sikkim State PBCR	
PBCR situated in	Sir Thutob Namgyal Memorial Hospital, Gangtok
PBCR Name	Sikkim
Coverage Area	Sikkim State
PBCR Established Year	2003
Number of sources of registration	40
Area (in Sq.km)	7096
Urban & Rural covered (%)	25.2 & 74.8
Population as per 2011 Census	
Males	323070
Females	287507
Total	610577
Major Ethnic groups	Nepalese, Bhutias, Lepchas
Cancer is still not been made notifiable in Sikkim	

8.2 Risk Factor & Health Practices

Risk Factor for Cancer	Urban		Rural		Total	
	Males	Females	Males	Females	Males	Females
Adults (age 15-49 years)						
Literacy (%)	93.3	89.5	90.0	85.2	91.5	86.6
Use of any kind of tobacco (%)	39.6	8.2	40.8	6.9	40.3	7.3
Consumption of alcohol (%)	48.9	22.7	52.9	23.1	51.2	23.0
Proportion attempted to stop smoking or using tobacco in any other form during the past 12 months	10.3	23.4	15.9	18.1	13.5	20.0
Overweight or obese (BMI ≥ 25.0 kg/m^2) (%)	41.5	34.1	29.7	23.1	34.8	26.7
Children under age 6 months exclusively breastfed (%)		70.7		48.6		54.6

Source: NFHS-4 (2015 -16)

Health practices & Health seeking	Urban		Rural		Total	
	Males	Females	Males	Females	Males	Females
Adults (age 15-49 years)						
Comprehensive knowledge of HIV/AIDS (%)	37.7	31.5	34.9	21.3	36.1	25.5
Have Ever Undergone Examinations of Cervix (%)		11.8		13.3		12.8
Have Ever Undergone Examinations of Breast (%)		6.0		7.2		6.8
Institutional births (%)		95.3		94.4		94.7
Population and Household Profile	**Both Sex**					
Households using improved sanitation facility (%)	76.0		94.2		88.2	
Households using clean fuel for cooking (%)	93.0		42.4		59.1	
Households with any usual member covered by a health scheme or health insurance (%)	32.6		29.2		30.3	

Source: NFHS-4 (2015 -16)

8.3 Health Systems at a Glance

Health Facilities	Number
Sub centre	147
Primary Health Centres	24
Community Health Centres	2
Sub Divisional Hospital	0
District Hospitals	4
Mobile Medical Unit	4
AYUSH	3
Cancer treating hospitals *	1
Radiotherapy facilities *	0
Cancer patient welfare schemes *	0
Palliative care centres *	1

*Source: Rural Health Statistics report (2014 -15); * Provided by Cancer registry*

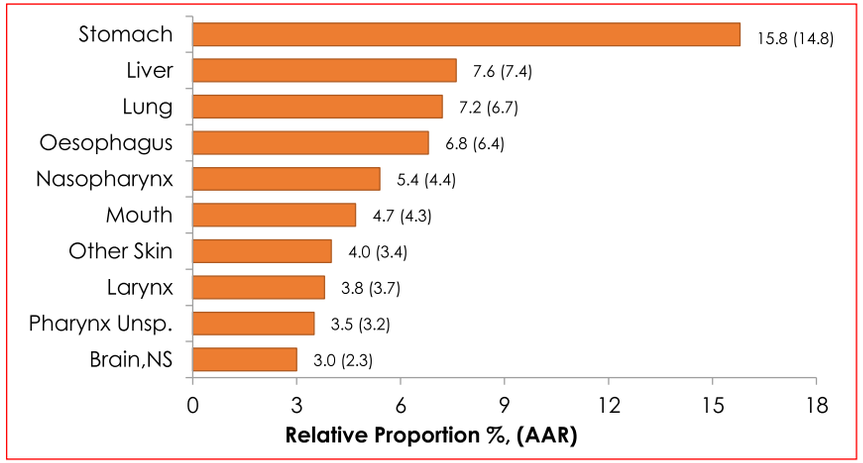
8.4 Number and Age Adjusted Incidence Rate (Reporting years: 2012-14)

Sex	Number of New Cancer cases	AAR
Males	707	90.7
Females	678	100.3

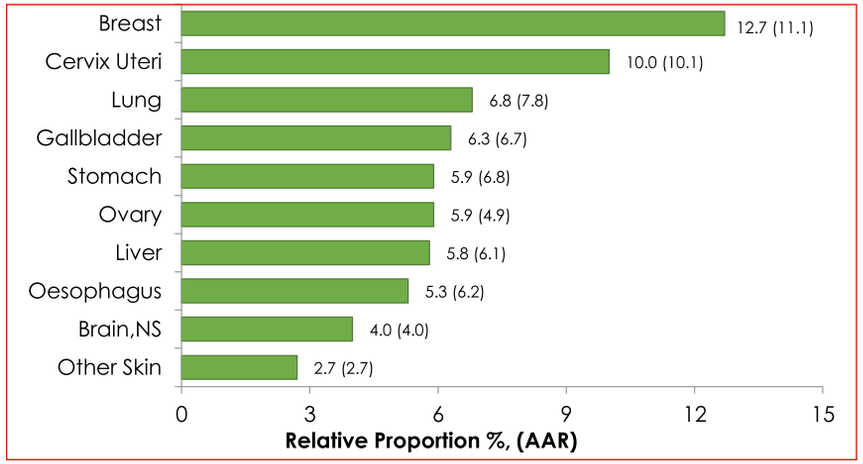
AAR - Age Adjusted Incidence Rate per 1,00,000 population

8.5 Leading Sites of Cancer

Leading Sites of Cancer in Males



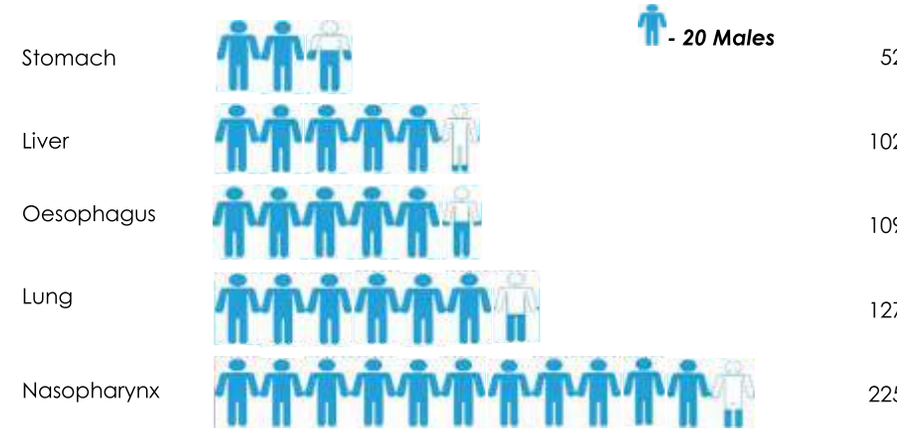
Leading Sites of Cancer in Females



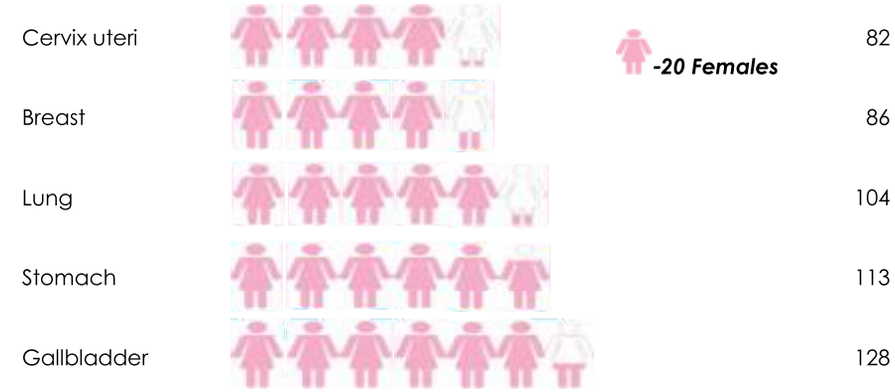
In males, proportion of Stomach cancer is the highest followed by Liver and Lung. These three sites contribute almost one third (31%) of all cancers. In females, Breast cancer is the commonest followed by Cervix Uteri and Lung. These three sites contribute almost one third (30%) of all cancers.

8.6 Possibility of one in number of person developing cancer in (0-74) years of age

Males



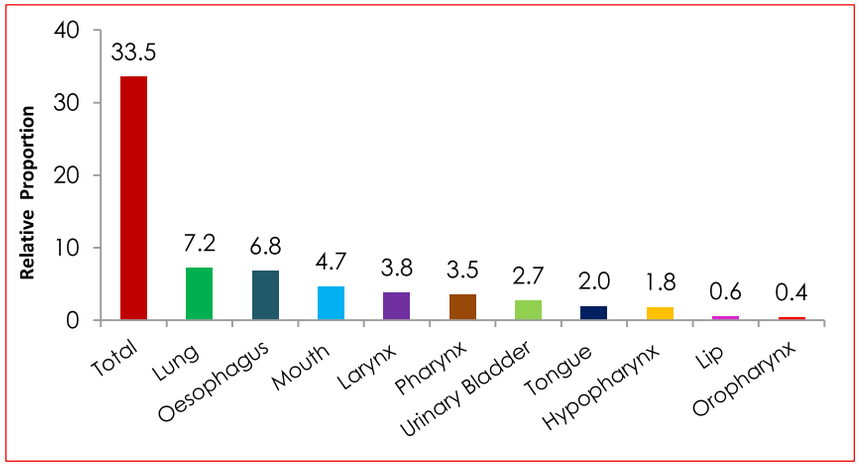
Females



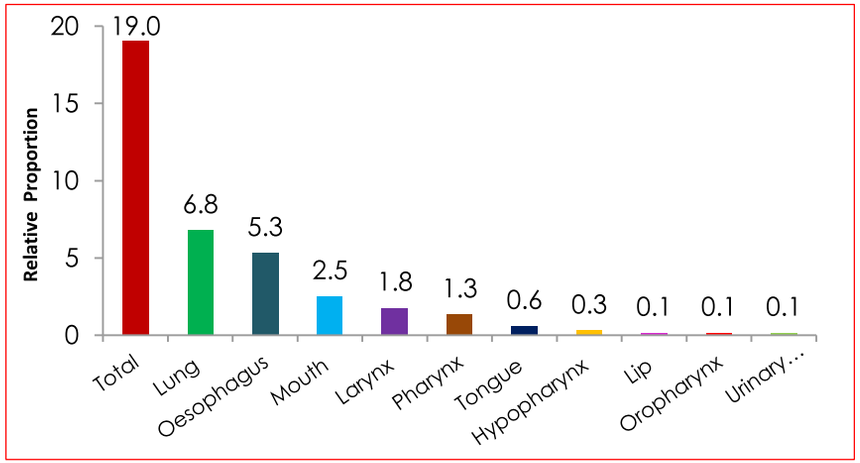
The average risk that a person will develop Stomach cancer in their lifetime (0-74 years) is about 1 in 52 for males. Similarly, 1 in 82 females will possibly develop Cervix Uteri cancer in their lifetime (0-74 years).

8.7 Sites of the Cancers known to be associated with use of tobacco

Males

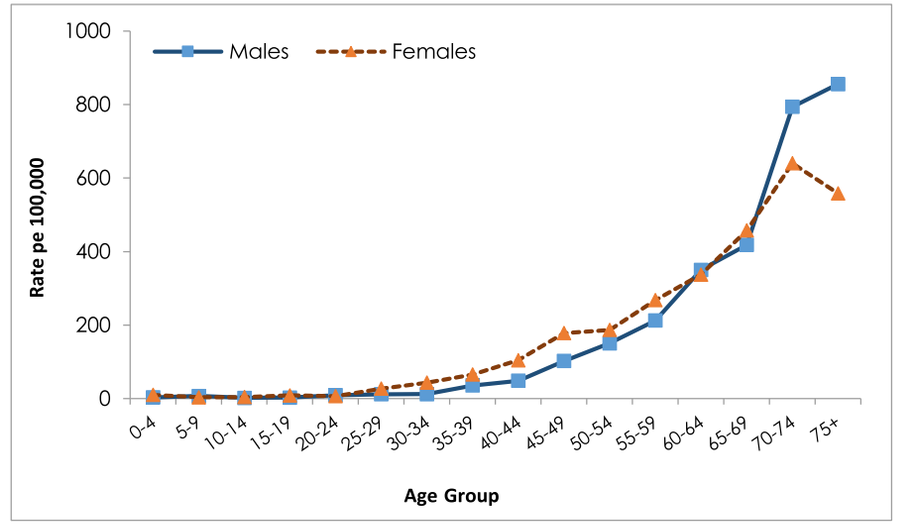


Females



Around 33% and 19% of all cancers in males and females are respectively associated with the use of tobacco. Among these proportion of Lung, Oesophagus and Mouth are leading in both sexes.

8.8 Age Specific Rate (ASpR)



Age Specific Incidence Rate is highest for males in 75+ age group. For females, it is observed in 5 years each (70-74 yrs). Age specific incidence rates show distinct rise from 35- 39 years age onwards in both sexes.

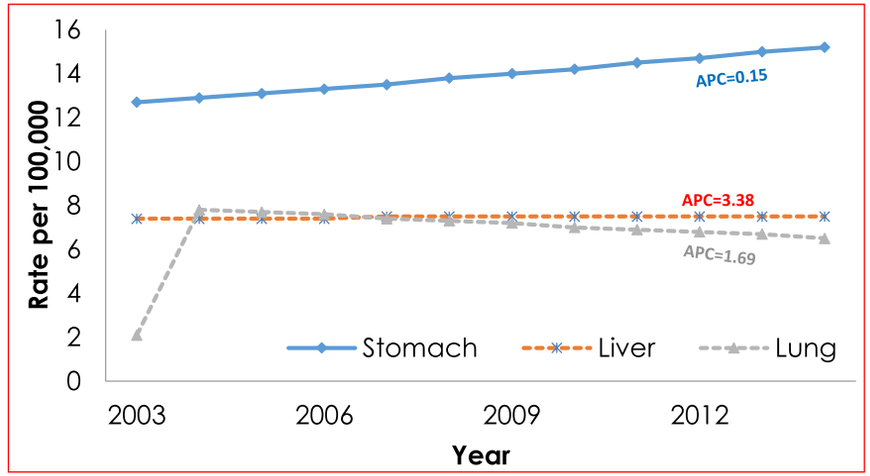
8.9 Ethnicity wise proportion of cancer cases

Cultural Group	Number	Proportion
Nepalese	901	65.1
Bhutias	278	20.1
Lepchas	106	7.7
Others	26	1.9
Missing/Unknown	74	5.3
Total	**1385**	**100.0**

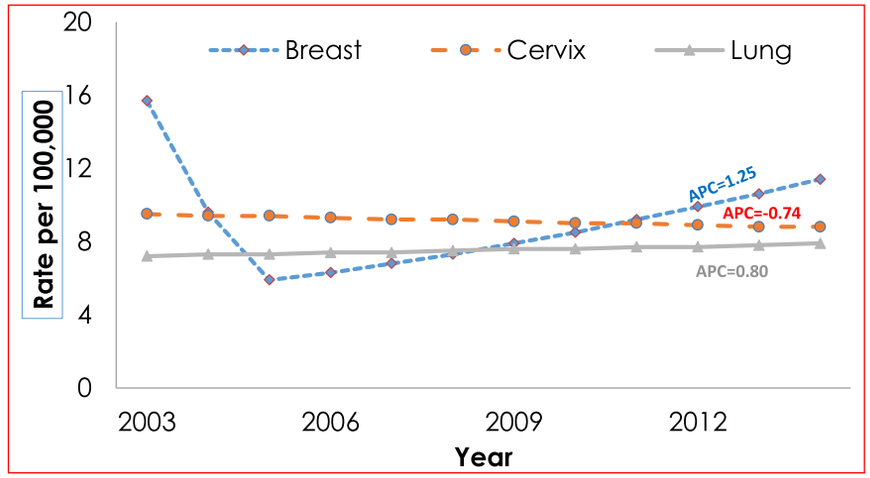
Approximately 65% of the cancer cases belong to Nepalese and followed by Bhutias contribute to 20% of all cancers.

8.10 Trends over time in Cancer Incidence

Males



Females



** Significant Joinpoint model & Annual Percent Change (APC) (p<0.05)*

In Males, cancers of Stomach, Liver and Lung are increasing over the years; similarly, Breast and Lung cancers are showing an increase whereas Cervix cancer is showing a decline although these are not statistically significant.

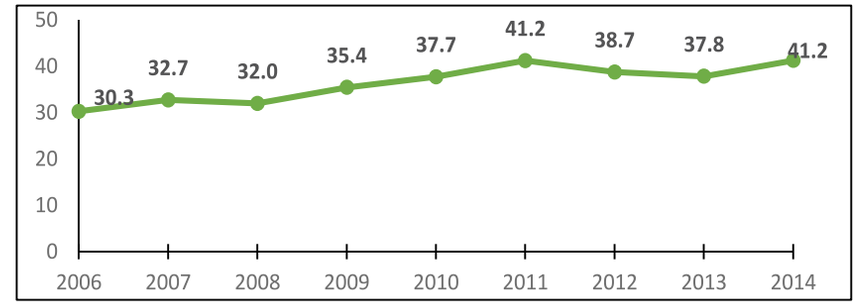
8.11 Cancer Deaths

Case Fatality Ratio (CFR)			
Sex	**Incidence case**	**Death**	**CFR (%)**
Males	707	365	51.6
Females	678	311	45.9
Both Sexes	1385	676	48.8

Approximately 50% cancer deaths are reported related to newly diagnosed case of cancer.

8.12 Status of Medical Certification of Cause of Death *

Implementation status of MCCD	
Existing Allopathic Medical Institutions	31
Medical Institutions Covered under MCCD	31
Medical Institutions reported MCCD data as per the National list	28
Ranking of States/UTs in the medical certification of cause of death,2014	11



Trend in proportion of medically certified deaths to total registered deaths in Sikkim, 2006-14

Rank	Cause of death	Percentage
1	Circulatory System	26.5
2	Digestive system	17.1
3	Certain Infectious & Parasitic Diseases	11.9
4	Respiratory System	8.8
5	Injury Poisoning	7.1
6	Neoplasms	6.3
7	Certain Conditions Originating in Perinatal Period	5.7
8	Symptoms, Signs & Abnormal Findings	2.4
9	Other groups	14.1

** Report on Medical Certification of Cause of Death (MCCD), 2008 -14, Office of the Registrar General of India, Government of India.*

Coverage of institutions and reporting of MCCD are satisfactory. Conditions of the Circulatory system is the leading cause of death. Quality of cause of death information has to be further improved.

Advocacy Points

- Cancer of Stomach, Liver and Lung are most common in men.
- Cancer of Breast, Cervix and Lung are most common in women
- One third of cancers in men are associated with the use of tobacco.
- Cancer cases start rising from 35 years and reach peak at 75 years affecting the economically productive age group.
- High burden of risk factors such as tobacco, alcohol, obesity etc., need to be addressed through appropriate prevention programme and health education.
- Use of clean fuel needs to be promoted in rural sectors to minimize indoor air pollution.
- Coverage of screening for breast, cervix and oral cancer needs to be improved.
- Cancer treatment facilities particularly radiotherapy, palliative care etc need to be established and strengthened.
- Cancer patient welfare and other relevant health insurance scheme needs to be in place to improve affordability and access to health care.
- Strengthening the reporting of cause of death is required to generate accurate mortality estimates.
- Notifiability of Cancer needs to be considered to ensure completeness of cancer reporting in the state.

Chapter 9 – TRIPURA: Cancer & Health Indicator profile

9.1 Demography of the Population Based Cancer Registry

Tripura State PBCR	
PBCR situated in	Regional Cancer Centre, Agartala
PBCR Name	Tripura
Coverage Area	Tripura State
PBCR Established Year	2010
Number of sources of registration	55
Area (in Sq.km)	10492
Urban & Rural covered (%)	26.2 & 73.8
Population as per 2011 Census	
Males	1874376
Females	1799541
Total	3673917
Major Ethnic groups	Kayastha, Koibarta, Jogi, Brahmin
Cancer is made notifiable in Tripura from 24th September 2008	

9.2 Risk Factor & Health Practices

Risk Factor for Cancer	Urban		Rural		Total	
	Males	Females	Males	Females	Males	Females
Adults (age 15-49 years)						
Literacy (%)	95.2	88.4	87.0	77.0	89.5	80.4
Use of any kind of tobacco (%)	57.5	37.9	72.3	44.0	67.8	42.2
Consumption of alcohol (%)	54.7	0.4	58.9	6.7	57.6	4.8
Proportion attempted to stop smoking or using tobacco in any other form during the past 12 months	13.9	24.7	9.6	16.6	10.7	18.8
Overweight or obese (BMI ≥ 25.0 kg/m^2) (%)	18.2	23.5	14.9	12.8	15.9	16.0
Children under age 6 months exclusively breastfed (%)		63.4		72.9		70.7

Source: NFHS-4 (2015 -16)

Health practices & Health seeking	Urban		Rural		Total	
	Males	Females	Males	Females	Males	Females
Adults (age 15-49 years)						
Comprehensive knowledge of HIV/AIDS (%)	50.9	44.3	30.5	21.0	36.8	28.0
Have Ever Undergone Examinations of Cervix (%)		7.0		4.3		5.1
Have Ever Undergone Examinations of Breast (%)		1.5		1.2		1.3
Institutional births (%)		92.6		75.7		79.7
Population and Household Profile	**Both Sex**					
Households using improved sanitation facility (%)	65.1		59.6		61.3	
Households using clean fuel for cooking (%)	68.6		16		31.9	
Households with any usual member covered by a health scheme or health insurance (%)	31.7		69.5		58.1	

Source: NFHS-4 (2015 -16)

9.3 Health Systems at a Glance

Health Facilities	Number
Sub centre	1017
Primary Health Centres	91
Community Health Centres	20
Sub Divisional Hospital	11
District Hospitals	6
Mobile Medical Unit	0
AYUSH	61
Cancer treating hospitals *	1
Radiotherapy facilities *	1
Cancer patient welfare schemes *	0
Palliative care centres *	1

Source: Rural Health Statistics report (2014 -15); * Provided by Cancer registry

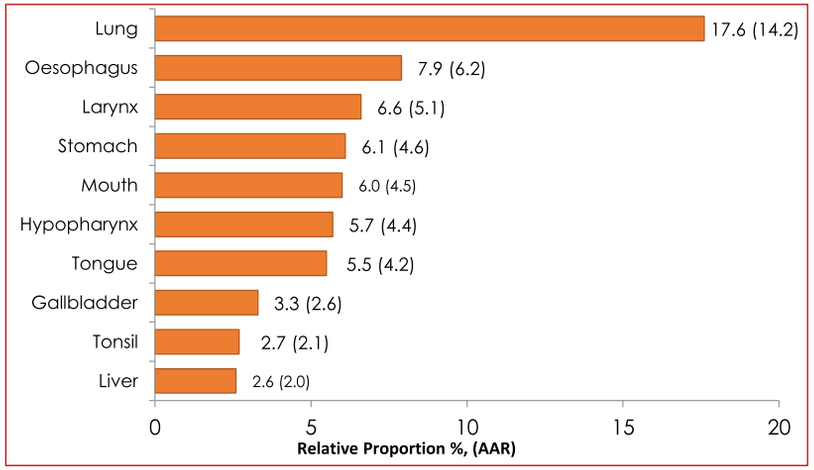
9.4 Number and Age Adjusted Incidence Rate (Reporting years: 2012-14)

Sex	Number of New Cancer cases	AAR
Males	3628	76.4
Females	2702	54.9

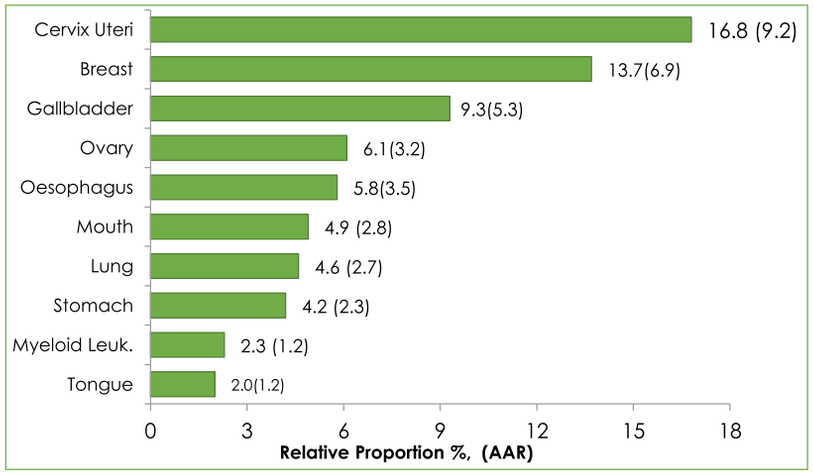
AAR - Age Adjusted Incidence Rate per 1,00,000 population

9.5 Leading Sites of Cancer

Leading Sites of Cancer in Males



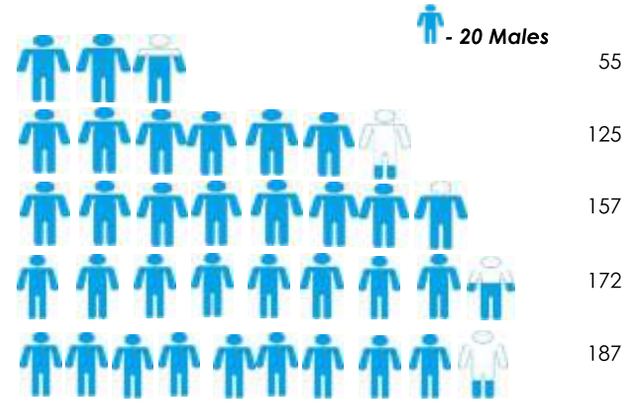
Leading Sites of Cancer in Females



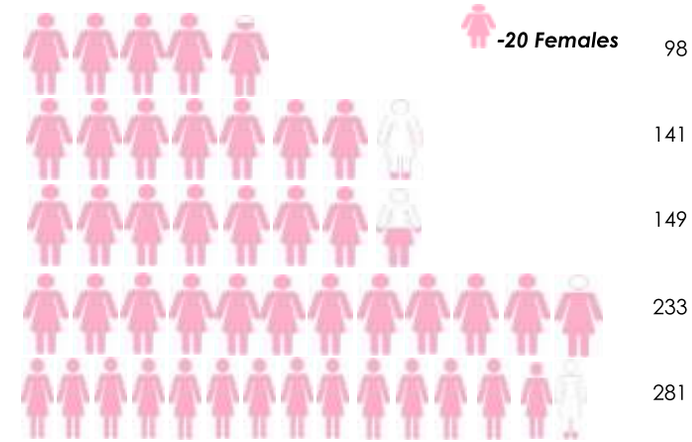
In males, proportion of Lung cancer is the highest followed by Oesophagus and Larynx. These three sites contribute almost one third (32%) of all cancers. In females, Cervix Uteri cancer is the highest followed by Breast and Gallbladder. These three sites contribute more than one third (40%) of all cancers.

9.6 Possibility of one in number of person developing cancer in (0-74) years of age

Males



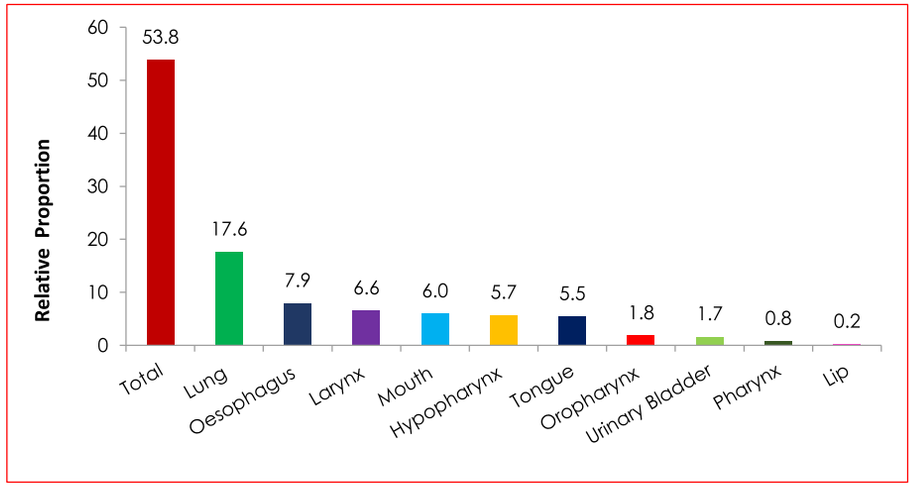
Females



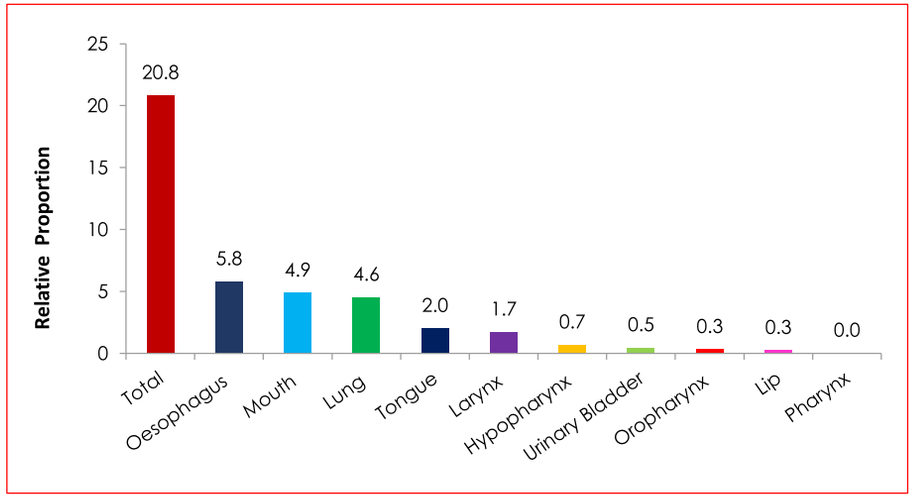
The average risk that a person will develop Lung cancer in their lifetime (0-74 years) is about 1 in 55 for males. Similarly, 1 in 98 females will possibly develop Cervix Uteri cancer in their lifetime (0-74 years).

9.7 Proportion of Cancer in Sites known to be associated with use of tobacco

Males

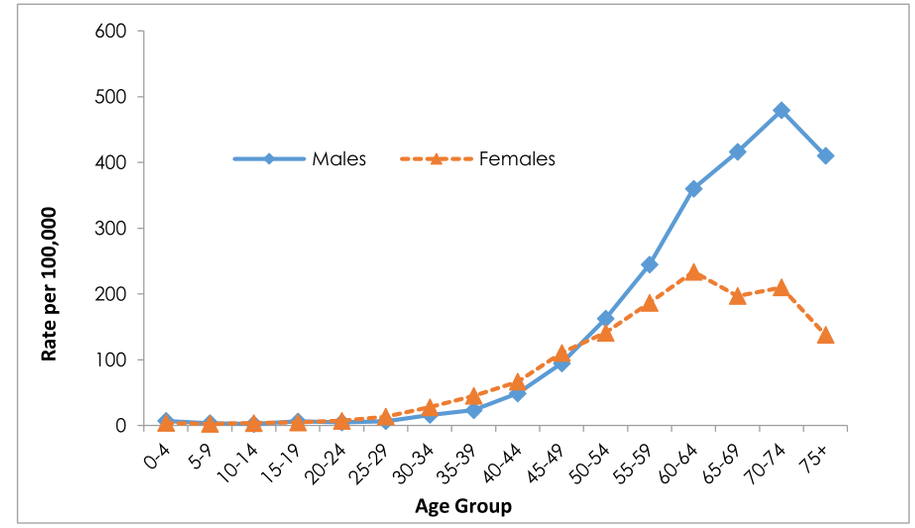


Females



Around 54% and 21% of all cancers in males and females are respectively associated with the use of tobacco. Among these proportion of Lung, Oesophagus and Mouth are high in both sexes.

9.8 Age Specific Rate (ASpR)



Age Specific Incidence Rate is highest for males in 70-74 age group. For females, it is observed in 5 years earlier (60-64 yrs). Age specific incidence rates show distinct rise from 30- 34 years age onwards in both sexes.

9.9 Ethnicity wise proportion of cancer cases

Cultural Group	Number	Proportion
Kayastha	2645	41.8
Koibarta	836	13.2
Jogi	617	9.7
Brahmin	327	5.2
Bishnupriy	65	1.0
Others	901	14.2
Missing/Unknown	939	14.8
Total	**6330**	**100.0**

Approximately 42% of the cancer cases belong to Kayastha.

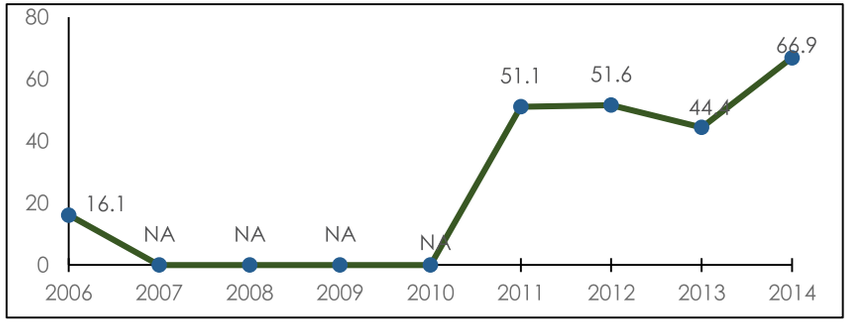
9.10 Cancer Deaths

Case Fatality Ratio (CFR)			
Sex	**Incidence case**	**Death**	**CFR (%)**
Males	3628	1778	49.0
Females	2702	1082	40.0
Both Sexes	6330	2860	45.2

Approximately 45% cancer deaths are reported related to newly diagnosed case of cancer.

9.11 Status of Medical Certification of Cause of Death *

Implementation status of MCCD	
Existing Allopathic Medical Institutions	112
Medical Institutions Covered under MCCD	107
Medical Institutions reported MCCD data as per the National list	107
Ranking of States/UTs in the medical certification of cause of death,2014	4



NA- Not Available Data

Trend in proportion of medically certified deaths to total registered deaths in Tripura, 2006-14;

Rank	Cause of death	Percentage
1	Circulatory System	28.4
2	Respiratory System	24.9
3	Symptoms, Signs & Abnormal Findings	17.6
4	Certain Infectious & Parasitic Diseases	9.3
5	Injury Poisoning	6.5
6	Neoplasms	4.2
7	Certain Conditions Originating in Perinatal Period	1.3
8	Digestive system	0.6
9	Other groups	7.3

** Report on Medical Certification of Cause of Death (MCCD), 2008 -14, Office of the Registrar General of India, Government of India.*

Coverage of institutions and reporting of MCCD are satisfactory. Conditions of the Circulatory system is the leading cause of death. Quality of cause of death information has to be further improved as the group 'Symptoms, signs and Abnormal findings' has been reported as the third leading cause.

Advocacy Points

- Cancer of Lung, Oesophagus and Larynx are most common in men.
- Cancer of Cervix, Breast, and Gall Bladder are most common in women.
- More than half of cancers in men are associated with the use of tobacco.
- Cancer cases start rising from 30- 34 years and reach peak at 70 -74 years affecting the economically productive age group.
- High burden of risk factors such as tobacco, alcohol, obesity etc need to be addressed through appropriate prevention programme and health education.
- Use of clean fuel needs to be promoted in rural sectors to minimize indoor air pollution.
- Coverage of screening for breast, cervix and oral cancer needs to be improved.
- Cancer treatment facilities particularly radiotherapy, palliative care etc need to be established and strengthened.
- Strengthening the reporting of cause of death is required to generate accurate mortality estimates.
- Cancer patient welfare and other relevant health insurance scheme needs to be in place to improve affordability and access to health care.

Way Forward

- Strengthen cancer registration possible through the implementation of cancer notifiability in every state.
- Translate research evidence to relevant policy and programme.
- Create awareness prevention, management and outcome for cancer in the community.
- Strengthen human resource, infrastructure for early detection, treatment and palliative care facilities.
- Need to tackle major risk factors i.e. tobacco, alcohol and indoor air pollution.
- Promote appropriate research programme for cancer prevention and control
- Develop comprehensive cancer control programme.
- Encourage engagement between researchers and programme manager.

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