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REPORT ON MONITORING SURVEY OF CANCER RISK FACTORS AND HEALTH SYSTEM RESPONSE IN NORTH EAST REGION (NER) OF INDIA

2022

ICMR-NCDIR, Bengaluru

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REPORT ON MONITORING SURVEY OF CANCER RISK FACTORS AND HEALTH SYSTEM RESPONSE IN NORTH EAST REGION (NER) OF INDIA

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प्रोफेसर (डा.) बलराम भार्गव, पदम श्री
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Foreword

According to reports of the National Cancer Registry Programme, India is witnessing a rise in the burden of cancer. The incidence and mortality rates for cancer are the highest for the country's North East Region (NER). Given this, ICMR-NCDIR conducted the 'Monitoring survey of cancer risk factors and health system response in NER during 2019-2021, as a part of the 'Prevention and control of cancer in the North Eastern States in India (CaRes NER Programme)'.The survey aimed to understand the distribution of major cancer-associated behavioral and metabolic risk factors at a population level. The health system's response towards cancer prevention and control at the primary and secondary level in public and private sector health facilities has also been assessed.

I appreciate the hard work of the investigators of the collaborating sites and the scientists and staff ICMR-NCDIR for completing the survey even during the pandemic situation and bringing out this report of great relevance to cancer prevention and control.

It is hoped that this survey will aid in establishing a cancer risk factor surveillance program at the Population Based Cancer Registries, which have been compiling data on cancer-related statistics for many years. This would help to monitor the outcomes of different prevention and control initiatives that are being implemented in the region.

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Preface

डॉ प्रशान्त माथुर डी सी एच, डी एन बी, पी एच. डी., एम एन ए एम एस
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आई सी एम आर - राष्ट्रीय रोग सूचना विज्ञान एवं अनुसंधान केंद्र
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ICMR - National Centre for Disease Informatics and Research
Department of Health Research, Ministry of Health
and Family Welfare, Government of India

PREFACE

The report on 'Monitoring survey of cancer risk factors and health system response in North East Region (NER) of India' gives a comprehensive yet descriptive presentation of the profile of largely modifiable risk factors of cancer that could contribute to the high burden of cancer in the region, as recorded in the periodic reports of the National Cancer Registry Programme (NCRP). The survey aimed to generate key cancer and other NCD related risk factors and health system response indicators in all the twelve Population Based Cancer Registries (PBCRs') of the eight states in the Northeastern region of India under the overall co-ordination of the Indian Council of Medical Research (ICMR) - National Centre for Disease Informatics and Research (NCDIR), Bengaluru.

The report describes the rationale of establishing a cancer risk factor surveillance system in a PBCR and the methodology of conducting an all-encompassing survey that would capture data on the socio-behavioural determinants of cancer, co-morbidities which could increase cancer risk and mortality, health and treatment seeking behaviour, access to health care and preparedness of the health system to address cancer prevention and control. The report concludes with a listing of key findings and recommended strategies to address areas of concern.

This survey was an approach to implement a baseline monitoring system that would drive us to understand the linkage between exposures to risk factors, other NCDs, and cancer incidence derived from the PBCRs in the NER. The survey findings will enable the policymakers and stakeholders at making the best decisions to address cancer prevention and control in the region.

Prashant Mathur

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Acknowledgement

It is an immense pleasure to bring out the 'Report on monitoring survey of cancer risk factors and health system response in North East Region (NER) in India ', which has been made possible by the valuable contribution of several persons.

First and foremost, we would like to thank all the study respondents whose data were included in the Report. We acknowledge the tireless efforts of the Principal Investigators, Co-Principal Investigators, registry and survey staff undertaking the survey despite the challenges imposed by field conditions and the COVID 19 pandemic and completing it within the specified period. We would also like to thank the state health authorities in each state for granting the requisite permissions for surveying the health facilities.

We want to thank our experts: Dr Binod Patro, Dr. Tulika Goswami, Dr K R Thankappan, Dr. Brogen Singh Akoijam and Dr Himanshu Chaturvedi for providing the much needed technical expertise for finalizing the study tools, sample size, operational manual, training of trainers, regional training and undertaking supervisory visits to the PBCR survey sites.

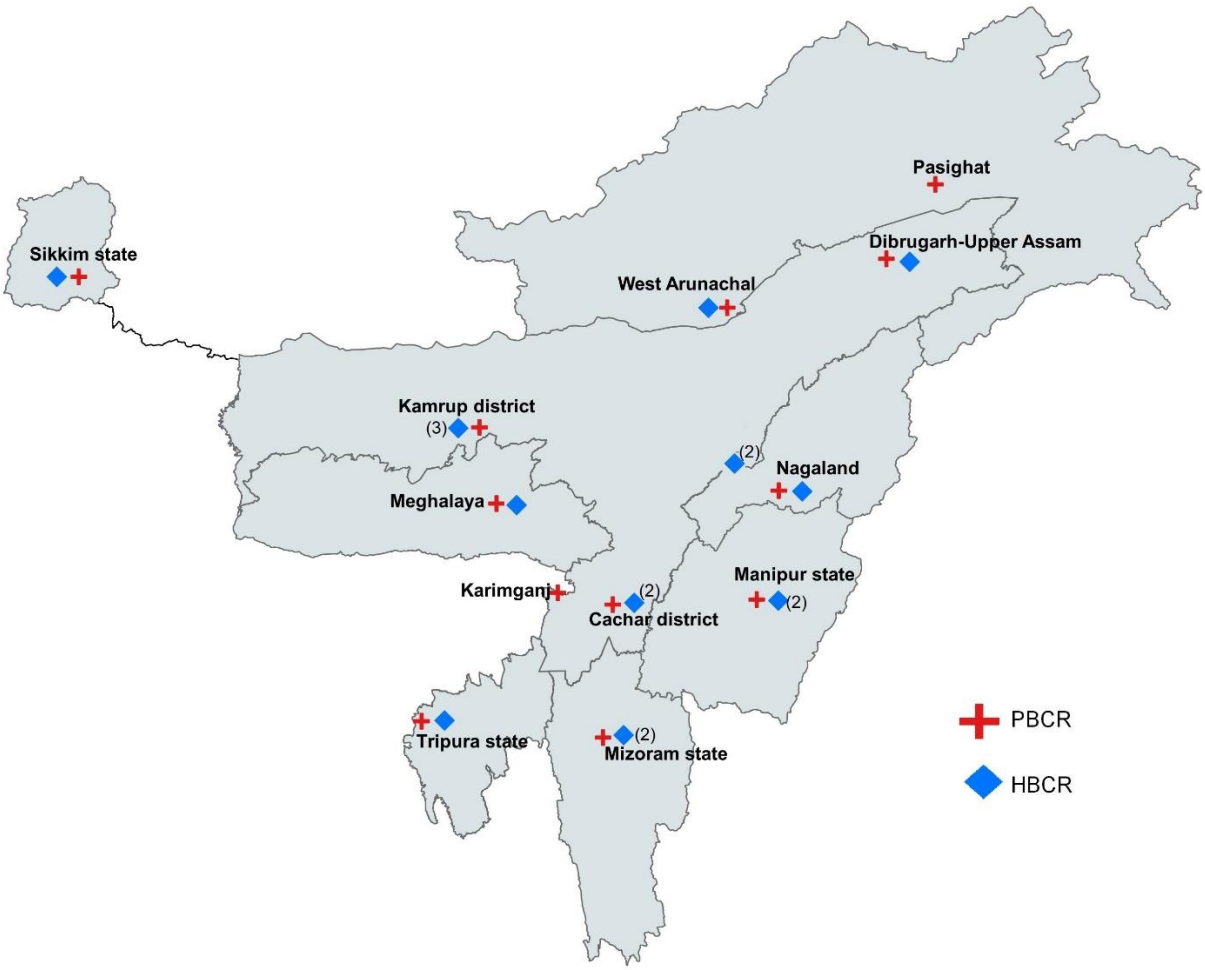
We are very grateful to Prof Balram Bhargava, Director General ICMR and Secretary DHR, for his constant inspiration and motivation for undertaking research that could be translated into fruitful actions that would help address the nation's health needs.

We want to thank our Director, Dr Prashant Mathur, for his guidance and support in the execution of the project and preparation of the report.

This passage would not be complete without acknowledging the vital and supportive role of the scientific and technical staff of NCDIR. They include Mr N Suresh Kumar, Dr Sravya L, Dr Prachi Phadke, Mr Rohith Mohan, Ms Nifty Tomy, Mr Thillai Govindarajan, Ms Nirmala V, Mr Arindam Debnath and Ms Gurpreet Kaur Rajput. We are also thankful to Ms Priyanka Das, Mr Monesh and Mr Solomon for their contribution towards report design and developing the online version of the report. The support and facilitation of the administrative and finance staff at NCDIR are duly acknowledged.

Dr Anita Nath Dr Vaitheeswaran K Mr Vinay Urs K S Mrs Thilagavathi R

Network of PBCRs and HBCRs in North East India



List of abbreviations

AAR	Age Adjusted Incidence Rate
BMI	Body Mass Index
BP	Blood Pressure
CCA	Central Coordinating Agency
CEBs	Census Enumeration Blocks
CHCs	Community Health Centres
Co-PI	Co-Principal Investigator
CVDs	Cardiovascular Diseases
DALYs'	Disability Adjusted Life Years
DHs	District Hospitals
HHs	Households
HPV	Human Papilloma Virus
HWCs'	Health and Wellness Centres
ICMR	Indian Council of Medical Research
MET	Metabolic equivalent
MOHFW	Ministry of Health and Family Welfare
MSW	Medical Social Worker
NCDs	Noncommunicable Diseases
NCDIR	National Centre for Disease Informatics and Research
NCRP	National Cancer Registry Programme
NER	North-East Region
NGO	Non-Governmental Organization
NNMS	National NCD Monitoring Survey
NPCDCS	National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke
PBCR	Population Based Cancer Registry
PHCs	Primary Health Centres
PI	Principal Investigator
PPS	Probability proportional to size
PSUs	Primary Sampling Units
SDGs	Sustainable Development Goals
TCCC	Tertiary Care Cancer Centers
WC	Waist Circumference
WHO	World Health Organization

Executive Summary

Background, rationale and objectives

The incidence, mortality, and cumulative risk of developing cancer has been consistently high in the Northeastern Region (NER) of India, according to reports of the National Cancer Registry Programme (NCRP). While the Population Based Cancer Registries (PBCRs') under the NCRP have been instrumental in providing the much-needed cancer data for the geographic area covered by a registry, it is vital to understand the likely reasons for the reported cancer incidence and its outcomes. Cancers share several common risk factors, and comparable health system needs with other significant NCDs (cardiovascular diseases, diabetes, stroke, chronic obstructive pulmonary disease and chronic kidney disease) for prevention, early detection and control. These include major behavioural and metabolic risk factors such as tobacco use, unhealthy diet, inadequate physical activity, alcohol use, raised blood glucose and overweight/obesity. Therefore, establishing a cancer risk factor surveillance system within a cancer registry is essential to track changes, implement suitable interventions and evaluate their impact, which would be reflected in the magnitude of cancer that is periodically reported from the registry. The survey objectives included:

Primary objectives: To generate prevalence of key cancer and other NCD related risk factors and estimate health system response in all the 12 PBCRs of the eight states in Northeastern region of India.

Secondary objectives:

- To set a baseline to monitor and track trends in the prevalence of risk factors associated with cancer and other NCDs in the 12 PBCRs of the eight states in Northeastern region of India.
- To link or correlate risk factors with cancer incidence and burden collected by the 12 PBCRs in the NER.

Key findings

- The proportion of solid fuel use was high in rural areas (79%). Over half (51.3%) of the population (rural and urban combined) used wood as cooking fuel. More than three quarters (77.4%) of the rural population used 'open stove' or '*chulha'* for cooking.
- Nearly half of the respondents (48.6%) were current tobacco users, comprising 61.7% men and 34.8% women. Over one third (38.8%) of men were current users of smoked tobacco

- Close to a quarter (22.8%) of the respondents reported to have consumed alcohol over the past 12 months and 18.3% reported alcohol use within the past month.
- The mean number of days on which either fruits or vegetables were consumed was 0.8 days in a week.
- According to the WHO criteria, the proportion of those who were obese was 5.2%, while the prevalence of obesity was higher (27.6 %) using Asian cut off points.
- The prevalence of raised blood pressure was 28.7%, of which the proportion of newly detected (20.8%) was higher than previously known (7.9%).
- The proportion of respondents whose blood glucose level was over 126 mg/dl was 5.1%, among whom the proportion of known diabetics was 3.3%.
- Less than 10% of the respondents had received advice regarding lifestyle modification from a health care provider, regarding avoidance of tobacco and alcohol use, maintaining a healthy body weight and undergo screening for common cancers: oral, breast, head and neck.
- Close to a third (29.9%) of the cancer patients had sought health care outside of their state, the majority (63.6%) were availing of treatment at a government health facility.
- Over a quarter (26%) of the cancer patients were self-financing their treatment; 5.8% were covered by health insurance.
- Cancer screening for all three types of cancers (cervical, breast, oral) was available in 19.1% of the PHCs', 20.4 % of the CHCs' and 35.7% % of the District hospitals.
- A few CHCs' had a specialist in position in the following departments: surgery (17.3%), medicine (39.8%) and gynaecology (36.7%).
- Less than 50% of the General Duty Medical Officers at the CHCs' and District hospitals had been trained for NPCDCS/NHM (NCD related)/State program. Likewise, the proportion of staff from other cadres who had undergone NCD-related programme management training was low in PHCs', CHCs' and District hospitals.
- About a quarter of the District hospitals had daycare facilities for chemotherapy (24.3%) and histopathology (21.4%).

Overall, addressing cancer control in the NER requires a multidisciplinary approach at all the levels of prevention, from primordial to tertiary, coupled with community participation and multisectoral coordination to ensure optimal outcomes which would be evidenced by cancer incidence and outcomes in terms of survival rates and mortality.

Chapter - 1
Introduction

1.1 Burden of cancer

Cancer is a prominent cause of morbidity and mortality worldwide and in India as well. In 2020, the estimated number of cancer cases globally was 19.3 million, with 10 million reported deaths [1]. Cancer cases were higher in males (10.06 million) than females (9.22 million). Cancer is also ranked the second leading cause of death globally, following deaths due to cardiovascular reasons [2]. India reported an estimated 1.39 million new cancer cases in 2020 [3]. In 2016, cancer contributed to 8.3% of deaths and 5.0% of Disability Adjusted Life Years (DALYs) in India in 2016, which was twice its contribution in 1990 [4]. Among these, stomach cancer contributed to the highest proportion of DALYs (9%), followed by breast cancer (8.2%) and lung cancer (7.5%). The incidence, mortality, and cumulative risk of developing cancer has been consistently high in the Northeastern Region of India.

The region has a unique cancer profile compared to the other areas of the country. Aizawl district in Mizoram recorded the highest Age-Adjusted Incidence Rate (269.4 per 100,000) in males, and Papumpare district in Arunachal Pradesh recorded the most elevated AAR (219.8 per 100,000) in females for all cancer sites [3],[5]. Likewise, the crude mortality rate of cancer was highest in males (115.0 per 100,000) and females (69.6 per 100,000) in Aizawl district of Mizoram state. Pooled analysis of cancer data in all eight states of the NER showed that the leading sites in males included cancer of the oesophagus (13.6%) followed by lung (10.9%). At the same time, in females, the breast was the top site (14.5%), followed by the cervix uteri (12.2%). The probability of developing cancer in any target organ over a lifetime was highest for both the genders in Kamrup urban in Assam (1 in 4 males and 1 in 6 females). Close to half of the cancers (49.3%) among males in the NER were cancers in sites associated with tobacco use.

1.2 Risk factors of cancer

A risk factor is any attribute, characteristic or exposure of an individual which increases the likelihood of developing a disease. Cancers share several common risk factors, and comparable health system needs with other significant NCDs (cardiovascular

diseases, diabetes, stroke, chronic obstructive pulmonary disease and chronic kidney disease) for prevention, early detection and control. These include major behavioural and metabolic risk factors such as tobacco use, unhealthy diet, inadequate physical activity, alcohol use, raised blood glucose and overweight/obesity. There is sufficient evidence that besides lung cancer, smoked tobacco is causally associated with cancer of the mouth, gastrointestinal tract, urinary bladder and pancreas [6],[7]. Smokeless tobacco has been linked with a high chance of oral potentially malignant diseases (OPMD) and cancers of the head and neck and oesophagus [8],[9]. The International Agency for Research on Cancer (IARC) has identified the following sites of cancer that are causally associated with alcohol use: cancers of the oral cavity, pharynx, larynx, oesophagus, liver and female breast [10]. Similarly, for obesity, cancers with convincing scientific evidence of a causal link with obesity and overweight; include oesophageal adenocarcinoma and cancers of the colon, rectum, kidney, pancreas, gallbladder, postmenopausal breast, corpus uteri, and ovary [11].

India state-level disease burden report (2017) indicates that behavioural risk factors account for a significant proportion of DALYs [4]. In the Northeast states, the prevalence rates of smoking and drinking were estimated to be 11.4% and 9.1%, while almost two-thirds of the population consumed a diet low in fruits [4]. Similarly, the summary exposure value for metabolic risk factors such as high body mass index and fasting glucose has increased by 105.9% and 19.9% from 1990 to 2016. A consensus is that about 60 per cent of cancer deaths can be averted with adequate preventive measures and early detection by screening [12].

1.3 Health system preparedness for cancer care

Apart from behavioural and environmental risk factors, the challenges to tackle NCDs are compounded by the state of the health care system. The burden of cancer in India is linked to inequities in health care access and uneven distribution of infrastructure and human resources across the country. Report of the World Cancer Initiative on 'Cancer preparedness index 'places India on a much lower rank on the 19th position among the 28 countries that were part of the study [13]. A public health approach for the continuum of care for cancer ranges from prevention to treatment, including palliative care. Treatment seeking behaviour and delay in diagnosis pose a significant impact on survivorship and mortality. Even factors such as attitude towards cancer

prevention practices that include Human Papilloma Virus (HPV) vaccination, screening and lifestyle modification could decrease cancer risk. There is a shortage of quality cancer-related healthcare facilities. The proportion of cancer patients seeking treatment outside NER is highest for Sikkim (95.3%), followed by Nagaland (58.1%) [5]. Less than one-third of cancers of the breast, cervix, head and neck, stomach and lung cancer detected in the region were localised at the time of getting diagnosed.

Goal 3 of the Sustainable Development Goals focuses on good health and well-being [14]. One of the critical targets is reducing premature mortality due to Noncommunicable Diseases (NCDs) by one third through prevention and treatment, promoting mental health and well-being by 2030. In response to the rising NCD epidemic, the Government of India initiated the National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases, and Stroke (NPCDCS) in 2010. Concerning cancer control, the program emphasises risk reduction and promotes organised screening for the three common cancers-oral, breast and cervix. According to NFHS-5, the proportion of those who reported having undergone screening for breast, cervical or oral cancer was very low in many states in the NE region [15]

The Tertiary Care Cancer Centers (TCCC) scheme was also initiated to provide comprehensive and robust cancer care by setting up State Cancer Institutes (SCIs) and TCCCs'. Presently, there are two State Cancer Institutes and seven TCCCs' in the region [16]. The number of health facilities under the public health delivery system is shown in the table below:

Healthcare Facilities of NER states*							
S. No	States	HWCs-Subcentres	Number of Subcentres	HWCs-PHCs	Number of PHCs	HWCs-UPHCs	Number of CHCs
1.	Arunachal Pradesh	78	363	38	124	4	60
2.	Assam	765	4680	379	1002	52	192
3.	Manipur	85	418	29	93	1	17
4.	Meghalaya	67	443	35	143	19	28
5.	Mizoram	42	370	54	65	8	9
6.	Nagaland	103	415	46	137	7	21
7.	Sikkim	27	153	13	25	0	2
8.	Tripura	233	1001	32	112	5	22

**As of 31st March 2020. Source [17]*

The National Tobacco Control Program (NTCP) has been pivotal for preventing and controlling tobacco use [18]. Rigorous policy implementation is crucial for ensuring primordial and primary prevention of NCDs, including cancer, through managing risk factors. The Cigarette and Other Tobacco Product Act (COTPA), 2003 prohibits smoking in public places, promotion of branded tobacco products, sale of tobacco products by or to minor and pictorial warning labels on tobacco products. However, the actual implementation of the Act could be a matter of concern. Indian alcohol policies appear to fluctuate with imposing and removing prohibitions for consumption and sales from time to time and revising the legal age of consuming alcohol. In 2020, the Food Safety and Standards Authority of India (FSSAI) brought out regulations to curb junk food consumption by restricting the availability of foods that are high in added sugars, saturated and trans fats or sodium in or within a fifty-metre of schools [19].

1.4 About the survey

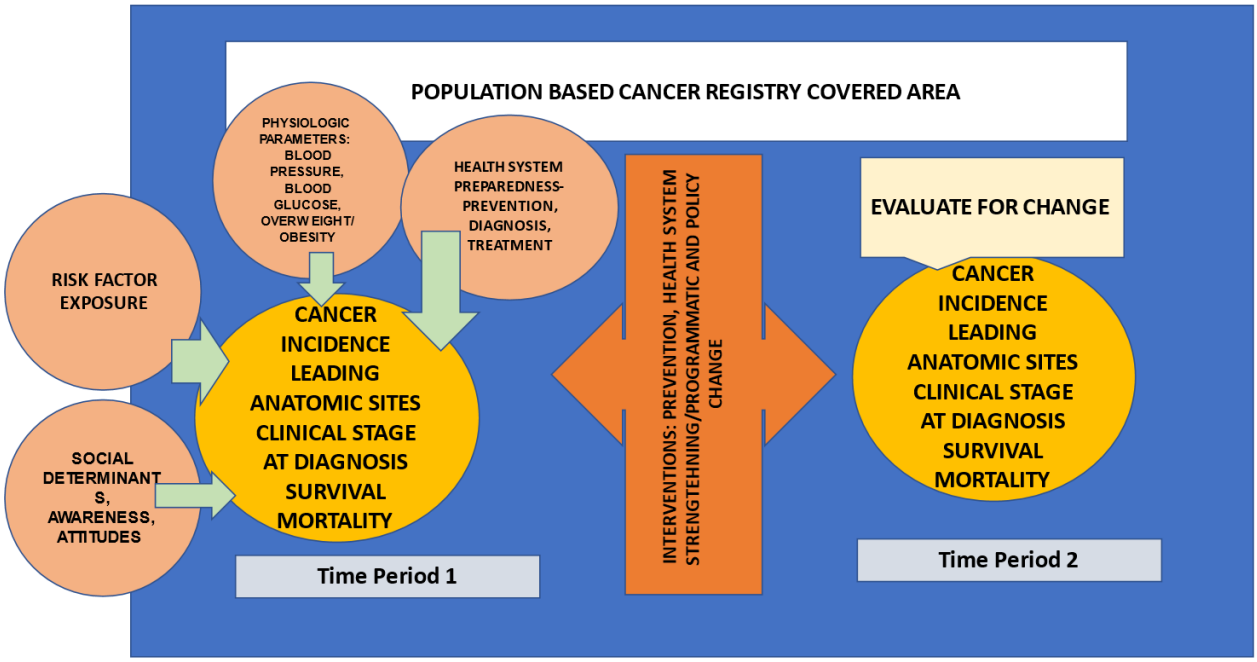
The National Cancer Registry Programme (NCRP) was commenced in 1981 by the Indian Council of Medical Research (ICMR) and is presently implemented at the National Centre for Disease Informatics and Research (ICMR - NCDIR) at Bengaluru through a network of cancer registries across the country. Population Based Cancer Registries (PBCRs') collect data on the incidence, profile, mortality and trends of cancer in a defined geographical area, while Hospital Based Cancer Registries (HBCRs') collect detailed clinical and disease outcome details of patients availing cancer care at specific hospital sites. There are 38 PBCRs under NCRP, of which twelve PBCRs' are situated in the northeastern region (NER). The data from the cancer registries have paved the way for cancer prevention and control activities in India.

While the Population Based Cancer Registries have been instrumental in providing the much-needed cancer data for the geographic area covered by a registry, it is vital to understand the likely reasons for the reported cancer incidence and its outcomes. The determinants of cancer burden could be explained in terms of the lifestyle and behavioural risk factors, comorbidities, social environment and preparedness of the health system (as shown on next page). Various surveys like the National NCD Monitoring Survey (NNMS), National Family Health Survey (NFHS) and Global Adult Tobacco Survey (GATS) have given either national or state-level estimates of behavioural risk factors, especially regarding tobacco use, alcohol consumption and

diet, which would not be sufficient to explain the reasons behind cancer occurring in a limited geographical area.

This survey was conducted as a part of Cancer Research in North East Region (CaRes-NER), a multidisciplinary programme for preventing and controlling cancer in the northeastern states. The survey aimed to form a baseline of risk factors for comparison in subsequent surveys. This would aid in establishing a cancer risk factor surveillance program comprising of a regular collection, analysis and dissemination of risk factor related data. As cancer registration is an integral part of cancer surveillance, ongoing surveillance of risk factors will help correlate trends in cancer incidence and risk factors. Moreover, with the set time-bound National NCD targets (10) and indicators (21) by 2025 adapted by the Ministry of Health and Family Welfare (MoHFW), Government of India (GoI) in 2012 and attempts to achieve Universal Health Coverage (UHC), an ongoing surveillance would determine outcomes of NCD control initiatives including comprehensive primary health care be delivered by the Health & Wellness Centres (HWCs') set up under *'Ayushman Bharat'* scheme [19]. Therefore, establishing a cancer risk factor surveillance system within a cancer registry is essential to track changes, implement suitable interventions and evaluate their impact, which would be reflected in the magnitude of cancer that is periodically reported from the registry.

Cancer Prevention and Control through PBCRs



1.4.1 Objectives of the survey

1.	Primary objective	To generate prevalence of key cancer and other NCD related risk factors and estimate health system response in all the 12 PBCRs of the eight states in Northeastern region of India.
2.	Secondary objectives	To set a baseline to monitor and track trends in the prevalence of risk factors associated with cancer and other NCDs in the 12 PBCRs of the eight states in Northeastern region of India. To link or correlate risk factors with cancer incidence and burden collected by the 12 PBCRs in the NER.

Chapter - 2
Methodology

2.1 Survey Design

The present survey adapted the same methodology (multistage cluster random sampling method) used in the National NCD Monitoring Survey (NNMS) – 2017 – 18 [5], with necessary modifications adopted for the unique cancer profile in the 12 PBCR covering areas in eight states of the NER

2.2 Study Population

The target population for the survey was defined as all residents aged 18 or above residing in their usual residence. The institutional population comprising those living in collective places like students' dormitories, hospitals, hotels, prisons, military barracks, etc., were included in the survey.

2.3 Sample size

The sample size for the survey was worked out to obtain reliable estimates for cancer risk factors related to adults in Population Based Cancer Registry (PBCR) covering areas. The sample size was estimated by considering the objectives of estimating the prevalence of behavioural risk factors for cancer and other NCDs (including tobacco use, alcohol consumption, and physical inactivity). The prevalence of tobacco use is 28.6% (GATS – 2), alcohol use is 17.1% at age >18 years (Magnitude of Substance abuse in India), and 54.5% are insufficiently engaged in physical activity (ICMR-INDIAB study). The proportion of the population burdened with NCDs and associated risk factors also vary across different parts of the country. The prevalence of alcohol use of 17% approximately and underlying assumptions of relative precision amounting to 15% of prevalence, design effect of 1.5, and non-response rate of 10% formed the basis for determining the sample size by gender in each state. The calculated sample size was estimated to be 23,040. The sample size was 2880 for those states with 100% coverage by the PBCR. For other PBCR areas, the sample size was adjusted according to coverage by PBCR as shown in the Table below:

`

Table 2.3.1 Sample size charting for the survey according to PBCR coverage area

Table 1: Sample size and number of PSU per study site									
Sl No.	Registry Name	State Name	State Total Population	State Total Population (Age 18+)	Total Population (Age 18+) covering PBCR by State wise	Total Populationof Study site (as percensus 2011)- (Age 18+)	% Of under PBCR covering area	Total sample size per Study Site (Approximately)	Total PSUs(48 HH per PSU)
	Sikkim - PBCR	Sikkim	610577	403569	403569	403569	100	2880	60
	Tripura - PBCR	Tripura	3673917	2444294	2444294	2444294	100	2880	60
	Mizoram - PBCR	Mizoram	1097206	674279	674279	674279	100	2880	60
	Manipur - PBCR	Manipur	2855794	1814488	1814488	1814488	100	2880	60
	Naharlagun - PBCR	ArunachalPradesh (8 Districts)				434610	84.3	2400	50
	Pasighat - PBCR	ArunachalPradesh (2 Districts)	13,83,727	792662	515541	80931	15.7	480	10
	Cachar - PBCR	Assam (Cachar District)				1073847	11.8	384	8
	Kamrup District and Kamrup Metropolitan - PBCR	Assam (2 Districts)	3,12,05,576	19109031	9087202	1862323	20.5	576	12
	Dibrugarh - Upper Assam PBCR	Assam (7 Districts)				4929169	54.2	1536	32
	Karimganj - PBCR	Assam (3Districts)				1221863	13.4	384	8
	Meghalaya - PBCR	Meghalaya (4Districts)	29,66,889	1580947	978370	978370	100.0	2880	60
	Nagaland - PBCR	Nagaland (2Districts)	19,78,502	1156723	398456	398456	100.0	2880	60
								23040	480

2.4 Data Collection Tools

The study tools used for different levels included (i) Household (ii) Adult (iii) Adult with cancer and (iv) Health facility (PHC or urban equivalent, CHC/ District Hospital and private facilities). These instruments were adapted from the National NCD Monitoring Survey (NNMS) to suit survey objectives. Standard references were used to define the data variables [15,20,21].

2.5 Survey Period

The survey was conducted in a phased manner between November 2019 and April 2021. A fourteen months period was allocated to each implementing PBCR, which included delays due to the COVID 19 pandemic.

2.6 Governance of Survey

The survey implementation was under the supervision, coordination and monitoring of the Central Coordinating Agency (CCA) at ICMR - National Centre for Disease Informatics & Research (NCDIR), Bengaluru.

The CCA provided all technical and scientific assistance for the survey at all stages. It was responsible for overall coordination, monitoring, quality assurance, data maintenance, cleaning, analysis and report writing with the technical support from its partners. A team of experts were identified for survey supervision, monitoring and scientific guidance.

For the states of Arunachal Pradesh and Assam with multiple PBCRs, one of the PBCRs was selected as an implementing agency, with the other PBCRs' designated as 'collaborators'. A total of 9 implementing agencies and three collaborators were identified. The details have been provided in **Annexure 2.**

2.7 Quality Assurance and Training

The quality control measures were followed to standardise the survey at all stages and all levels of governance. This included preparing training materials, undertaking training, calibration and standardisation of equipment, data collection tools, field data collection and storage, handling blood samples and safe disposal mechanisms of the generated biomedical waste. A dashboard was created to monitor the live status of data collection and troubleshooting, or any queries or issues faced at the time of the field was solved through FAQ's and virtual calls.

All Principal Investigators (PI) and Co-Principal Investigators (Co-PI) from every PBCR were trained in all survey procedures as part of the CCA's two-day Training of Trainers program. A classroom-based training, demonstrations, hands-on and mock field drills were undertaken for the research team during the 3-day training program.

2.8 Data Management and Analysis

The field team used the handheld devices loaded with the software application for data collection and entered the field itself. Provision of keeping back up of data in SD cards in the handheld was also present. The data from the handheld devices were uploaded/ synced to the Central server at ICMR-NCDIR.

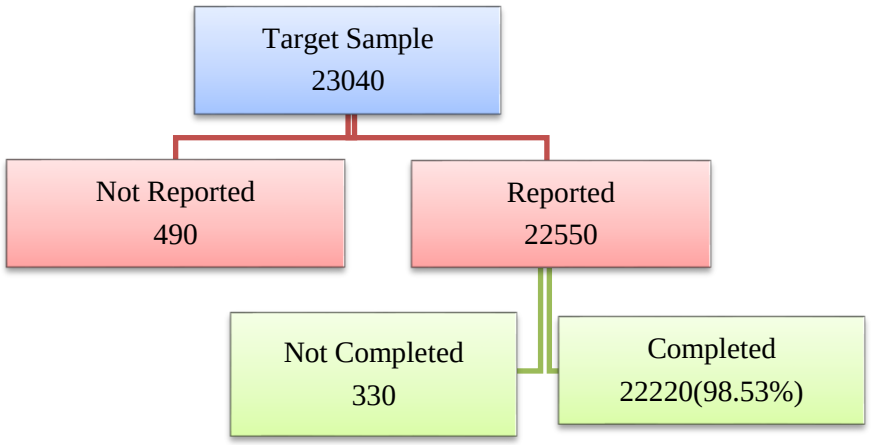
The data from all districts were compiled and cleaned, following which weighting procedures were followed for adjusting for sampling and population proportions and response rates. The detailed statistical analysis plan was prepared based on the identified indicators and subgroups. The data analysis was done using STATA 14.1 with prior developed analysis commands by complex survey analysis. The survey results have been presented by descriptive statistics with means and proportions with 95% confidence intervals (CIs) as a measure of precision on the estimated population parameters.

2.9 Ethical Considerations

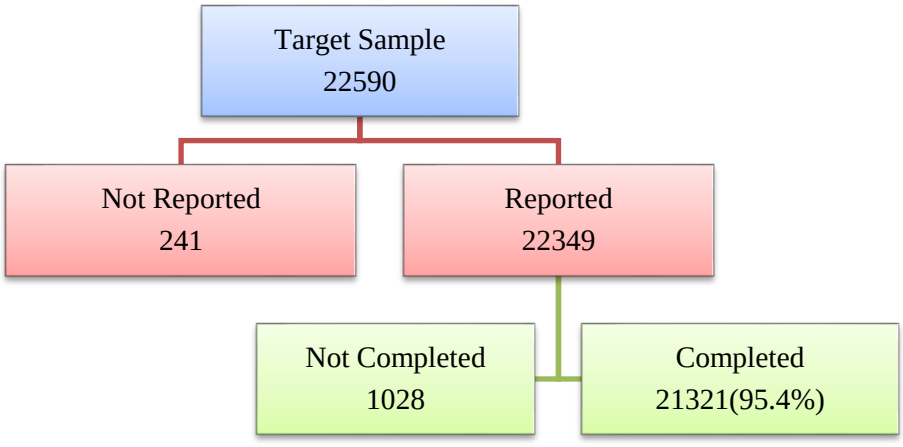
The survey received ethical clearance from the Ethics review committee of the CCA, ICMR – NCDIR (NCDIR/IEC/2017/2). All participating PBCRs' also obtained approvals from their respective Ethics Committees. In addition, all participating centres informed the local authorities, citizen groups, community representatives and sought their support. During the COVID 19 pandemic, all instructions related to COVID 19 protocol were put in place from time to time and adhered to. All field staff and investigators with the necessary protective wear and instructed to follow COVID 19 appropriate behaviour.

Chapter - 3
Survey Results

Household Response Rate



Adult – level Response Rate



A. Household level interview

3.1 Household Characteristics

3.1.1 Average size of the household by place of residence*

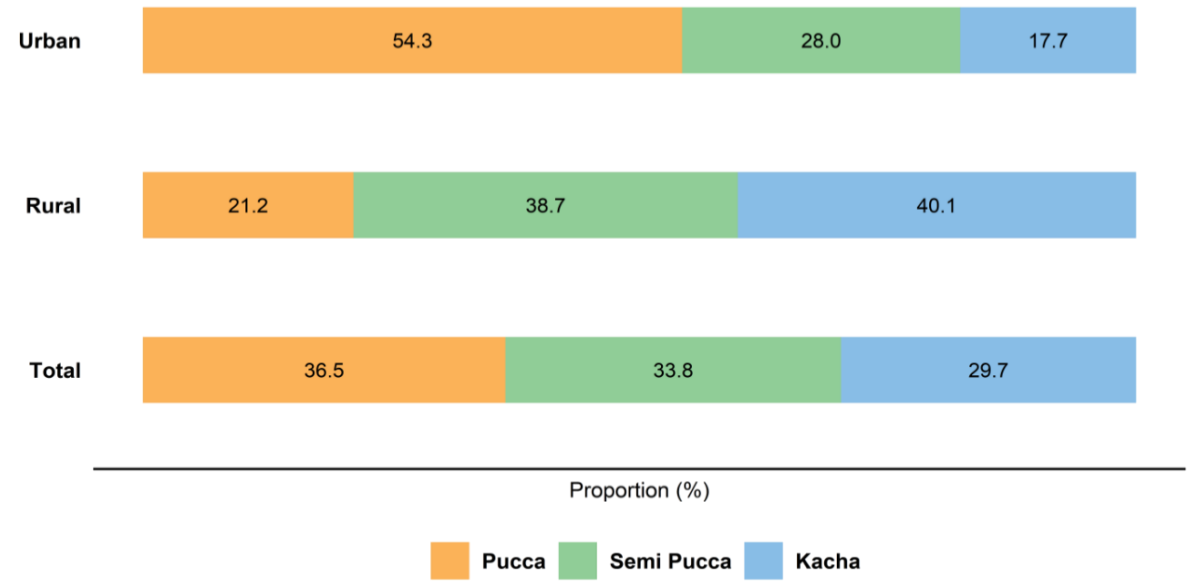
	Urban	Rural	Combined
Median (IQR*)	**4.0 (2.0)**	**4.0 (3.0)**	**4.0 (2.0)**

*Size of the household- Number of members in the household [*IQR: - Interquartile Range]*

**Household: A person or group of persons who could be biologically related/not related, living together in the same unit(s), who recognise a joint head of the household (an adult male or female) and are considered a single unit, sharing the same household arrangements.*

3.1.2 Household characteristics by place of residence (Percentage)

3.1.2 (a) Type of House*



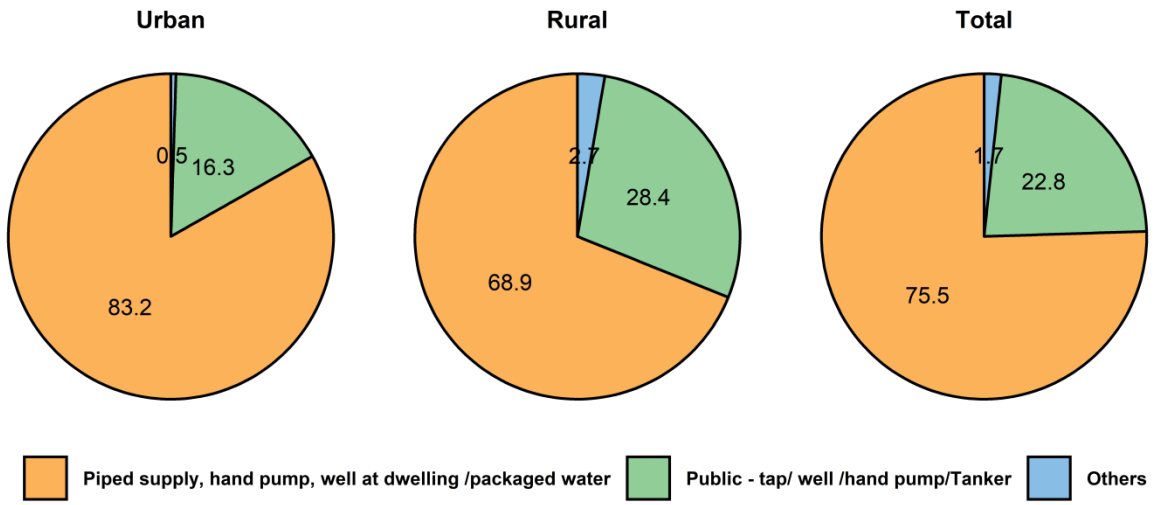
* ***Type of house*** *is defined based on roof, floor and walls.*

Pucca house*: A pucca house is one, which has walls and a roof made of the following material. Wall material include burnt bricks, stone and cement. Roof material includes tiles, cement, iron or asbestos sheets*

Semi pucca house: *A house with fixed walls made up of pucca material, but the roof is made up of material other than those used for pucca house.*

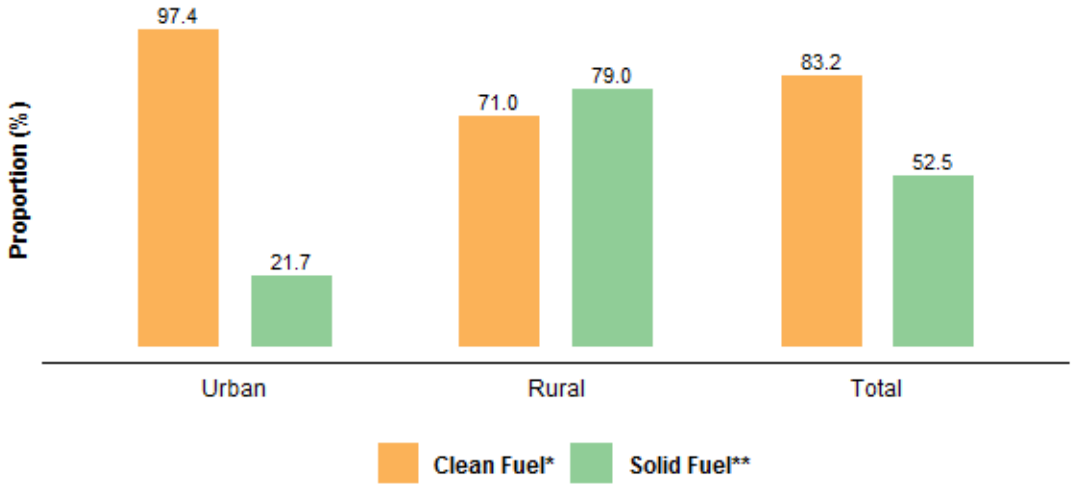
Kutcha House: *The walls and/or roof are made of material other than those mentioned above, such as unburnt bricks, bamboos, mud, grass, reeds, thatch, loosely packed stones, etc.*

3.1.2 (b) Main source of drinking water



3.1.3 Fuel used for cooking and type of kitchen among households by place of residence (Percentage)

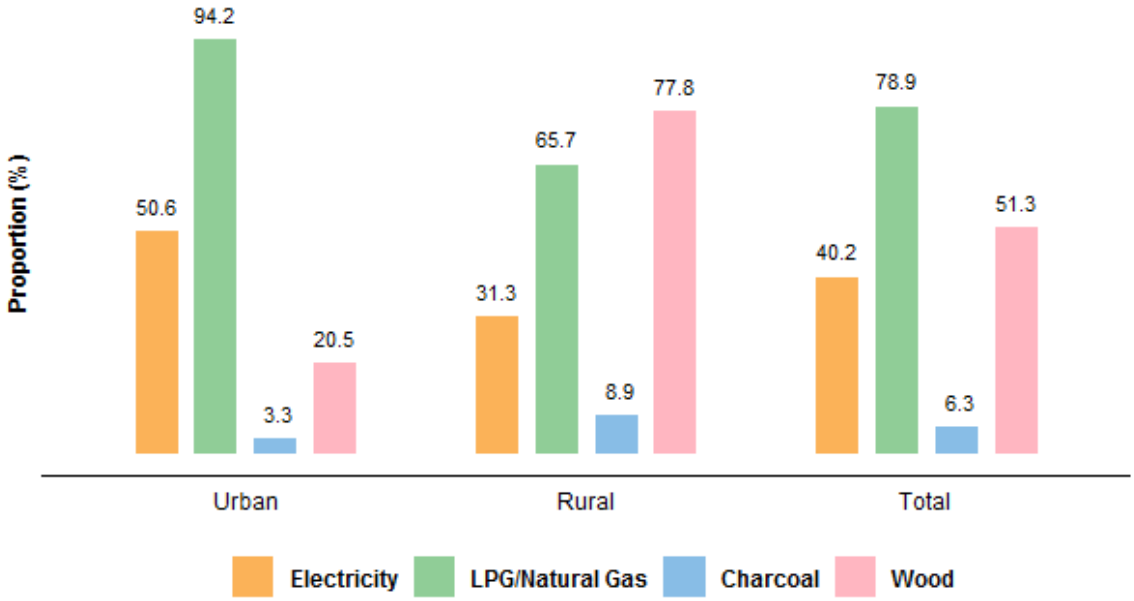
3.1.3 (a) Type of fuel



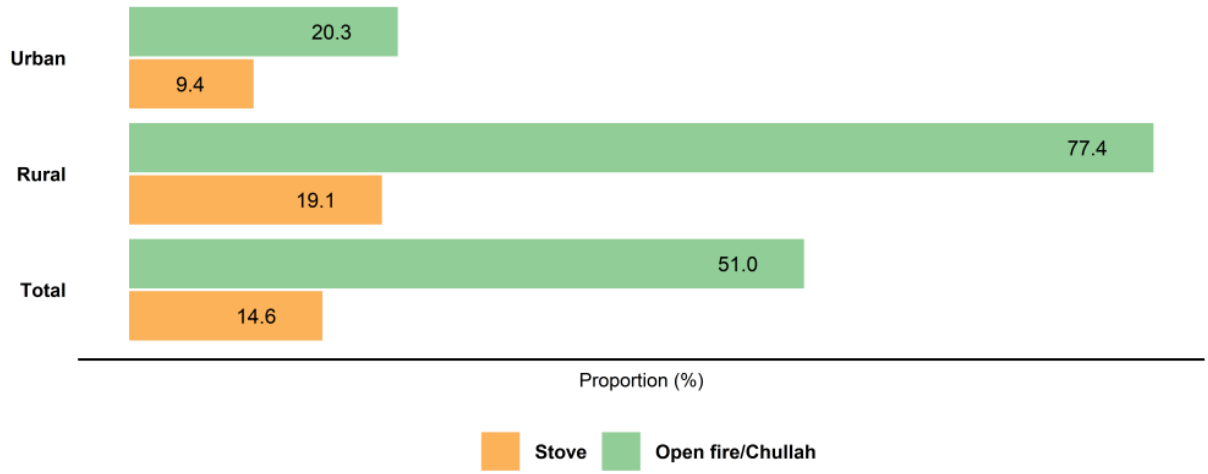
**Clean fuel: Electricity, LPG/Natural Gas, Biogas*

***Solid Fuel: Charcoal, Coal/lignite, wood, Straw/Shrubs/Grass, Agricultural crop waste, Dung cakes*

3.1.3 (b) Type of fuels used for cooking purposes



3.1.3 (c) Type of stove/ fire used among households using solid fuels



3.2 Awareness and Attitudes Towards Cancer

Nearly all (99.3%) of the respondents conceded that they never felt ashamed or hesitant to talk about a cancer case in the household. Only 5.2% of the households were aware about the Human Papilloma Virus (HPV) vaccine.

3.3 Descriptive Profile of Cancer Cases Identified at the Household Level

3.3.1- Households with cancer cases by place of residence

	Urban (N=6711)	Rural (N=14671)	Combined (N=21382)
Percentage of households with diagnosed cancer cases			
Percentage – alive	98 (1.5)	122 (0.8)	220 (1.0)
Percentage – deceased	363 (5.4)	496 (3.4)	859 (4.0)

3.3.2 - Duration of Cancer from the time of diagnosis by place of residence

	Urban	Rural	Male	Female	Combined
Duration of diagnosis for cancer patients who are alive	**(N=101)**	**(N=124)**	**(N=102)**	**(N=123)**	**(N=225)**
< 6 months	7 (6.9)	11 (8.9)	11 (10.8)	7 (5.7)	18 (8.0)
6-12 months	10 (9.9)	13 (10.5)	11 (10.8)	12 (9.8)	23 (10.2)
13– 24months	11 (10.9)	29 (23.4)	22 (21.6)	18 (14.6)	40 (17.8)
> 24 months	60 (59.4)	63 (50.8)	46 (45.1)	77 (62.6)	123 (54.7)
Don't know	13 (12.9)	8 (6.5)	12 (11.8)	9 (7.3)	21 (9.3)
Duration between diagnosis and death of the patient	**(N=387)**	**(N=525)**	**(N=595)**	**(N=317)**	**(N=912)**
< 6 months	113 (29.2)	161 (30.7)	183 (30.8)	91 (28.7)	274 (30.0)
6-12 months	21 (5.4)	27 (5.1)	36 (6.1)	12 (3.8)	48 (5.3)
13– 24months	97 (25.1)	115 (21.9)	140 (23.5)	72 (22.7)	212 (23.2)
> 24 months	82 (21.2)	111 (21.1)	125 (21.0)	68 (21.5)	193 (21.2)
Don't know	74 (19.1)	111 (21.1)	111 (18.7)	74 (23.3)	185 (20.3)

** Prior to the date of interview: extracted from the date of diagnosis*

3.3.3 - Duration of Cancer (in months) by place of residence (Mean)

	Urban	Rural	Combined
Average duration of cancer **(**alive**)**	83.5	48.6	64.1
Average duration of cancer **(**deceased**)**	18.3	17.4	17.8
Average duration of cancer **(**alive/deceased**)**	32.6	24.4	27.9

**Extracted from the date of diagnosis*

B. Adult Level Interview

3.4 Demographic Characteristics of Adults by Place of Residence and Gender

3.4.1 Socio - demographic characteristics of adults by place of residence and gender (Percentage)

	Urban	Rural	Men	Women	Total
Age (in years)					
18–44	70.9	71.4	70.3	72.1	71.2
45 –69	25.3	24.6	25.9	23.9	24.9
70 and above	3.8	4.0	3.8	4.0	3.9
Marital Status					
Never married	19.3	13.0	19.5	11.9	15.8
Currently married/ cohabiting	72.8	79.4	77.1	75.9	76.4
Separated/Not living together/ Divorced	2.2	2.0	1.8	2.3	2.1
Widowed	5.7	5.6	1.6	9.9	5.7
Highest level of Education					
Less than class 6	13.2	26.4	18.1	21.5	19.7
Class 6 to 10	41.4	48.4	43.4	46.8	45.0
Class 11 or 12	19.7	14.5	17.3	16.9	17.1
Graduation or diploma completed	21.0	8.9	17.4	12.1	14.9
Post-graduation	4.6	1.7	3.8	2.5	3.2
No response	0.1	0.1	0.002	0.2	0.1
Occupation					
Professional	14.1	7.2	14.5	5.9	10.2
Medium or large Business	3.6	1.4	4.1	0.5	2.4
Middle / Senior Executive/officer in organization	3.1	0.9	2.8	0.8	1.8
Agricultural land owner	0.7	7.8	6.5	2.7	4.7
Sales and Marketing executives/Clerical	1.8	0.9	1.9	0.7	1.3
Self-employed and small business	16.6	9.5	17.7	7.4	12.7
Skilled manual labourer	7.1	7.1	12.1	1.8	7.1
Unskilled manual/agricultural labourer	5.9	21.9	20.7	8.6	14.8
Student	7.6	4.2	6.4	5.0	5.7
Homemaker	29.4	30.4	0.8	60.6	29.9
Retired	3.6	2.0	4.3	1.0	2.7
Unemployed (able to work)	5.1	4.6	6.1	3.5	4.9
Unemployed (unable to work)	1.2	1.8	1.7	1.4	1.5
No response	0.01	0.2	0.1	0.1	0.1
Others	0.2	0.1	0.3	0.02	0.2

3.4.2 Religion and Social Status of adults by place of residence and gender (Percentage)

	Urban	Rural	Men	Women	Total
Religion					
Hinduism	47.1	36.6	40.9	41.6	41.3
Islam	6.3	4.1	5.0	5.2	5.1
Christian	40.1	46.3	43.4	43.6	43.5
Sikhism	0.03	0.003	0.01	0.02	0.02
Buddhism	4.0	6.7	5.6	5.3	5.5
Jainism	0.04	0.03	0.03	0.04	0.04
None	0.1	0.6	0.4	0.3	0.4
Others	2.4	5.6	4.7	3.9	4.2
Social Group					
General	28.2	11.7	19.3	18.7	19.0
OBC	17.6	18.4	17.5	18.7	18.1
SC	7.2	5.4	6.1	6.3	6.2
ST	46.7	63.2	56.2	55.6	55.9
Others	0.1	0.5	0.4	0.3	0.3

3.5 Obstetric History of Adult Females

	Urban	Rural	Total
Ever Pregnant (%)	77.4	85.7	82.1
Age at first Pregnancy (%)			
<18 Years	7.6	10.1	9.0
18 – 29 Years	83.8	84.9	84.5
≥ 30 Years	8.6	5.0	6.5
Average age at first pregnancy*(in years)	22.6	21.5	22.0
Gravida*#	2.3	2.6	2.5
Ever breast fed	97.9	98.4	98.2
Never breast fed	2.1	1.6	1.8
Mean/Median duration (in months) of breastfeeding among ever pregnant women@	48.9	52.3	50.9

**Values are expressed as Mean;*

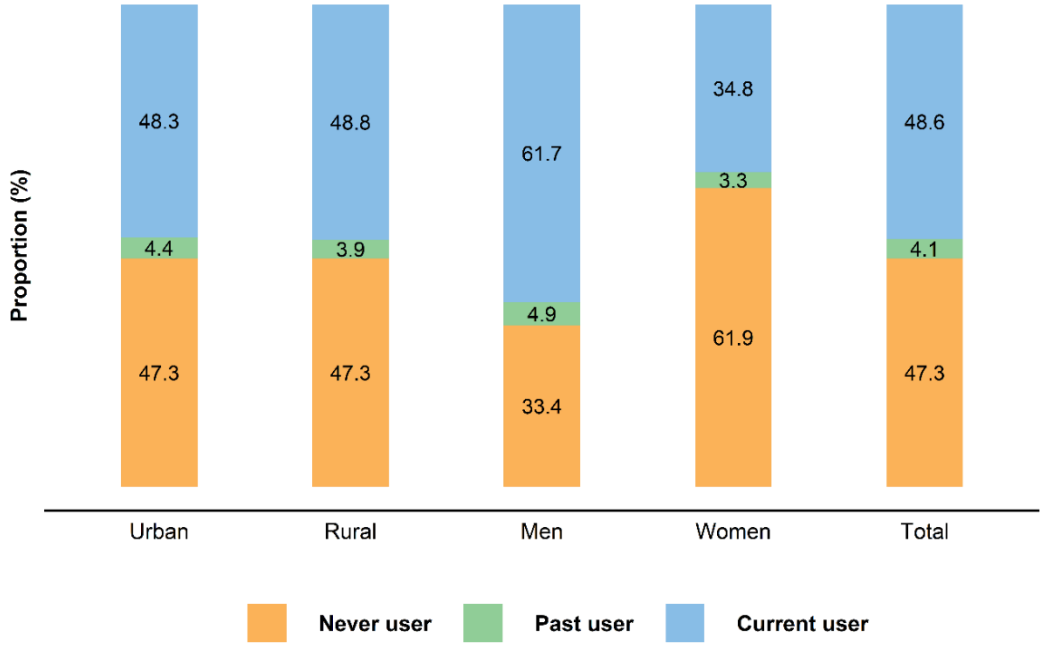
#Includes total number of confirmed pregnancies that a woman has had (includes abortion, still births or live births)

@Combined breastfeeding duration of all live births

3.6 Behavioural Characteristics

3.6.1 Tobacco use

3.6.1.1 - Prevalence of tobacco use (any form) by residence and gender



3.6.1.2 - Prevalence of smoked tobacco use by place of residence and gender(percentage)

	Urban	Rural	Men	Women	Total
Never user*	74.0	73.3	54.1	94.1	73.7
Past user**	4.7	4.3	7.1	1.7	4.4
Current user***	21.3	22.4	38.8	4.2	21.9

** A person who has never smoked/used smokeless tobacco during their lifetime.*

*** Use of smoke and/or smokeless tobacco in the past either daily or occasionally prior to 12 months preceding the survey*

**** Use of any form of tobacco (smoke and/or smokeless) over the last 12 months preceding the survey.*

3.6.1.3 - Smokeless tobacco use by place of residence and gender **(***Percentage***)**

	Urban	Rural	Men	Women	Total
Never user	60.5	61.5	58.0	64.1	61.0
Past user	3.5	3.3	4.0	2.8	3.4
Current user	36.0	35.2	38.0	33.1	35.6

3.6.1.4 - Type of current Tobacco use among adults by place of residence and gender (Percentage)

	Urban	Rural	Men	Women	Total
Only Smoked Tobacco	12.2	13.6	23.7	1.7	13.0
Only Smokeless Tobacco	27.0	26.4	22.9	30.7	26.7
Both Smoked and Smokeless Tobacco	9.1	8.8	15.1	2.4	8.9
Either Smoked or Smokeless Tobacco	48.3	48.8	61.7	34.8	48.6

3.6.1.5 - Current daily tobacco use by place of residence and gender (Percentage)*

	Urban	Rural	Men	Women	Total
Only Smoked Tobacco	11.5	13.0	22.6	1.6	12.4
Only Smokeless Tobacco	24.4	24.3	22.4	26.5	24.4
Both Smoked and Smokeless Tobacco	5.9	6.0	9.9	1.8	5.9
Either Smoked or Smokeless Tobacco	41.8	43.3	54.9	29.9	42.7

** Use of any form of tobacco (smoke and/or smokeless) daily over the last 12 months preceding the survey*

3.6.1.6 - Current daily tobacco use by type of product, place of residence and gender (Percentage)*

	Urban	Rural	Men	Women	Total
Smoked Tobacco					
Bidis	16.2	37.5	29.4	18.1	28.3
Manufactured Cigarettes	52.5	28.1	39.8	27.0	38.6
Hand-rolled Cigarettes	15.4	22.4	18.8	24.9	19.4
Pipes /Chilam	0.2	2.1	1.2	1.3	1.2
Cigars, Cheroots	0.2	0.4	0.4	0.0	0.4
Hookah/No. of Shisha session	0.1	1.0	0.5	1.9	0.6
Local smoked tobacco products	4.0	4.6	3.8	9.3	4.3
Others	0.0	.04	.03	0.0	.03
Smokeless Tobacco					
Chewing tobacco	46.7	51.8	54.1	43.9	49.5
Pan with Z*arda*, Betel with Tobacco quid	39.4	34.4	32.4	41.8	36.7
Tuibur, Tobacco Snuff, by mouth	14.8	14.4	16.7	12.0	14.6
Snuff, by nose	0.1	0.2	0.2	0.1	0.1
Others	0.5	0.4	0.6	0.3	0.5

**Among current users*

3.6.1.7 - Age (in years) at initiation and cessation of different forms of tobacco use by place of residence and gender (Mean)

	Urban	Rural	Men	Women	Total
Age at initiation					
Any form of tobacco*	22.1	20.7	20.6	22.8	21.3
Smoked tobacco	21.0	20.0	20.1	23.0	20.4
Smokeless tobacco	23.4	21.9	22.2	23.1	22.6
Age at cessation					
Any form of tobacco**	37.0	34.9	36.2	35.3	35.9
Smoked tobacco	36.8	34.8	36.1	34.3	35.8
Smokeless tobacco	37.5	35.8	37.5	35.7	36.7

**Minimum age of smoked and smokeless tobacco use*

***Maximum age of smoked and smokeless tobacco use*

3.6.1.8 - Duration (years) of tobacco use among past users by place of residence and gender (Mean)*

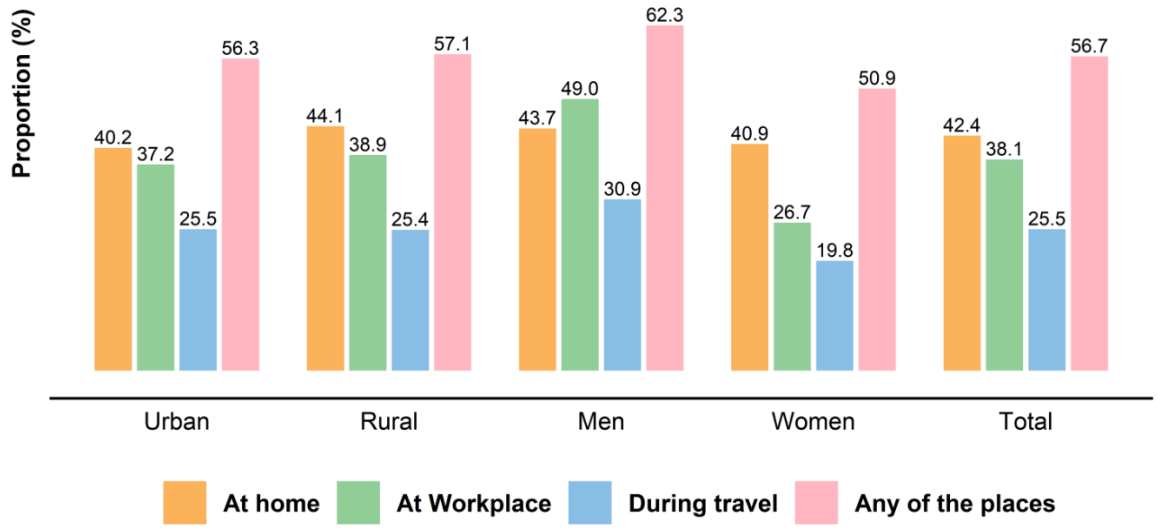
	Urban	Rural	Men	Women	Total
Any form of tobacco	16.5	15.5	16.8	14.0	16.0
Smoked tobacco	17.1	15.6	16.7	14.4	16.3
Smokeless tobacco	15.1	14.6	16.2	13.0	14.9

3.6.1.9 - Personal attempts to quit and advised to quit tobacco use by doctor/health worker by place of residence and gender (Percentage)

	Urban	Rural	Men	Women	Total
Attempted to quit					
Smoked tobacco (among current users)	15.0	15.0	14.8	16.9	15.0
Advised to quit					
Any form of tobacco use	6.9	6.8	8.6	5.0	6.9
Smoked tobacco use	4.2	3.8	6.4	1.5	4.0
Smokeless tobacco use	5.3	5.4	6.1	4.7	5.4

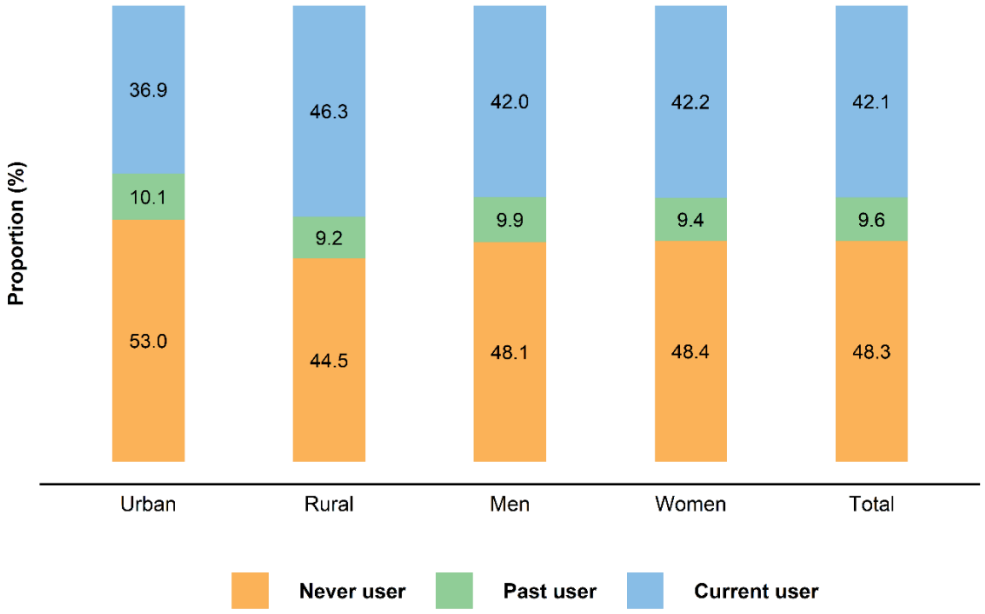
3. 6. 2 Exposure to Second Hand Smoke

3.6.2.1 - Exposure to second hand tobacco smoke in the past 30 days by place of residence and gender (Percentage)



3.6.3 Non – Tobacco Betel Products

*3.6.3.1 - Consumption of betel products without tobacco (any form) * by place of residence and gender (Percentage)*



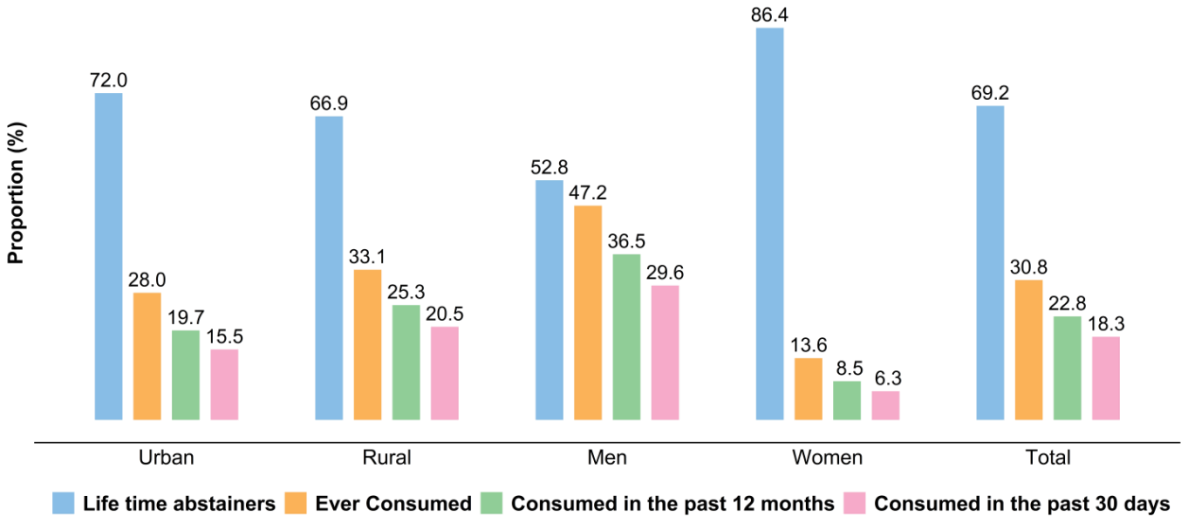
**Includes pan masala, betel quid, areca nut.*

3.6.3.2- *Consumption of different betel products without tobacco by place of residence and gender* (*Percentage*)

	Urban	Rural	Men	Women	Total
Pan Masala					
Never user	78.2	83.9	79.8	83	81.4
Past user	9.2	7.0	9.1	6.9	8.0
Current user	12.6	9.1	11.1	10.1	10.6
Betel quid					
Never user	72.8	78.3	75.1	76.7	75.9
Past user	7.2	5.0	6.7	5.2	5.9
Current user	20.0	16.7	18.2	18.1	18.2
Areca nut					
Never user	62.8	50.1	56	55.5	55.7
Past user	11.9	10.5	11.4	10.8	11.2
Current user	25.3	39.4	32.6	33.7	33.1

3.6.4 Alcohol Use

*3.6.4.1 - Alcohol use *by place of residence and gender (Percentage)*



**Lifetime abstainer: A person who has never consumed one or more drink of any type of alcohol in their lifetime.*

Ever consumed: A person who has consumed any of the alcoholic products (such as beer, wine, whisky, locally prepared alcohol etc.) at least once in their lifetime.

Current alcohol use: Consumption of alcohol in the last 12 months preceding the survey.

3.6.4.2 - Age of initiation of Alcohol consumption by place of residence and gender (Mean)

	Urban	Rural	Men	Women	Total
Age of initiation of Alcohol consumption	21.7	21.0	21.1	21.9	21.3

3.6.4.3 - Patterns of alcohol use in the past 12 months by place of residence and gender (Percentage)*

	Urban	Rural	Men	Women	Total
Unable to stop drinking					
Never	70.5	72.7	70.5	78.3	71.9
Daily/ almost daily	4.1	4.5	4.5	3.7	4.4
Weekly	7.7	8.4	8.9	4.5	8.1
Monthly	7.3	5.1	6.3	4.3	6.0
Less than Monthly	9.0	8.4	8.7	8.1	8.6
Failed to do usual routine work due to drinking habit					
Never	81.5	81.4	79.6	89.7	81.5
Daily/ almost daily	0.8	1.3	1.1	1.0	1.1
Weekly	3.2	4.5	4.6	1.3	4.0
Monthly	3.4	2.7	3.2	2.1	3.0
Less than Monthly	8.8	6.7	8.3	4.0	7.5
Need of first drink in the morning					
Never	87.4	86.2	85.2	93.1	86.6
Daily/ almost daily	1.0	1.5	1.3	1.4	1.3
Weekly	1.8	3.6	3.3	1.3	3.0
Monthly	2.6	2.1	2.6	1.0	2.3
Less than Monthly	4.6	4.3	4.8	2.4	4.4

**Among those who consumed alcohol in the past 12 months*

3.6.4.4 - Heavy episodic drinking among adults in the past 30 days by age category, place of residence and gender (Percentage)*

≥6 standard drinks **	Urban	Rural	Men	Women	Total
18- 44 Years	8.9	10.7	17.3	2.4	9.9
45 – 69 Years	7.3	12.0	15.6	3.3	9.9
70 and above	2.6	4.8	5.8	1.9	3.8
18+ years	8.3	10.8	16.4	2.6	9.7

**Drinking ≥6 standard drinks in a single drinking occasion*
***Contains a net pure alcohol content of 10 gm*

3.6.4.5 - Received advice to avoid alcohol use by doctor/health worker in the last one year by age category, place of residence and gender (Percentage)

	Urban	Rural	Men	Women	Total
18- 44 Years	2.4	2.7	4.0	1.1	2.6
45 – 69 Years	4.2	3.7	6.3	1.3	4.0
70 and above	3.3	3.0	4.7	1.5	3.1
18+ years	2.9	3.0	4.6	1.2	2.9

3.6.5 Diet

3.6.5.1 - Number of days of consumption of fruits, vegetables and fruit or vegetable juices in a week by place of residence and gender (Mean)

	Urban	Rural	Men	Women	Total
Fruits	2.3	1.9	2.0	2.2	2.1
Vegetables	5.9	5.7	5.8	5.9	5.8
Fruits and/or Vegetables	0.9	0.8	0.8	0.9	0.8
Fruit or Vegetable juice	6.0	5.8	5.8	5.9	5.9

3.6.5.2 - Number of servings of fruits, vegetables and fruit or vegetable juices consumed per day by place of residence and gender (Mean)

	Urban	Rural	Men	Women	Total
Fruits	0.4	0.4	0.4	0.4	0.4
Vegetables	1.9	1.8	1.9	1.9	1.9
Fruits and/or Vegetables*	0.2	0.1	0.1	0.2	0.1
Fruit or Vegetable Juice	2.4	2.2	2.3	2.3	2.3

**One standard serving of fruits and/or vegetables is equivalent to 80-100 grams.*

The quantity of intake was measured by servings; for vegetables, this refers to one cup of raw, leafy green vegetables (spinach, salad etc.), half cup of other vegetables, cooked or raw (tomatoes, pumpkin, beans etc.), or a half cup of vegetable juice.

For fruits, this refers to one medium-sized piece of fruit (banana, apple etc.) or a half cup of raw, cooked or canned fruit.

*** Includes fresh juice made at home/shop.*

3.6.5.3 - Number of days of Consumption of different meat items (any form) in a typical week by place of residence and gender (Mean)

	Urban	Rural	Men	Women	Total
Birds/Poultry	1.6	1.6	1.6	1.6	1.6
Fish	2.0	1.9	2.0	1.9	1.9
Red Meat	1.7	1.7	1.7	1.7	1.7
Either Birds/Poultry or Fish or Red Meat*	2.3	2.2	2.3	2.3	2.3

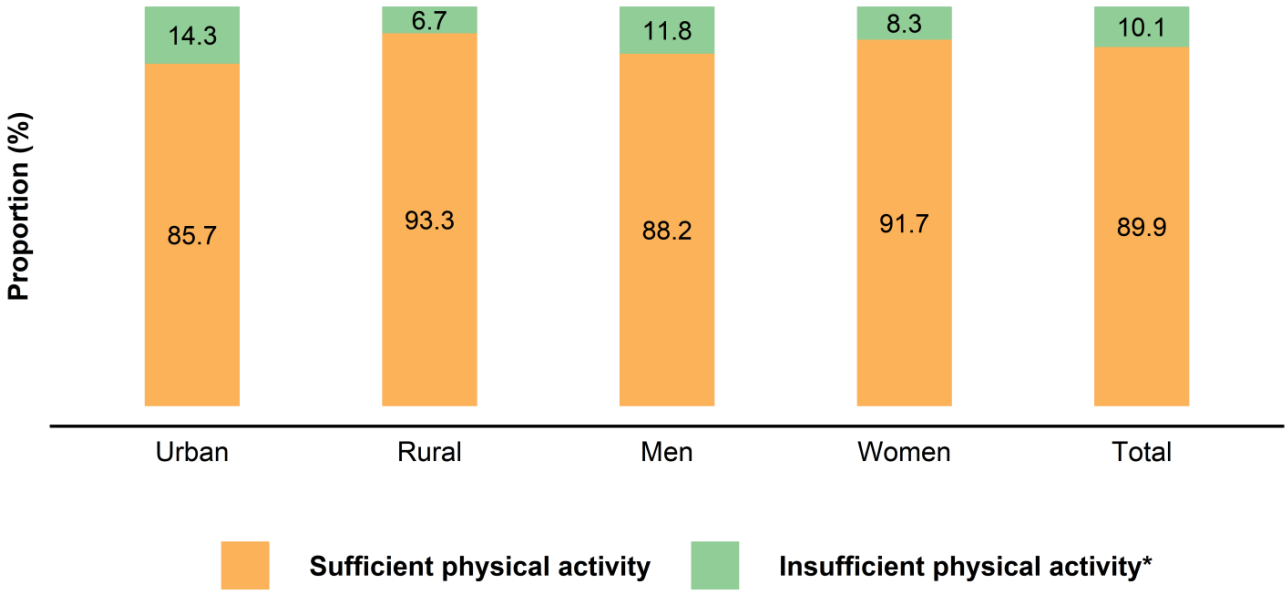
**If an adult consumed more than one meat item, the maximum number of days for any one item was considered*

3.6.5.4 - Consumption of preserved/salt curated and fermented products among adults by place of residence and gender

	Urban	Rural	Men	Women	Total
Percentage of consumption	75.5	75.0	74.4	76.0	75.2
Mean number of days of consumption	2.9	3.2	3.0	3.1	3.1

3.6.6 Physical Activity

3.6.6.1 - Levels of physical activity by place of residence and gender (Percentage)



**Insufficient physical activity less than 150 minutes of moderate – intensity physical activity per week OR <75 minutes of vigorous – intensity physical activity per week OR an equivalent combination of moderate – and vigorous intensity physical activity accumulating at least 600 MET minutes per week*

3.6.6.2 - Nature of physical activity in which the participants are engaged by place of residence and gender (Percentage)

	Urban	Rural	Men	Women	Total
Routine work at home/workplace					
Vigorous-intensity activity*	19.2	47.9	43.2	26.6	35.1
Moderate intensity activity**	77.5	83.1	69.9	91.9	80.6
Recreational/leisure activities					
Vigorous-intensity activity	4.4	5.9	9.7	0.6	5.2
Moderate intensity activity	19.2	10.7	18.7	10.0	14.5

** An activity which requires hard physical effort, and causes one to breathe much harder than normal.*

*** An activity that requires moderate physical effort and causes one to breathe somewhat harder than normal.*

3.6.6.3 -Proportion of work, transport and leisure activity contributing to total activity by place of residence and gender (Percentage)

3.6.6.4 - Received Advice to increase physical activity by doctor/health worker in the last one year by age category, place of residence and gender **(***Percentage***)**

	Urban	Rural	Men	Women	Total
18- 44 Years	8.9	8.0	7.8	8.9	8.4
45 – 69 Years	11.8	8.2	11.2	8.3	9.8
70 and above	9.5	6.3	9.3	6.1	7.7
18+ years	9.6	8.0	8.8	8.7	8.7

3.6.7 High risk behaviour and Sexually Transmitted Infections

3.6.7.1 - Responses to questions on sexual behaviour by place of residence and gender **(***Percentage***)**

	Urban	Rural	Men	Women	Total
Responded	63.1	61.0	59.3	64.6	61.9

3.6.7.2 - Age at first sexual intercourse by place of residence and gender **(***Percentage***)**

	Urban	Rural	Men	Women	Total
<15 Years	0.7	0.8	0.1	1.4	0.8
15 – 19 Years	24.1	31.6	12.8	43.1	28.2
20 -24 Years	37.9	39.1	38.4	38.7	38.5
> 25 Years	37.3	28.4	48.7	16.9	32.5

3.6.7.3 - Number of sexual partners by place of residence and gender **(***Percentage***)**

	Urban	Rural	Men	Women	Total
Single sexual partner	77.4	82.2	75.9	84.5	80.1
Multiplesexual partner*	2.9	3.3	4.9	1.3	3.1

Two or more sexual partners

3.6.7.4 - Mean age at first sexual intercourse by place of residence and gender (*Mean*)

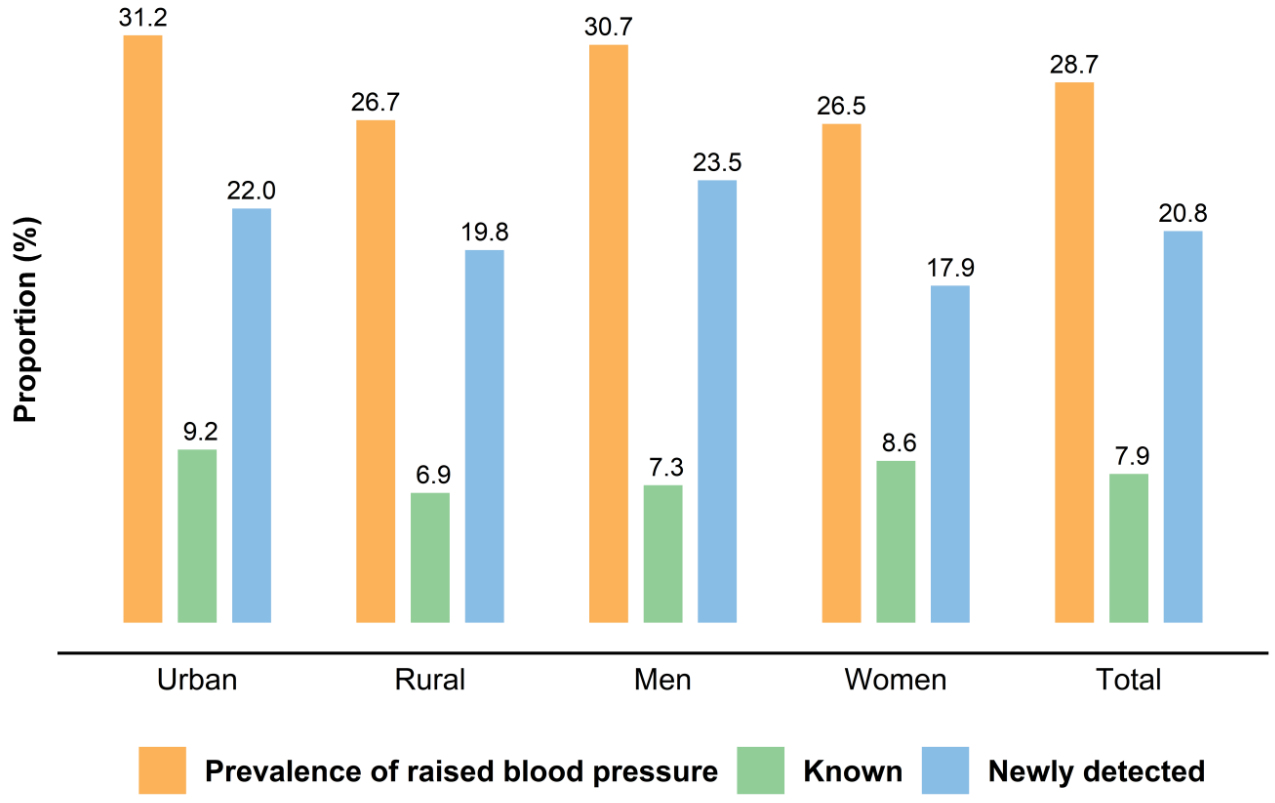
The mean age at first sexual intercourse was 22.6 years, which was slightly lower among women (20.9 years) than men (24.5 years)

3.6.7.5 - High risk behaviour and Sexually Transmitted Infection (STI) among adults by place of residence and gender (Percentage)

	Urban	Rural	Men	Women	Total
Ever had STI	0.4	0.8	0.3	1.1	0.7
Type of symptoms					
Urethral /vaginal discharge	51.3	48.9	28.8	54.6	49.6
Blisters or ulcers (sores) on the mouth, lips, genitals, anus, or surrounding area	6.4	8.8	19.7	5.2	8.1
Burning or pain during urination	45.4	50.1	81.8	40.6	48.7
Warts or bumps on the genitals, anus, or surrounding areas	0.8	5.0	1.3	4.3	3.7
Small, dimpled bumps or lesions on the skin	14.1	17.9	7.2	19.1	16.7

3. 7 Blood Pressure Measurement

*3.7.1 - Raised Blood Pressure *by place of residence and gender (Percentage)*



**Raised Blood Pressure – Systolic BP≥140 and/or diastolic blood Pressure ≥90*

3.7.2- Blood Pressure Categories among those measured by place of residence and gender (Percentage)

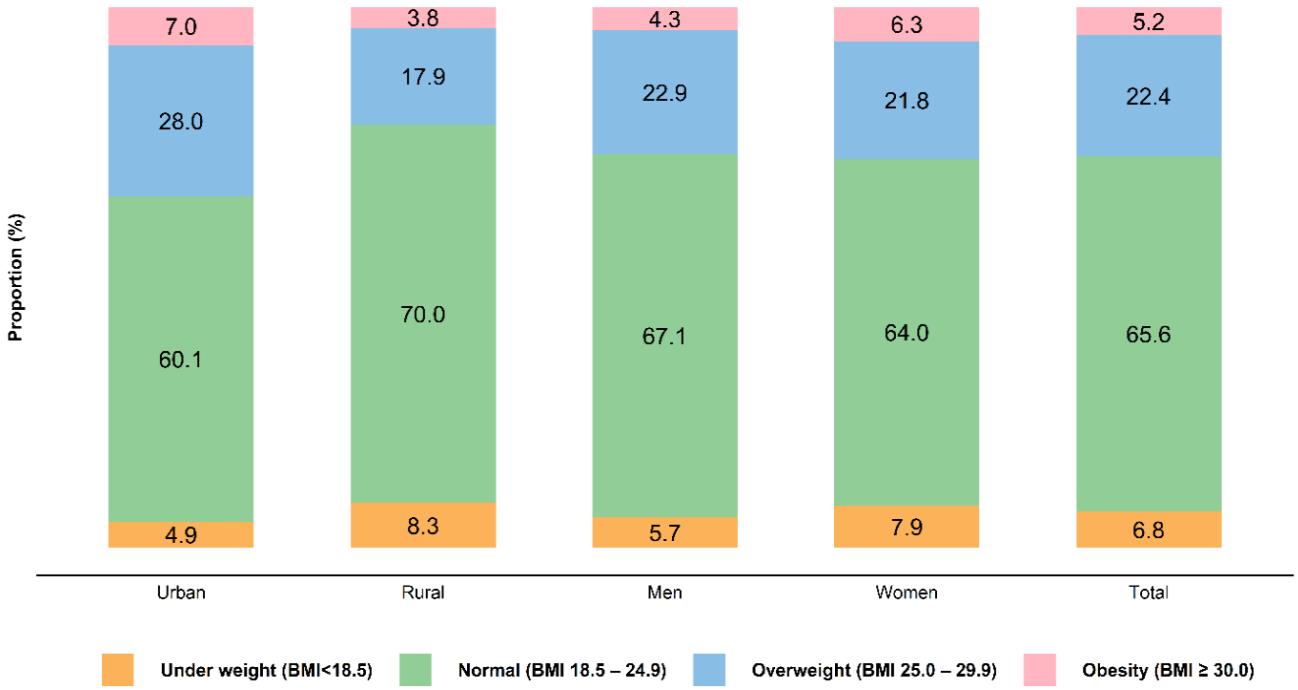
	Urban	Rural	Men	Women	Total
Normal	20.7	23.2	15.8	28.7	22.1
Pre - Hypertension	50.4	51.9	55.1	47.2	51.2
Hypertension – Stage 1	20.8	18.1	21.2	17.3	19.3
Hypertension – Stage 2	8.1	6.8	7.9	6.8	7.4

*** Normal-(SBP <120, DBP<80); Pre – hypertension (SBP:120-139,DBP: 80-89); Hypertension Stage 1(SBP:140 -159, DBP:90-99); Hypertension Stage 2(SBP≥160; DBP≥100) among measured.*

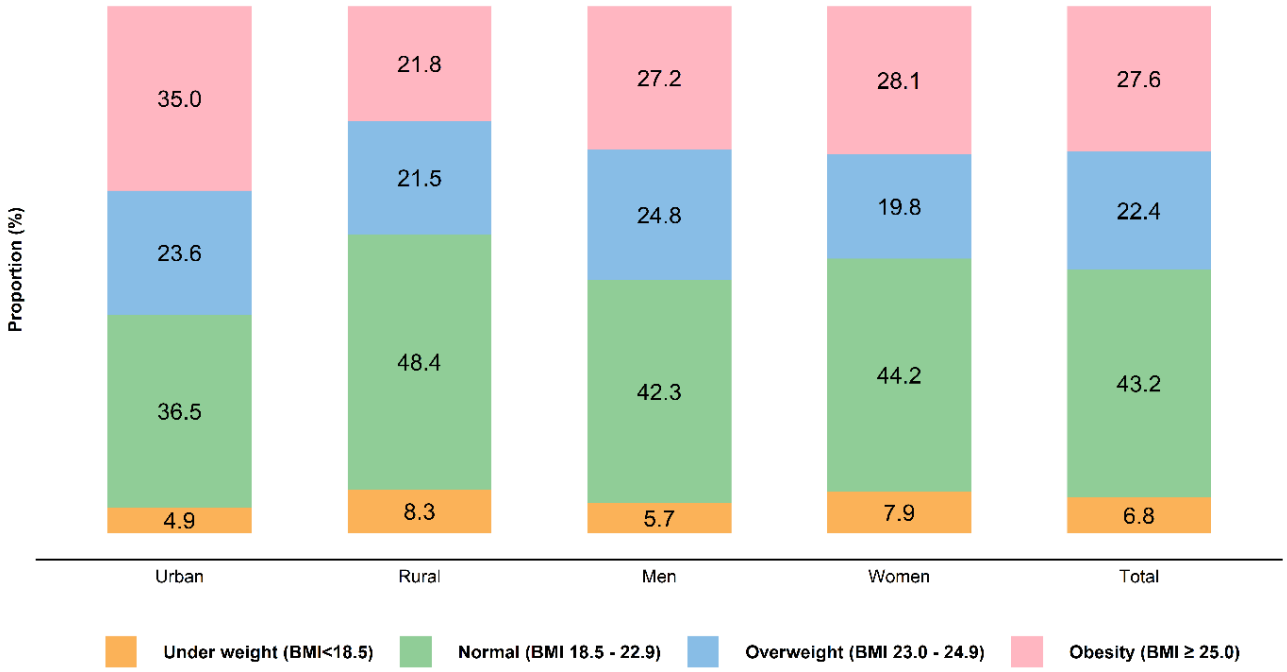
3.8 Physical Measurement

3.8.1 - BMI categories based on WHO and Asian cut off by place of residence and gender (Percentage)

3.8.1 (a) - BMI categories (WHO cut off) by area of residence and gender (Percentage)



3.8.1 (b) - BMI categories (Asian cut off) by area of residence and gender (Percentage)



3. 8.2 - Prevalence of Overweight (including obesity) and Obesity by place of residence and gender (Percentage)

	Urban	Rural	Men	Women	Total
Overweight (BMI ≥25.0)	35.0	21.8	27.2	28.1	27.6
Obese (BMI ≥30.0)	7.0	3.8	4.3	6.3	5.2

3.8.3 - Central Obesity by age categories, place of residence and gender (Percentage)*

	Urban	Rural	Men	Women	Total
18- 44 Years	41.8	33.1	19.3	55.6	37.0
45 – 69 Years	53.9	37.3	29.0	62.8	44.8
70 and above	40.0	32.4	24.5	47.0	35.7
18+ years	44.8	34.1	22.0	57.0	38.9

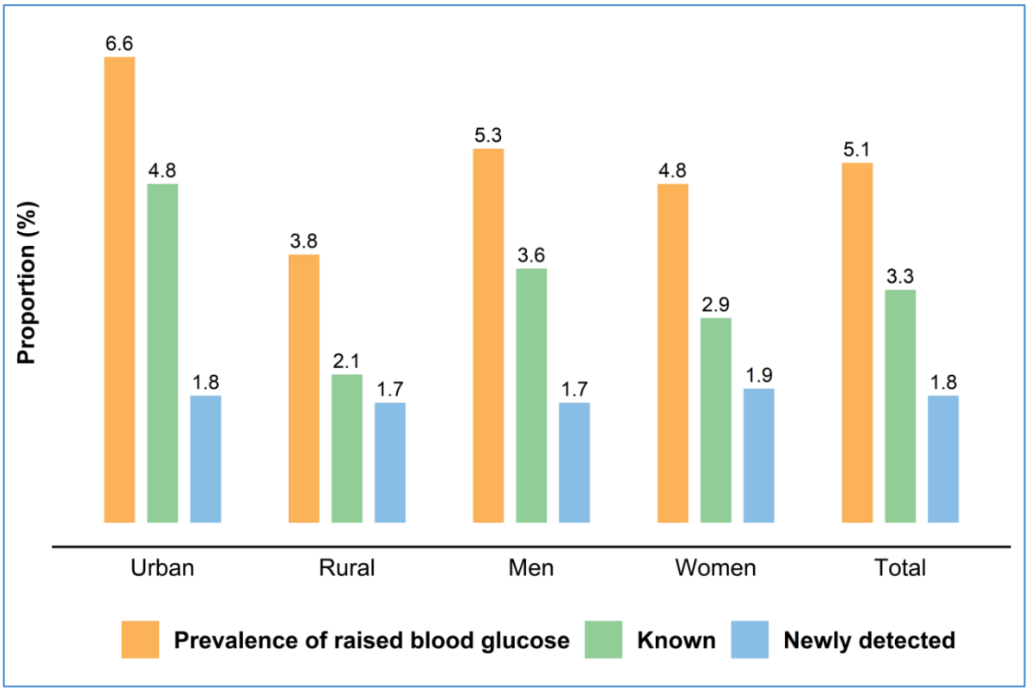
** A waist circumference of ≥90cm in males and ≥80cm in females (as per South Asia Pacific Guidelines)*

3.8.4 - Received Advice to maintain healthy body weight by doctor or health worker in the last one year by age category, place of residence and gender (Percentage)

	Urban	Rural	Men	Women	Total
18- 44 Years	9.5	6.1	7.9	7.3	7.6
45 – 69 Years	11.6	6.7	9.7	8.0	8.9
70 and above	7.7	7.0	8.9	5.7	7.3
18+ years	10.0	6.2	8.4	7.4	7.9

3.9 Blood Glucose Measurement

3.9.1 - Raised fasting blood glucose levels (mg/dl) by place of residence and gender (Percentage)



**Raised fasting blood glucose - ≥126 mg/dl including those on medication for diabetes*

3.9.2 - Fasting blood glucose levels (mg/dl) among those measured by place of residence and gender (Percentage)

	Urban	Rural	Men	Women	Total
<100 mg/dl	88.9	90.5	89.5	90.0	89.8
100 – 109 mg/dl	4.0	4.2	4.1	4.2	4.1
110 – 125 mg/dl	2.8	2.6	2.8	2.6	2.7
≥126 mg/dl	4.3	2.7	3.6	3.2	3.4

3.10 Clustering of risk factors

Clustering of at least ≥3 risk factors among adults by place of residence and gender (Percentage)*

	Urban	Rural	Men	Women	Total
18- 44 Years	30.7	21.0	31.8	18.5	25.3
	(28.6-32.9)	(19.1-22.9)	(29.7-34.0)	(16.9-20.3)	(23.8-26.7)
45 – 69 Years	52.6	38.4	48.2	40.8	44.8
	(49.5-55.6)	(36.0-40.8)	(45.9-50.6)	(37.6-44.1)	(42.7-46.8)
70 and above	58.6	50.8	58.0	50.4	54.2

	(51.3-65.5)	(45.2-56.4)	(52.0-63.7)	(43.9-56.9)	(49.6-58.6)
18+ years	37.3	26.5	37.1	25.2	31.3
	(35.2-39.4)	(24.7-28.3)	(35.2-39.0)	(23.4-27.0)	(29.9-32.7)

**Clustering of risk factors – Presence of ≥3 risk factors like daily tobacco use, inadequate fruits and/or vegetable consumption, insufficient physical activity, overweight(≥25.0 Kg/m^2), raised blood pressure and raised fasting blood glucose including those on medication.*

3.11 Health Seeking Behaviour and Management Indicators

3.11.1 Blood Pressure

3.11.1.1 - Measurement of blood pressure by place of residence and gender (Percentage)

	Urban	Rural	Men	Women	Total
Never measured in life	21.9	32.1	33.1	21.7	27.6
Measured ever in life	78.1	67.9	66.9	78.3	72.4
Within past 1 year	59.4	45.1	46.1	57.0	51.4
> 1 year	18.7	22.9	20.7	21.3	21.0

3.11.1.2 - Awareness, advice on treatment, adherence to treatment and control of blood pressure among those with raised blood pressure by place of residence and gender (Percentage)*

	Urban	Rural	Men	Women	Total
Received advice for treatment	84.6	75.9	80.7	80.1	80.4
On treatment*	55.5	39.1	47.0	48.1	47.6
Adherence to treatment**	45.3	28.6	37.1	37.4	37.3
Blood pressure under control ***	27.0	26.2	24.1	28.8	26.6

** Taken medication for at least one day in the last two weeks*

***Among those on treatment, consistently took treatment as prescribed over the last two weeks*

****Among those who known to have raised blood pressure*

3.11.1.3 - Source of measurement and current treatment for raised blood pressure by place of residence and gender (Percentage)

	Urban	Rural	Men	Women	Total
Source of measurement of blood pressure*					
Government screening camp/Health facility	51.0	74.0	61.4	62.8	62.2
Private/NGO screening camp/Health facility	49.0	26.0	38.6	37.2	37.8
Current source of consultation for raised blood pressure					
Allopathic doctor from Public sector	37.9	42.6	38.2	42.0	40.2
Allopathic doctor from Private/ NGO health facility	37.1	15.5	27.7	25.8	26.7

**Among those who got it measured in the last 1 year*

3.11.1.4 - Received advice to check blood pressure by doctor/health worker in the last one year by age category, place of residence and gender (Percentage)

	Urban	Rural	Men	Women	Total
18- 44 Years	66.7	56.4	54.4	67.6	60.9
45 – 69 Years	75.4	62.7	66.1	71.1	68.4
70 and above	80.8	70.4	74.3	75.5	74.9
18+ years	69.4	58.5	58.2	68.8	63.3

3.11.2 Raised Blood Glucose

3.11.2.1 - Measurement of blood glucose by place of residence and gender (Percentage)

	Urban	Rural	Men	Women	Total
Never measured in life	53.3	65.1	66.2	53.2	59.9
Measured ever in life	46.7	34.9	33.8	46.8	40.1
Measured in the past					
Within 1year	32.1	20.1	21.6	29.5	25.4
> 1 year	14.6	14.8	12.2	17.3	14.7

3.11.2.2 - Awareness, advice and on treatment, adherence to treatment and control of blood glucose among those with raised blood glucose by place of residence and gender (Percentage)*

	Urban	Rural	Men	Women	Total
Received advice for treatment	89.9	78.7	83.3	89.4	86.0
On treatment*	69.0	55.1	61.3	67.7	64.1
Adherence to treatment**	60.0	47.0	52.0	59.8	55.4
Blood glucose under control ***	49.3	54.9	47.6	56.0	51.3

** Taken medication for at least one day in the last two weeks*

***Among those on treatment, consistently took treatment over the last two weeks*

****Among those who are already aware that they have raised blood glucose, (Fasting Blood Glucose level≤126 mg/dl)*

3.11.2.3 - Source of measurement and current consultation for raised blood glucose by place of residence and gender (Percentage)

	Urban	Rural	Men	Women	Total
Source of measurement of blood glucose*					
Government screening camp/Health facility	49.7	74.5	57.6	62.9	60.6
Private/NGO screening camp/Health facility	50.3	25.5	42.4	37.1	39.4
Current consultation for raised blood glucose					
Allopathic doctor from Public sector	42.2	41.2	38.8	45.8	41.9
Allopathic doctor from Private/ NGO health facility	40.1	28.6	35.9	36.2	36.0

**Among those who got it measured in the last 1 year*

3.11.2.4 - Advised to check blood glucose by doctorlhealth worker in the last one year by age category, place of residence and gender (Percentage)

	Urban	Rural	Men	Women	Total
18- 44 Years	37.5	28.8	26.0	39.5	32.7
45 – 69 Years	56.6	36.2	43.5	47.5	45.4
70 and above	63.9	43.8	51.7	53.3	52.5
18+ years	43.3	31.2	31.5	42.0	36.6

3.12 Cancer Screening

3.12.1 - Level of awareness and source of information about cancer screening by place of residence and gender (Percentage)

	Urban	Rural	Men	Women	Total
Awareness levels by age groups					
18- 29 Years	26.2	21.2	22.4	24.3	23.4
30 – 49 Years	33.1	20.1	25.4	26.3	25.9
50- 69 Years	28.6	18.2	24.7	20.7	22.8
70 and above	22.8	12.9	18.5	15.8	17.1
18+ years	30.2	19.7	24.4	24.4	24.4
Source of information*					
TV/Newspaper/social media	84.6	75.0	84.1	76.3	80.3
Friends/family	84.6	78.6	81.1	82.7	81.9
Health worker	57.9	58.2	58.8	57.3	58.0
Health awareness camps	29.9	20.4	27.9	23.3	25.7

**Among those who are aware of cancer screening.*

3.12.2 - Adults who had ever undergone oral/breast/cervical cancer screening by place of residence (Percentage)

	Urban	Rural	Total
Cervical cancer	1.7	0.5	1.0
Breast cancer*	1.5	0.4	0.9
Oral cancer	0.6	0.2	0.4

**Among women more than 30 years of age*

3.12.3 - Methods of breast cancer screening by place of residence (Percentage)

Screening for breast cancer	Urban	Rural	Total
Forms of screening*			
Only clinical breast examination by doctor / health care professional	93.8	50.7	82.7
Only Ultrasound of breast or mammogram	45.6	38.3	43.8
Performed breast self-examination	49.7	34.3	45.7

**Among those who reported to have undergone breast cancer screening ever in life.*

3.12.4 - Methods of Cervical cancer screening by place of residence (Percentage)

	Urban	Rural	Total
VIA	2.2	20.1	17.2
PAP	83.0	59.1	82.8
HPV-DNA	0.0	5.4	1.4
Others	0.0	2.6	0.7

**Among those who reported to have undergone cervical cancer screening ever in life.*

3.12.5 - Received advice to screen for cancer by doctor/health worker in the last one year by place of residence and gender (Percentage)

	Urban	Rural	Men	Women	Total
Oral Cancer	0.6	0.2	0.3	0.4	0.3
Breast Cancer*	1.5	0.8	0.0	1.1	1.1
Cervical Cancer*	2.0	0.4	0.0	1.1	1.1

**Among women respondents*

C. Health Facility Assessment

3.13 Public Primary Health Care Centres*

3.13.1 - Infrastructure and type of available services

	Urban (n=35)	Rural (n =186)	Total(N=221)
Types of services			
Outpatient services	33 (94.3)	182 (97.8)	215 (97.3)
In patient services	12 (34.3)	121 (65.1)	133 (60.2)
Emergency services	21 (60.0)	147 (79.0)	168 (76.0)
Availability of functional Telephone facility	14 (100.0)	60 (96.8)	74 (97.4)
Availability of ambulance facility[1]	14 (40.0)	123 (66.1)	137 (62.0)
Electricity and Functional electricity back up	20 (57.1)	129 (69.4)	149 (7.4)

** First point of contact with a qualified doctor in the public sector, providing preventive, promotive and curative health care.*

[1] Includes ambulance owned by health center, centralised ambulance services, outsourced and hired as and when required

3.13.2 - Availability of cancer related services

	Urban (n=35)	Rural (n =186)	Total(N=221)
Written standard treatment guidelines under NPCDCS availability	19 (54.3)	79 (42.5)	98 (44.3)
Cancer screening availability			
Oral Cancer	12 (34.3)	49 (26.3)	61 (27.6)
Cervical Cancer	9 (25.7)	36 (19.4)	45 (20.4)
Breast Cancer	14 (40.0)	47 (25.3)	61 (27.6)
All three cancers	7 (20.0)	35 (18.8)	42 (19.0)
Method of screening cancer			
Organized Screening*	7 (20.0)	31 (16.7)	38 (17.2)
Opportunistic screening**	3 (8.6)	19 (10.2)	22 (10.0)
Place of referral of patients found positive after screening			
CHC	0 (0.0)	4 (2.2)	4 (1.8)
DH	8 (22.9)	33 (17.7)	41 (18.6)
Tertiary Care Hospital	6 (17.1)	12 (6.5)	18 (8.1)
Private Health facility	0 (0.0)	1 (0.5)	1 (0.5)
Availability of Physiotherapy facility	2 (5.7)	7 (3.8)	9 (4.1)

** Systematic screening of all persons in a defined target group*

*** A person's participation results from a referral made by a healthcare provider or based on their own choice.*

3.13.3 - Counselling facilities for risk behaviour

	Urban (n=35)		Rural (n =186)		Total(N=221)	
	In house	In Vicinity	In house	In Vicinity	In house	In Vicinity
Availability of Counselling facilities for risk behaviour through counsellor or specialised personnel*						
Tobacco cessation	9 (25.7)	6 (17.1)	65 (34.9)	24 (12.9)	74 (33.5)	30 (13.6)
Dietary Modification	10 (28.6)	4 (11.4)	49 (26.3)	20 (10.8)	59 (26.7)	24 (10.9)
Physical Activity	9 (25.7)	4 (11.4)	44 (23.7)	17 (9.1)	53 (24.0)	21 (9.5)
Alcohol Cessation	11 (31.4)	4 (11.4)	62 (33.3)	24 (12.9)	73 (33.0)	28 (12.7)

**Available in-house and in vicinity (within 5 km)*

3.13.4 - Availability of IEC material on cancer

	Urban (n=35)	Rural (n =186)	Total
IEC materials related to Cancer displayed/available in the patient waiting room/outpatient department			
Posters	27 (77.1)	109 (58.6)	136 (61.5)
Videos	3 (8.6)	5 (2.7)	8 (3.6)
Pamphlets	11 (31.4)	61 (32.8)	72 (32.6)
Booklets	10 (28.6)	26 (14.0)	36 (16.3)

3.13.5 Availability of Human Resources						
Staff	**Urban (n=35)**		**Rural (n =186)**		**Total(N=221)**	
	Proportion of facilities reporting the availability of Human Resources	Proportion trained for NPCDCS/ NHM (NCD related)/State program	Proportion of facilities reporting the availability of Human Resources	Proportion trained for NPCDCS/NHM (NCD related)/State program	Proportion of facilities reporting the availability of Human Resources	Proportion trained for NPCDCS/ NHM (NCD related)/State program
Medical Officer (MBBS)	34 (97.1)	19 (54.3)	168 (90.3)	76 (40.9)	202 (91.4)	95 (43.0)
AYUSH Medical Officer	12 (34.3)	6 (17.1)	81 (43.5)	14 (7.5)	93 (42.1)	20 (9.0)
Staff Nurse	31 (88.6)	11 (31.4)	172 (92.5)	40 (21.5)	203 (91.9)	51 (23.1)
Auxiliary Nurse Midwife (ANM)	8 (22.9)	1 (2.9)	65 (34.9)	14 (7.5)	73 (33.0)	15 (6.8)
Lady Health Visitor/ Female Health Assistant/PHN	12 (34.3)	0 (0.0)	48 (25.8)	2 (1.1)	60 (27.1)	2 (0.9)
Male Health Assistant	26 (74.3)	3 (8.6)	124 (66.7)	21 (11.3)	150 (67.9)	24 (10.9)
Accountant cum data entry operator	34 (97.1)	2 (5.7)	148 (79.6)	22 (11.8)	182 (82.4)	24 (10.9)
Pharmacist	31 (88.6)	3 (8.6)	147 (79.0)	25 (13.4)	178 (80.5)	28 (12.7)
Lab Technician	6 (17.1)	1 (2.9)	42 (22.6)	3 (1.6)	48 (21.7)	4 (1.8)
Health educator	16 (45.7)	1 (2.9)	86 (46.2)	25 (13.4)	102 (46.2)	26 (11.8)
Cold Chain & Vaccine Logistic Assistant	26 (74.3)	3 (8.6)	146 (78.5)	18 (9.7)	172 (77.8)	21 (9.5)

3.13.6 Availability of Laboratory procedures and equipment &supplies

	Urban (n=35)	Rural (n =186)	Total(N=221)
Availability of Laboratory [1]			
Routine investigations[2]	34 (97.1)	165 (88.7)	199 (90.0)
Cancer screening[3]	8 (22.9)	27 (14.5)	35 (15.8)
Equipment & supplies available in stock			
General[4]	35 (100.0)	184 (98.9)	219 (99.1)
Cancer screening[5]	26 (74.3)	133 (71.5)	159 (71.9)

1. *Includes generally available in house, free of cost; generally available in house, on payment; and outsourced, but paid for by the program*
2. *Includes blood glucose, urine routine, haemoglobin and total leucocyte count*
3. *For cervical cancer screening: Visual Inspection with Acetic Acid (VIA)*
4. *Includes availability of at least one of each adult weighing scale, Stadiometer/Wall markings for height, Measuring tape, Stethoscope, B.P Apparatus and Glucometer*
5. *Includes availability of both Vaginal Speculum (Cusco's and Sims) and Torch / Examination light*

3.14 Public Secondary Health Care Facilities

3.14.1 - Infrastructure and available services

	CHC (n=98)	DH(n=42)
Location		
Rural	62 (63.3)	8 (19.0)
Urban	36 (36.7)	34 (81.0)
Types of services		
Outpatient services	97 (99.0)	42 (100.0)
In patient services	87 (88.8)	41 (97.6)
Emergency services	92 (93.9)	41 (97.6)
Intensive Care Unit (ICU) or Cardiac Care Unit	4 (4.1)	17 (40.5)
Availability of functional Telephone facility	48 (49.0)	23 (54.8)
Availability of ambulance facility[1]	93 (94.9)	39 (92.9)
Electricity and Functional electricity back up	93 (94.9)	41 97.6)

[1] *Includes ambulance owned by health center, centralised ambulance services, outsourced and hired as and when required*

3.14.2 - Availability of Cancer related services

	CHC (n=98)	DH(n=42)
Written standard treatment guidelines under NPCDCS availability	62 (78.5)	24 (80.0)
Cancer screening availability		
Oral Cancer	21 (21.4)	17 (40.5)
Cervical Cancer	20 (20.4)	16 (38.1)
Breast Cancer	21 (21.4)	16 (38.1)
All three cancers	20 (20.4)	15 (35.7)
Method of detecting cancer		
Organised Screening	9 (9.2)	10 (23.8)
Opportunistic screening	11 (11.2)	13 (31.0)
Management of patients with Cancer		
Fixed days/day in a week	3 (3.1)	4 (9.5)
Seen daily, no dedicated day	14 (14.3)	12 (28.6)
All are referred/Not managed	5 (5.1)	2 (4.8)
Availability of Day care facility for management of cancer patients (for Chemotherapy)	6 (6.7)	9 (24.3)

3.14.3 - Availability of Counselling facilities for risk behaviour and Cancer related IEC materials

	CHC (n=98)	DH(n=42)
Availability of Counselling facilities for risk behaviour through counsellor or specialised personnel*		
Tobacco cessation	47 (48.0)	31 (73.8)
Dietary Modification	30 (30.6)	23 (54.8)
Physical Activity	25 (25.5)	27 (64.3)
Alcohol Cessation	44 (44.9)	28 (66.7)
IEC materials related to Cancer displayed/available in the patient waiting room/outpatient department		
Posters	77 (78.6)	29 (69.0)
Videos	3 (3.1)	7 (16.7)
Pamphlets	41 (41.8)	23 (54.8)
Booklets	25 (25.5)	17 (40.5)
Others	1 (1.0)	1 (2.4)

**Available in-house and in vicinity(within 5 km)*

3.14.4 - Availability of Human Resources (Medical Staff)

	CHC (n=98)		DH(n=42)	
	Proportion of facilities reporting the availability of Human Resources	**Proportion trained for NPCDCS/NHM (NCD related)/State program**	**Proportion of facilities reporting the availability of Human Resources**	**Proportion trained for NPCDCS/NHM (NCD related)/State program**
Medicine	39 (39.8)	17 (17.3)	34 (81.0)	23 (54.8)
Surgery	17 (17.3)	3 (3.1)	24 (57.1)	9 (21.4)
Gynaecology	36 (36.7)	9 (9.2)	32 (76.2)	16 (38.1)
Radiology	21 (21.4)	5 (5.1)	23 (54.8)	5 (11.9)
Pathology	30 (30.6)	8 (8.2)	26 (61.9)	9 (21.4)
General duty Medical Officer	97 (99.0)	46 (46.9)	39 (92.9)	20 (47.6)
AYUSH	69 (70.4)	22 (22.4)	34 (81.0)	8 (19.0)
Paediatrics	27 (27.6)	2 (2.0)	30 (71.4)	11 (26.2)

3.14.5 - Availability of Human Resources (paramedical I other Staff)

	CHC (n=98)		DH(n=42)	
	Proportion of facilities reporting the availability of Human Resources	**Proportion trained for NPCDCS/NHM (NCD related)/State program**	**Proportion of facilities reporting the availability of Human Resources**	**Proportion trained for NPCDCS/NHM (NCD related)/State program**
Staff Nurse	98 (100.0)	54 (55.1)	41 (97.6)	20 (47.6)
Pharmacist	97 (99.0)	13 (13.3)	39 (92.9)	8 (19.0)
Lab Technician	95 (96.9)	19 (19.4)	41 (97.6)	14 (33.3)
Physiotherapist	19 (19.4)	6 (6.1)	30 (71.4)	10 (23.8)
Radiographer	58 (59.2)	5 (5.1)	33 (78.6)	3 (7.1)
O.T technician	12 (12.2)	0 (0.0)	19 (45.2)	4 (9.5)
Social worker	13 (13.3)	3 (3.1)	14 (33.3)	6 (14.3)
Data Entry Operator	63 (64.3)	16 (16.3)	33 (78.6)	8 (19.0)
Rehabilitation therapist	0 (0.0)	0 (0.0)	4 (9.5)	0 (0.0)
Counsellor	50 (51.0)	14 (14.3)	31 (73.8)	8 (19.0)
Others	65 (66.3)	53 (54.1)	29 (69.0)	23 (54.8)

3.14.6 - Availability of preventionItreatment procedures

	CHC (n=98)	DH(n=42)
General surgical procedures	25 (25.5)	26 (61.9)
Laparoscopic procedures	16 (16.3)	14 (33.3)
Radiotherapy	6 (6.1)	5 (11.9)
Palliative care	19 (19.4)	12 (28.6)

3.14.7- Availability of preventionItreatment procedures, laboratory and Equipment & supplies in Public Secondary Health Care facilities (Percentage)

	CHC (n=98)	DH(n=42)
Laboratory and other investigations[1]		
Routine blood investigations[2]	98 (100.0)	41 (97.6)
Biochemistry[3]	97 (99.0)	40 (95.2)
Cardiac investigations [4]	36 (36.7)	29 (69.0)
Radiology[5]	68 (69.4)	35 (83.3)
Endoscopy[6]	0 (0.0)	11 (26.2)
Histopathology	5 (5.1)	9 (21.4)
Cervical cancer screening[7]	8 (8.2)	14 (33.3)
Available equipment in stock		
Essential[8]	71 (72.4)	33 (78.6)
Imaging [9]	3 (3.1)	15 (35.7)
Cardiopulmonary[10]	1 (1.0)	7 (16.7)
Dental[11]	70 (71.4)	35 (83.3)
Laboratory[12]	21 (21.4)	15 (35.7)
Cancer screening[13]	3 (3.1)	8 (19.0)

1. *Includes Generally available in house, free of cost; Generally available in house, on payment; and Outsourced, but paid for by the program*
2. *Includes Haemoglobin, Total Leucocyte count*
3. *Includes blood glucose, Kidney function test and Liver function test*
4. *Includes ECG*
5. *Includes X ray, Low frequency USG, High frequency USG,Mammography and CT Scan/MRI*
6. *Includes Endoscopy and Colposcopy*
7. *Includes Visual Inspection with Acetic acid (VIA)*
8. *Includes atleast one of each adult weighing scale, Stadiometer/Wall markings for height, Measuring tape, Stethoscope and B.P Apparatus*
9. *Includes X ray Machine, Ultrasound machine and C.T scan Machine*

10. *Includes Nebulizer, infusion set, Oxygen mask, Oxygen cylinder, Pulse Oximeter, Laryngoscope, Adult ambu bag, Cardiac monitor, Defibrillator, ECG Machine, ECG roll, 12 Channel stress ECG Tread Mill.*
11. *Includes Dental mirror and Dental chair.*
12. *Includes at least one of each Centrifuge, Glucometer, Haemoglobin meter, Biochemical analyser, Lancets, Glucostrips, Urine strips, Microscope and Reagents/ kits for Glucose test*
13. *Includes Vaginal speculum (Cusco's and sims), Cotton tipped swabs, Punch biopsy forceps, Colposcope, Laryngoscope and Torch / Examination light.*

3.15 Private Secondary Health Care Facility

3.15.1 - Infrastructure and available services

	Urban (n =67)	Rural (n=9)	Total (n =76)
	Types of services		
Outpatient services	65 (97.0)	9 (100.0)	74 (97.4)
In patient services	66 (98.5)	8 (88.9)	74 (97.4)
Emergency services	58 (86.6)	9 (100.0)	67 (88.2)
Intensive Care Unit	37 (55.2)	4 (44.4)	41 (53.9)
	Cancer screening availability		
Oral Cancer	13 (19.4)	3 (33.3)	16 (21.1)
Cervical Cancer	14 (20.9)	3 (33.3)	17 (22.4)
Breast Cancer	13 (19.4)	3 (33.3)	16 (21.1)
Other Cancers	3 (4.5)	0 (0.0)	3 (3.9)
	Method of detecting cancer		
Organized Screening	6 (9.0)	0 (0.0)	6 (7.9)
Opportunistic screening	15 (22.4)	2 (22.2)	17 (22.4)
Treatment provided for Cancer	27 (40.3)	3 (33.3)	30 (39.5)
Availability of standard treatment guidelines for cancer	27 (40.3)	2 (22.2)	29 (38.2)

3.15.2 - Counselling facilities for risk behaviour and Cancer related IEC materials availability

	Urban (n =67)	Rural (n=9)	Total (n =76)
Availability of Counselling facilities for risk behaviour through counsellor or specialised personnel*			
Tobacco cessation	22 (32.8)	3 (33.3)	25 (32.9)
Dietary Modification	22 (32.8)	2 (22.2)	24 (31.6)
Physical Activity	21 (31.3)	2 (22.2)	23 (30.3)
Alcohol Cessation	20 (29.9)	3 (33.3)	23 (30.3)

**Available in-house and in vicinity (within 5 km)*

3.15.3 - IEC materials related to Cancer displayed/available in the patient waiting room/outpatient department

	Urban (n =67)	Rural (n=9)	Total (n =76)
Posters	24 (35.8)	2 (22.2)	26 (34.2)
Videos	3 (4.5)	1 (11.1)	4 (5.3)
Pamphlets	18 (26.9)	2 (22.2)	20 (26.3)
Booklets	10 (14.9)	2 (22.2)	12 (15.8)

3.15.4 - Availability of Human Resources

Staff	Urban (n =67)	Rural (n=9)	Total (n =76)
Medical Officer (MBBS and above)	66 (98.5)	9 (100.0)	75 (98.7)
Specialist*	37 (55.2)	5 (55.6)	42 (55.3)
Staff Nurse	65 (97.0)	8 (88.9)	73 (96.1)
Lab Technician	66 (98.5)	7 (77.8)	73 (96.1)
Radiographer	58 (86.6)	6 (66.7)	64 (84.2)
Medical imaging and therapeutic equipment technicians	31 (46.3)	3 (33.3)	34 (44.7)
Radiation therapy technologist	8 (11.9)	1 (11.1)	9 (11.8)
Counselor/ dietician/ educator/ care coordinator	25 (37.3)	2 (22.2)	27 (35.5)
Others	31 (46.3)	3 (33.3)	34 (44.7)

**Includes Physician/Surgeon/ Oncosurgeon/ /Medical oncologist/ Haematologist/ /Radiologist/ Nuclear medicine/ Medical physicist/ Radiation Oncologist/Palliative care Physician*

3.15.5 - Availability of preventionItreatment procedures

	Urban (n =67)	Rural (n=9)	Total (n =76)
General surgical procedures	61 (91.0)	7 (77.8)	68 (89.5)
Laparoscopic procedures	51 (76.1)	5 (55.6)	56 (73.7)
Radiotherapy	12 (17.9)	1 (11.1)	13 (17.1)
Chemotherapy	22 (32.8)	4 (44.4)	26 (34.2)
Palliative care	22 (32.8)	3 (33.3)	25 (32.9)

3.15.6 - Availability of preventionItreatment procedures, laboratory and Equipment & supplies

	Urban (n =67)	Rural (n=9)	Total (n =76)
Laboratory and other investigations[1]			
Routine blood investigations[2]	67 (100.0)	7 (77.8)	74 (97.4)
General pathology[3]	21 (31.3)	2 (22.2)	23 (30.3)
Biochemistry[4]	67 (100.0)	8 (88.9)	75 (98.7)
Cardiac investigations[5]	62 (92.5)	5 (55.6)	67 (88.2)
Radiology[6]	62 (92.5)	7 (77.8)	69 (90.8)
Nuclear Imaging[7]	2 (3.0)	0 (0.0)	2 (2.6)
Endoscopy[8]	34 (50.7)	3 (33.3)	37 (48.7)
Cancer	6 (9.0)	1 (11.1)	7 (9.2)
Available Technology			
Essential[9]	56 (83.6)	5 (55.6)	61 (80.3)
Imaging [10]	25 (37.3)	3 (33.3)	28 (36.8)
Cardiopulmonary[11]	4 (6.0)	0 (0.0)	4 (5.3)
Dental[12]	26 (38.8)	3 (33.3)	29 (38.2)
Laboratory[13]	32 (47.8)	3 (33.3)	35 (46.1)

1. *Includes Generally available in house, free of cost; Generally available in house, on payment; and Outsourced, but paid for by the program*
2. *Includes Haemoglobin and Total Leucocyte count ,*
3. *Includes histopathology, cytopathology, immunohistochemistry, histochemical stains*
4. *Includes blood glucose, blood chemistry – alkaline, phosphatase, calcium Kidney function test, Liver function test, Serum protein electrophoresis, Immunoassay test, Tumor lysis syndrome panel- LDH. Uric acid, potassium, Calcium, phosphate*
5. *Includes ECG and Echo*
6. *Includes X ray, Low frequency USG, High frequency USG,Mammography and CT Scan/MRI*
7. *Includes Nuclear scan and PET Scan*
8. *Includes Endoscopy and Colposcopy*
9. *Includes at least one of each adult weighing scale, Stadiometer/Wall markings for height, Measuring tape, Stethoscope and B.P Apparatus*

10. *Includes X ray Machine, Ultrasound machine and C.T scan Machine*
11. *Includes ECG Machine, ECG roll, 12 Channel stress ECG Tread Mill,Diagnostic spirometer, Nebulizer, infusion set, Oxygen mask, Oxygen cylinder, Pulse Oximeter, Laryngoscope, Adult ambu bag, Cardiac monitor and Defibrillator.*
12. *Includes dental Mirror and Dental Chair.*
13. *Includes atleast one of each Centrifuge, Glucometer, Haemoglobin meter, Biochemical analyser, Lancets, Glucostrips, Urine strips, Microscope and Reagents/ kits for Glucose testing*

D. Profile of adults with cancer

3.16.1 - Number of cancer patients by place of residence and gender

	Urban	Rural	Male	Female	Combined
Number of cancer patients	62	92	78	76	154

3.16.2 - Age at diagnosis and duration of cancer among cancer patients by place of residence and gender **(***Mean***)**

	Urban (62)	Rural (92)	Male (78)	Female (76)	Combined (154)
Age at diagnosis	51.3	51.4	52.4	50.3	51.4
Duration of cancer *	55.3	60.5	59.0	57.8	58.4

*months

3.16.3 - Site of cancer and other chronic illness among cancer patients by place of residence and gender (Percentage)

	Urban (62)	Rural (92)	Male (78)	Female (76)	Combined (154)
Site of Cancer					
Oesophagus	2(3.3)	6(6.5)	3(3.9)	5(6.6)	8(5.2)
Lung	4(6.6)	3(3.3)	7(9.1)	0(0)	7(4.6)
Stomach	3(4.9)	2(2.2)	3(3.9)	2(2.6)	5(3.3)
Throat	6(9.8)	22(23.9)	23(29.9)	5(6.6)	28(18.3)
Mouth	4(6.6)	8(8.7)	10(13.0)	2(2.6)	12(7.8)
Cervix	8(13.1)	10(10.9)	0(0.0)	18(23.7)	18(11.8)
Gall bladder	1(1.6)	0(0.0)	0(0.0)	1(1.3)	1(0.7)
Breast	14(22.6)	9(9.8)	3(3.8)	20(26.3)	23(14.9)
Diagnosed with co-morbidity					
Type of comorbidity					
Tuberculosis	3(4.8)	0(0.0)	3(3.8)	0(0.0)	3(1.9)
Kidney failure	0(0.0)	2(1.3)	1(1.3)	1(1.3)	2(1.3)
Diabetes Mellitus	7(11.3)	2(2.2)	3(3.8)	6(7.9)	9(5.8)
Heart Failure	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Stroke	0(0.0)	1(1.1)	1(1.3)	0(0.0)	1(0.6)
Others	1(1.6)	6(6.5)	2(2.6)	5(6.6)	7(4.5)

3.16.4 - Type of health facility or health care provider from where cancer care was taken among those who sought treatment by place of residence and gender (Percentage)

	Urban (62)	Rural (92)	Male (78)	Female (76)	Combined (154)
Type of health facility / health care provider					
Within the state	41(67.2)	62(72.1)	49(66.2)	54(74.0)	103(70.1)
Outside the state*	20(32.8)	24(27.9)	25(33.8)	19(26.0)	44(29.9)
Govt facility	36(58.1)	62(67.4)	46(59.0)	52(68.4)	98(63.6)
Private facility**	23(37.1)	22(23.9)	26(33.3)	19(25.0)	45(29.2)
Self-healers	3(4.8)	5(5.4)	5(6.4)	3(3.9)	8(5.2)
Alternative form of medicine (AYUSH)	0(0.0)	1(1.1)	0(0.0)	1(1.3)	1(0.6)
Others	1(1.6)	0(0.0)	0(0.0)	1(1.3)	1(0.6)

**Outside the state includes Other states within NER and Outside NER*

***Private facility includes within the state, Other states within NER and Outside NER*

3.16.5 - Source of finances for cancer treatment among cancer patients by place of residence and gender **(***Percentage***)**

	Urban (62)	Rural (92)	Male (78)	Female (76)	Combined (154)
Self-Financing/Taking loan/Sale of assets	13(21.0)	27(29.3)	19(24.4)	21(27.6)	40(26.0)
Family support	11(17.7)	26(28.3)	17(21.8)	20(26.3)	37(24.0)
Health Insurance Schemes/Hospital Incentives	1(1.6)	8(8.7)	6(7.7)	3(3.9)	9(5.8)

Chapter - 4
Key Findings

4.1 Socio-demographic and obstetric determinants, awareness and attitude

- Over half (51.6%) of the respondents lived below poverty. About half (45%) studied between class 6th and class 10th. The commonest profession among men included being engaged in manual labour or agriculture (20.7%), followed by self-employment (17.7%).
- Over 80% of the female respondents had ever been pregnant, and over 98% had practised breastfeeding.
- About 5.2% of the respondents were aware of HPV vaccination.
- Nearly a quarter (24.4%) of the participants were aware of cancer screening; the most common source of information for 80.3% included social and mass media.

4.2 Risk factor exposure:

This includes household-related and behavioural risk factors

4.2.1 Household related

- The proportion of solid fuel use was high in rural areas (79%). Over half (51.3%) of the population (rural and urban combined) used wood as cooking fuel.
- More than three quarters (77.4%) of the rural population used 'open stove' or '*chulha'* for cooking.

4.2.2 Exposure to tobacco and non-tobacco betel products

- Nearly half of the respondents (48.6%) were current tobacco users, comprising 61.7% men and 34.8% women. Over one third (38.8%) of men were current users of smoked tobacco

- The proportion of smokeless tobacco users (35.6%) was higher than those using smoked tobacco (21.9%).
- As many as 42.7% of the respondents used smoked or smokeless tobacco daily.
- Chewable tobacco (49.5%) and manufactured cigarettes (38.6%) were the most frequently used tobacco products.
- The mean age of initiation of tobacco use was 21.3 years, which was lower for men (20.6 years) than women (22.8 years).
- Over half of the population (56.7%) had been exposed to second hand smoke, of which a higher proportion (42.4%) had been exposed at home
- 42.1% of the respondents consumed non tobacco betel products, among which areca nut was the most frequently used product (33.1%), followed by betel quid (18.2%)

4.2.3 Alcohol consumption

- Close to a quarter (22.8%) of the respondents reported consumed alcohol over the past 12 months and 18.3% reported alcohol use within the past month.
- The mean age of initiation of alcohol consumption was 21.3 years, which was almost similar among males (21.1 years) and females (21.9 years).
- Among those consuming alcohol over the past year, 8.1% stated that they could not stop drinking once they started and reported consuming at least once a week. As many as 4% failed to do routine work due to drinking, while 3% felt the need to drink first thing in the morning, at least once a week.
- Among those who had consumed alcohol over the last 30 days, 9.7% reported heavy episodic drinking on a single drinking occasion, which was much higher for men (16.4%) than women (2.6%).

4.2.4 Diet

- The mean number of days on which either fruits or vegetables were consumed in a week was 0.8 days
- The mean number of servings of fruits and vegetables on any given day was 0.1.
- Over three-quarters of the respondents consumed preserved/salt curated and fermented products

4.2.5 Physical activity

- Close to 90% of the respondents appeared to be engaged in sufficient physical activity of which over 80% included moderate intensity activity during routine work either at home or in the workplace.

4.3 Prevalence of Co-morbidities

4.3.1 Overweight/obesity

- According to the WHO criteria, the proportion of those who were obese was 5.2%, while the prevalence of obesity was higher (27.6 %) using Asian cut off points.
- A higher proportion of women (6.3%) than men (4.3%) were obese.
- The prevalence of obesity was higher in urban areas (7%) than in rural areas (3.8%).
- Over a third of the respondents (38.9%) over 18 years of age had central obesity.

4.3.2 Raised blood pressure

- The prevalence of raised blood pressure was 28.7%, of which the proportion of newly detected (20.8%) was higher than previously known (7.9%).
- Over half of the respondents (51.2 %) had pre-hypertension.

4.3.3 Raised blood glucose

- The proportion of respondents whose blood glucose level was over 126 mg/dl was 5.1%, among whom the proportion of known diabetics was 3.3%.
- The prevalence of raised blood glucose was higher among males (5.3%) than females (4.8%) and nearly twice as higher in urban (6.6%) than rural areas (3.8%).
- The most frequently encountered co-morbidity among cancer patients was diabetes (5.8%)

4.4 Health seeking behaviour and access to care

4.4.1 Access to health advice, counselling and attempts to quit

- 6.9% of the current tobacco users had been ever advised to quit tobacco use, while 15% of current smokers had ever attempted to stop tobacco use.

- 2.9% of the respondents above 18 years had ever received advice to avoid alcohol use.
- 7.9% of respondents had ever received advice to maintain a healthy body weight.
- Close to two-thirds (63.3%) of the respondents over 18 years had ever received advice to get their blood pressure measured; the proportion of those receiving advice for undergoing blood glucose measurement was much lower (36.6%).

4.4.2 Access to NCD screening, cancer diagnosis and treatment

- While 72.4 % had ever undergone blood pressure measurement, a little over half (51.4 %) had undergone a blood pressure measurement over the past year.
- While 40.1 % had ever undergone blood glucose measurement, a little over a quarter (25.1 %) had undergone a blood glucose measurement over the past year.
- The proportion of female respondents above 30 years who had undergone screening for breast was 0.9%. 1% of the female respondents had undergone cervical cancer screening, while 0.4% of all adult respondents reported having undergone screening for oral cancer.

- Among the households that were included for the survey, 4% reported a cancer death, among which about 30 % of the patients had been diagnosed with cancer six months before death.

- Majority (63.6%) of the patients of cancer were availing of treatment at a government health facility. Close to a third (29.9%) had sought treatment outside of their State.
- Over a quarter (26%) of the cancer patients were self-financing their treatment; 5.8% were covered by health insurance.

4.4.3 Source of health care

- Out of those whose, blood pressure and blood glucose had been measured in the last one year, close to two-thirds had consulted at a government health centre.
- About 40% of those with raised blood pressure and glucose sought care from an allopathic doctor at a government health facility.

4.4.4 Treatment compliance

- Among those with raised blood pressure, over one third (37.3 %) were adherent to the prescribed treatment, and the blood pressure of over a quarter (26.6%) was reportedly under control.
- Among those with raised blood glucose, over half (55.4 %) were adherent to the prescribed treatment, and the blood glucose of over a half (51.3%) was reportedly under control.

4.5 Health facility preparedness

4.5.1 Primary Health Centre Preparedness

- Cancer screening for all three types of cancers (cervical, breast, oral) was available in 19.1% of the PHCs'
- Over one-third of the PHCs' provided counselling for tobacco (33.5%) and alcohol (33%) cessation.
- As many as 61.5% of the PHCs' had posters on cancer displayed at the centre.
- The proportion of medical officers who had been trained NPCDCS/NHM (NCD related)/State program was 54.3% for urban PHCs' and 40.9 % for rural PHCs'. Likewise, the proportion of staff from other cadres who had undergone NCD-related programme management training was low.

4.5.2 Secondary level public health facility preparedness: Community Health Centre and District Hospitals

- Cancer screening for all three types of cancers (cervical, breast, oral) was available in 20.4 % of the CHCs' and 35.7% % of the District hospitals.
- Less than a quarter (24.3%) of the District hospitals had daycare facilities for chemotherapy.
- Counselling facilities for tobacco cessation were available in less than half (48%) of the CHCs'.
- A few CHCs' had a specialist in position in the following departments: surgery (17.3%), medicine (39.8%) and gynaecology (36.7%).
- Less than 50% of the General Duty Medical Officers at the CHCs' and District hospitals had been trained for NPCDCS/NHM (NCD related)/State program. Likewise, the proportion of staff from other cadres who had undergone NCD-related programme management training was low.

- Facilities for histopathology were available in 21.4% of district hospitals and 5.1% of the CHCs'.
- While essential equipment (adult weighing scale, stadiometer/wall markings for height, measuring tape, stethoscope and BP Apparatus) was available in about three-quarters of the District hospitals and CHCs', most of the health facilities reported a shortage of equipment for laboratory and imaging procedures.

4.5.3 Private secondary level health care facilities preparedness

- Close to a quarter of the health facilities provided services for screening of oral cancer (21.1%), breast cancer (21.2%) and cervical cancer (22.4%).
- As many as 39.5% of the health centres had facilities for cancer treatment.
- Facilities for counselling for lifestyle modification were available in about one-third of the private health centres.
- Specialist doctors were available in over half (55.3%) of the health centre

Chapter - 5
The way Ahead-Translating Survey Findings into Action

5.1 Risk reduction

5.5.1 Intensive Information, Education and Communication (IEC) and Behavioural Change Communication (BCC)

Primordial prevention, that is, avoiding the emergence of risk factors in a population, is proven to be valuable for disease control. Most habits related to tobacco use, alcohol consumption, betel products, unhealthy diet and high-risk behaviour, start early in life, usually during adolescence or youth. Hence IEC and BCC activities using innovative and culturally acceptable means of communication should target the younger population and their caregivers and focus on changing the social acceptability of risk factors. Counselling at the household or family level would help since tobacco and alcohol use is influenced by its Use in the family. While such actions could be community-based and imparted through schools, colleges and workplaces, the availability of such services could be strengthened through the Health and Wellness Centres at a Sub-Centre or PHC and private health facilities. School teachers could be trained to participate in tobacco control programmes and be motivated to quit the habit themselves since this is bound to influence the younger population negatively.

5.5.2 Tobacco and alcohol cessation

Most cessation programmes are being operated at tertiary level hospitals which may not be easily accessible. Scaling up the availability of cessation programmes at the PHCs' and CHCs' Community-based interventions could be considered. These would be more culturally acceptable and cost-effective by reducing travel costs for beneficiaries and may help ensure better quitting rates than facility-based interventions.

5.5.3 Implementation of policies related to risk factor control

Implementation of the Cigarettes and Other Tobacco Products Act (COTPA) of 2003 would be effective if combined with strategies to address the sociocultural context of tobacco use. Policies to promote smoke-free indoor air at the household level, workplace, and public places should be considered for strict enforcement. Since alcohol consumption also has indigenous roots, policies regarding quality control, local alcohol products, and alternative livelihood arrangements could be explored.

5.2 Early detection

A heightened awareness of the early signs and symptoms of cancer is critical for early treatment-seeking and timely initiation of treatment. Community-based screening programmes involving key community leaders and peripheral health workers have been found to help raise awareness and enhance early detection in areas with rugged geographical terrain and socially disadvantaged groups. The community-based platform, i.e., village/ urban health nutrition and sanitation day, could effectively create awareness. Such interventions would help make screening and early detection programmes socially and culturally acceptable.

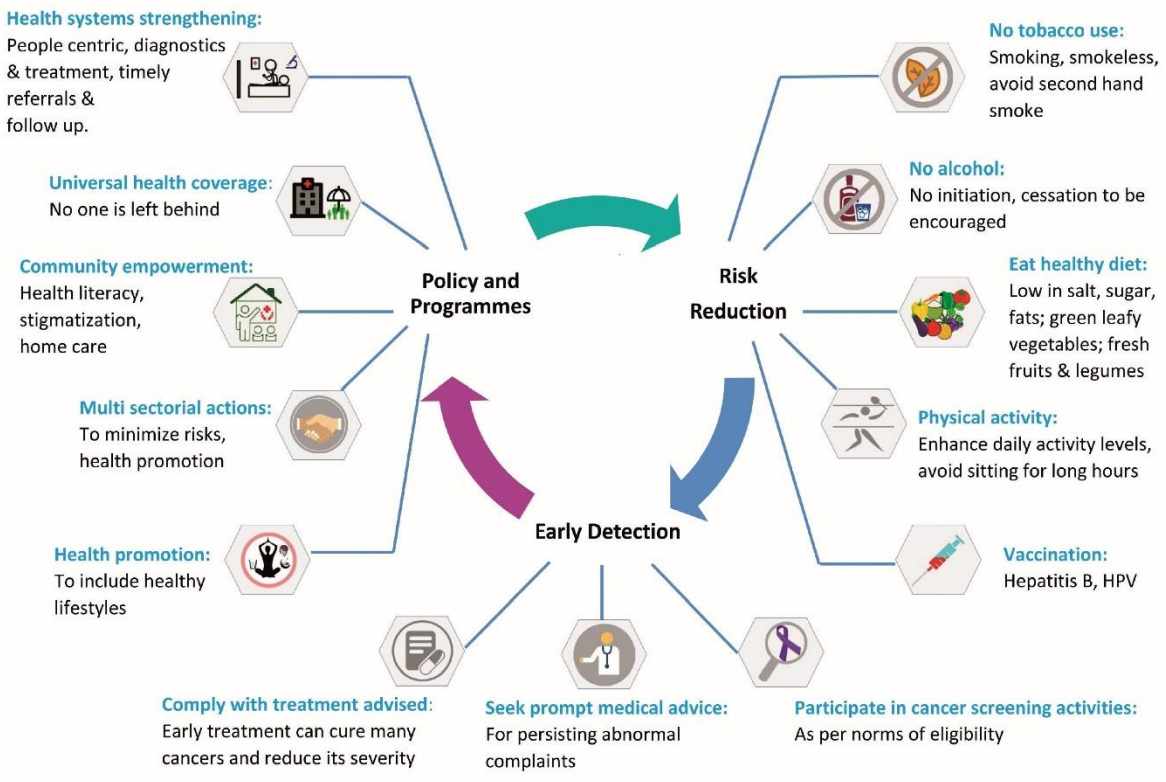
5.3 Health system strengthening

A robust health care system is crucial for the successful outcome of cancer control interventions. Since there is a shortage of trained health care providers, there is a pressing need to train the existing staff at the primary and secondary level health centres to ensure timely detection and referral, calling for scaling up of NPCDCS training. This would help to reduce the burden on tertiary cancer-treating centres. The availability of histopathology and daycare chemotherapy services could be scaled up through public-private partnerships or training/upgrading existing facilities. Expanding tertiary-level facilities would help reduce treatment-seeking for cancer outside of the region, which would also help to improve treatment follow up and disease outcomes. Since there appears to be a shortage of health insurance schemes and supportive services for cancer patients and caregivers, it is high time to plan for suitable solutions to reduce cancer-related morbidity and mortality.

On the whole, addressing cancer control in the NER requires a multidisciplinary approach with community participation. Multisectoral coordination with allied

departments such as education, youth affairs, environment and food industry could pave the way for effective implementation of policies and interventions related to risk factor control. Regular cancer risk factor surveys and assessment of the health system preparedness to address cancer care is of utmost importance to ensure timely action and evaluate the success of cancer-directed prevention and control efforts. Since cancer does not appear to be a stigma, interventions to enhance the health seeking behaviour related to screening and early detection would be effective. Capacity building of health care resources locally at all levels of health care, ranging from primary care to palliation for improving survivorship, is essential to maintain a continuum of care. This also alludes to building capacity for cancer research in the region, which would be of immense use in identifying the population's local needs and devising culturally appropriate and acceptable strategies for addressing the needs.

Ways for Cancer Prevention and Control



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Annexure 1

Demographic profile and PBCR coverage for each state

Demographic Profile

PBCR name	Males	Females	Total
Arunachal Pradesh	713912	669815	13,82,611
Assam	2171564	2070794	4242358
Manipur	1438586	1417208	2855794
Meghalaya	933280	930067	1863347
Mizoram	555339	541867	1097206
Nagaland	1024649	953853	1978502
Sikkim	323070	287507	610577
Tripura	1874376	1799541	3673917

(Source: 22)

PBCR Coverage – Arunachal Pradesh		
PBCR Name	Naharlagun	Pasighat
PBCR Institution	TomoRiba State Hospital, Naharlagun	General Hospital, Pasighat
Coverage Area	Eight Districts: Tawang, West kameng, East Kameng, Upper subansiri, Lower subansiri, Kurungkumey, Papumpare and West siang	Two Districts: East siang and Upper siang
PBCR Establishment Year	2011	2011
Number of sources of registration	40	65
Area (in Sq. km)	42095	10193
Urban and Rural Covered (P)	25.8 & 74.2	25.4 & 74.6

PBCR Coverage - Nagaland	
PBCR Institution	Naga Hospital authority, Kohima
PBCR Name	Nagaland
Coverage Area	Kohima & Dimapur
PBCR Establishment Year	2010
Number of sources of registration	30
Area (in Sq. km)	2390
Urban and Rural Covered (%)	49.3 & 50.7

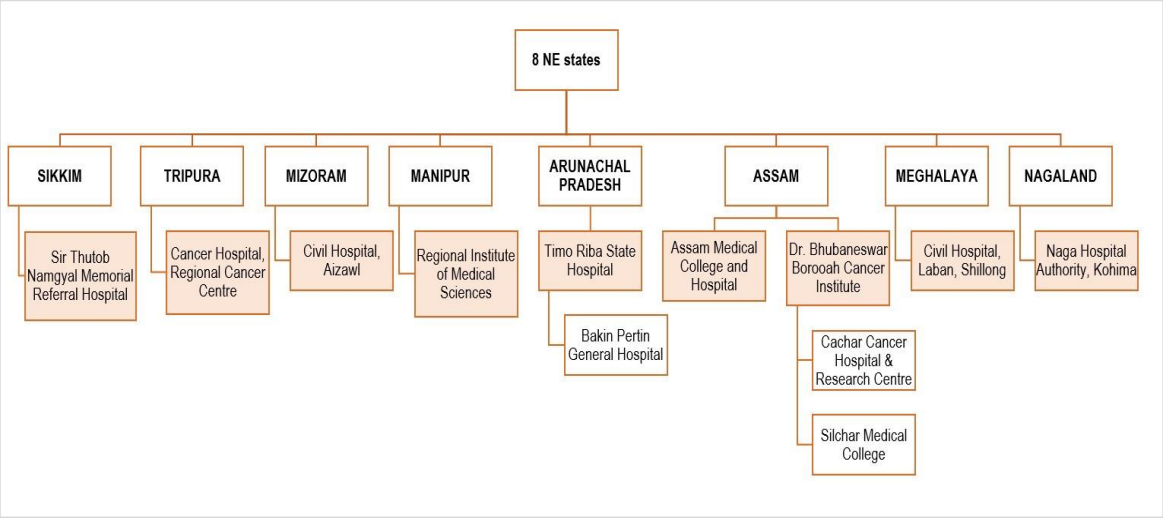
PBCR Coverage - Mizoram	
PBCR Institution	Civil Hospital, Aizawl
PBCR Name	Mizoram
Coverage Area	Mizoram State
PBCR Establishment Year	2003
Number of sources of registration	45
Area (in Sq. km)	21087
Urban and Rural Covered (%)	52.1 & 47.9

PBCR Coverage - Sikkim	
PBCR Institution	Sir Thutab Namgyal Memorial (STNM) Multispecialty Hospital, Gangtok.
PBCR Name	Sikkim
Coverage Area	Sikkim state
PBCR EstablishmentYear	2003
Number of sources of registration	36
Area (in Sq. km)	7096
Urban and Rural Covered (%)	25.2% & 74.8%

PBCR coverage of Tripura	
PBCR Institution	Atal Bihari Vajpayee Regional Cancer Centre
PBCR name	Agartala
Coverage Area	Tripura state
PBCR Established Year	2010
Number of sources of registration	30
Area (in Sq. km)	10492
Urban and Rural Covered (P)	26.2 & 73.8

PBCR Coverage – Assam				
PBCR Name	Cachar	Dibrugarh	Kamrup	Karimganj
PBCR Institution	Silchar Medical College, Silchar	Assam Medical College & Hospital, Dibrugarh	Dr. B. Borooah Cancer Institute, Guwahati	Cachar Cancer Hospital and Research Centre, Silchar
Coverage Area	Silchar Town Up to 2006 & Cachar district from 2007	Dibrugarh district	Urban Areas of Kamrup district & Kamrup Metropolitan district	Karimganj, Hailakandi and Dima Hasao
PBCR Established Year	2003	2003	2003	2016
Number of sources of registration	33	42	81	48
Area (in Sq. km)	3786	18325	4060	8026
Urban and Rural Covered (%)	18.2 & 81.8	18.4 & 81.6	100.0 & 0.0	10.5 and 89.5

Annexure 2



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Annexure 3

Photographs of the Survey

Household visits conducted by the Research team

Supervisory visits by the Investigators and Experts

Conduction of Screening camps for anthropometry, Blood pressure and Blood glucose measurement

Supervisory visit at a Health facility

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