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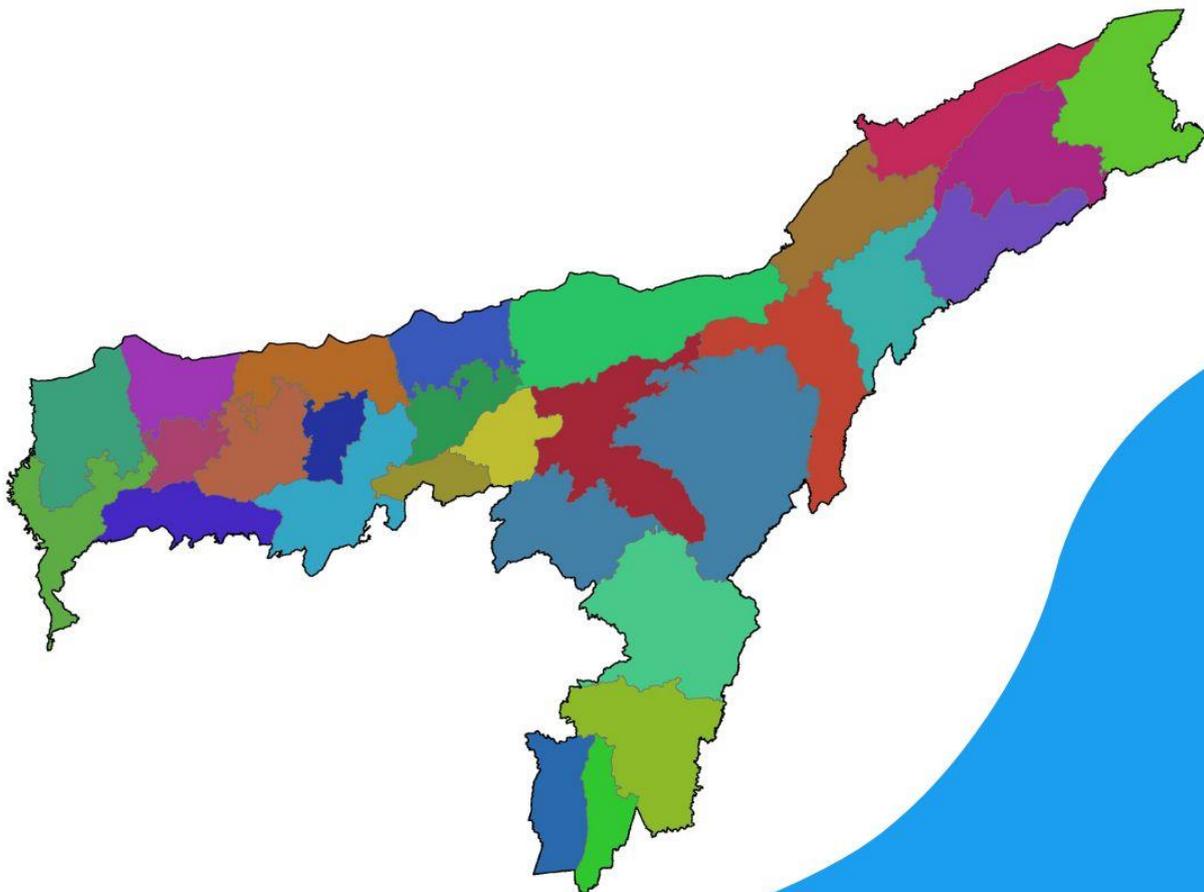
**NCDIR**

NATIONAL CENTRE FOR DISEASE  
INFORMATICS AND RESEARCH



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

2022



**ASSAM**

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### Message

Cancer is the second most common cause of death globally, accounting for an estimated 9.6 million deaths in 2018. The cancer burden is rising globally. There are massive social inequalities in cancer, with large variations in incidence, survival, and mortality between social groups.

According to the latest report of National Centre for Disease Informatics and Research, Indian Council of Medical Research is being released (NCDIR-ICMR) based on 2012-2016 cancer registry data shows that North-East, India has the highest cancer incidence and mortality rate. Many of the cancers can be prevented or survivorship can be improved through monitoring and early diagnosis.

I am pleased to note that NCDIR-ICMR has prepared a report on 'Monitoring survey of cancer risk factors and health system response in the Northeast Region of India' to highlight the magnitude of the cancer burden and current health system preparedness. I hope this report will serve as base for epidemiological studies on cancer and will be helpful for health planners for formulating different programmes.

I take this opportunity to congratulate Prof. (Dr.) Balam Bhargava, Director General, ICMR and Secretary, Department of Health Research, Dr. Prashant Mathur, Director, National Centre for Disease Informatics and Research (NCDIR-CIMR), Principal-Investigators, Co-Investigators and all the staff for bringing out this report.

I extend my good wishes.

  
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## Foreword

The rising burden of cancer across the country is a cause for worry. The incidence and mortality rates for cancer are highest in the North East Region (NER) of the country. The ICMR-NCDIR has successfully completed the 'Monitoring survey of cancer risk factors and health system response in NER 2019-2021' as part of the cancer research NER (CaRes NER) Programme in the state of Assam. The aim of the survey was to estimate the prevalence of major cancer - associated behavioral and metabolic risk factors and pattern of their distribution in the population. The response of the health system towards cancer prevention and control at the primary and secondary level in public and private sector health facilities has also been assessed. The findings from this survey will form a baseline for monitoring of risk factors for comparison in subsequent surveys.

This report contains the findings that were generated from the monitoring survey which was conducted in the state of Assam, implemented through PBCRs Kamrup, Cachar, Dibrugarh and Karimganj situated at Dr. Bhubaneswar Borooah Cancer Institute, Guwahati, Silchar Medical College, Silchar; Assam Medical College, Dibrugarh and Cachar Cancer Hospital & Research Centre, Cachar respectively.

I sincerely appreciate the efforts of the Principal Investigators and Co-Principal Investigators of these study sites for their role in supervising and coordinating a smooth and efficient conduct of the survey. The role and support provided by the scientific and technical staff at ICMR-NCDIR, Bengaluru is duly acknowledged.

I hope that this survey will aid in establishing a cancer surveillance program in the region which has so far been compiling data on cancer related statistics. As cancer registration is an integral part of cancer surveillance, an ongoing surveillance of risk factors will help to correlate trends in cancer incidence and risk factors. Valuable information shared with the state and local authorities shall facilitate efforts to reduce the cancer burden through appropriate interventions.

  
Prashant Mathur



## Dr. Bhubaneswar Borooah Cancer Institute

A Grant-in-Aid Institute of Department of Atomic Energy, Govt. of India and a Unit of Tata Memorial Centre (Mumbai), Guwahati, Assam.



### Message

It gives me immense pleasure to note that the report on 'Monitoring survey of cancer risk factors and health system response in the Northeast Region of India', conducted by National Centre for Disease Informatics and Research - Indian Council of Medical Research is being released (NCDIR-ICMR).

India faces a rising burden of non-communicable diseases and it affects all the sections of society. According to the reports published from time to time by National Cancer Registry Program, cancer is found as one of the leading cause of non-communicable diseases in northeast India. Latest report based on 2012-2016 cancer registry data shows that northeast, India has the highest cancer incidence and mortality rate. Regular monitoring and early management of cancer is required to improve cancer survivorship.

The cancer burden is rising globally – but not equally. We have learned that many cancer cases can be prevented, and even when prevention is not possible, early diagnosis saves lives. The report 'Monitoring survey of cancer risk factors and health system response in the Northeast Region of India' provides an in-depth understanding of the current situation and the risk factors both modifiable and non-modifiable, responsible for higher cancer burden in Assam, and current health system preparedness to battle with this disease. The survey is an important step towards the strengthening, surveillance of cancer and their risk factors and will be helpful for developing future action plan for health planners.

I take this opportunity to congratulate Prof. (Dr.) Balram Bhargava, Director General, ICMR and Secretary, Department of Health Research, Dr. Prashant Mathur, Director, National Centre for Disease Informatics and Research (NCDIR-ICMR) and appreciate the hard work of all the investigators, staff of registries, staff of the project and all the collaborating institutions for their effort in bringing out this report.

I extend all my good wishes and hope that the data will be useful to provide significant insight that will help in control of cancer.

**Dr. Amal Chandra Katak**

Director

Dr. B Borooah Cancer Institute

Guwahati-16

Director

Dr. B. Borooah Cancer Institute

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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 the Northeast Region of India', which would not be possible without the contribution of several persons.

It is a great pleasure to acknowledge the enthusiasm of all those who have contributed, directly and indirectly, to the preparation of the report. Several key persons and institutions have provided their whole hearted support in the planning, in surveying, data abstraction and processing, data analysis and preparation of reports.

We are grateful to Prof. (Dr.) Balram Bhargava, Director General, ICMR and Secretary, Department of Health Research for his encouragement and guidance. We duly acknowledge the support of the Division of NCD and ICMR Headquarters for their support.

We are extremely grateful to Dr. Prashant Mathur, Director, ICMR-NCDIR for leading the team and providing all kind of necessary inputs and support in the preparation of the report and its release.

We extend our sincere thanks to Dr. Amal Chandra Kataki, Director Dr. B Borooah Cancer Institute and Dr. Debabrata Barmon (Principal Investigator- PBCR Kamrup) for their sterling guidance, supervision, support and most valuable contribution to the process of information retrieval and the editing of this report.

All were ably supported by Co-Principal Investigators, ASHA workers, project staff and staff of PBCR and HBCR, whose steady work at the field has yielded data for this report.

We are thankful to Director NHM, Director of Health - Assam, Joint Director of Health Services of Kamrup Metro & Kamrup District and Police commissioner of Kamrup District for providing valuable guidance, logistical support and providing security to the field staff during the survey.

We are thankful to Dr. Anita Nath (Scientist E, NCDIR-ICMR) for organizing various workshops during the study period and for her continuous support in the preparation of the report. We are also thankful to the scientific, technical, project and administrative staff at ICMR-NCDIR for their active involvement and commitment towards the report preparation.

The members of Scientific Advisory Committee of ICMR-NCDIR provided the necessary guidance, which is duly acknowledged.

We hope that this report shall bridge the gaps in availability of reliable data on cancer burden, risk factors and health system preparedness to battle with cancer. We are pleased to present the report that shall provide valuable insights on cancer surveillance in Assam.



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## List of Abbreviations

<b>BMI</b>	Body Mass Index
<b>BP</b>	Blood pressure
<b>CCA</b>	Central Coordinating Agency
<b>CEBs</b>	Census Enumeration Blocks
<b>CHCs</b>	Community Health Centres
<b>Co-PI</b>	Co-Principal Investigator
<b>CSA</b>	Coordinating PBCR covering State Agency
<b>CVDs</b>	Cardiovascular Diseases
<b>DHs</b>	District Hospitals
<b>HHs</b>	Households
<b>ICMR</b>	Indian Council of Medical Research
<b>MSW</b>	Medical Social Worker
<b>NCDs</b>	Noncommunicable Diseases
<b>NCDIR</b>	National Centre for Disease Informatics and Research
<b>NER</b>	North-East Region
<b>NNMS</b>	National NCD Monitoring Survey
<b>NPCDCS</b>	National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke
<b>PBCR</b>	Population Based Cancer Registry
<b>PHCs</b>	Primary Health Centres
<b>PI</b>	Principal Investigator
<b>PPS</b>	Probability proportional to size
<b>PSUs</b>	Primary Sampling Units
<b>SDGs</b>	Sustainable Development Goals
<b>TWG</b>	Technical Working Group
<b>WHO</b>	World Health Organization
<b>STEPS</b>	STEPwise approach to surveillance
<b>WC</b>	Waist Circumference

## Executive Summary

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.

Hence, this survey is an approach to implement a baseline monitoring system to drive us in understanding the linkage between exposures to risk factors, other NCDs and cancer incidence derived from the PBCRs in the NER and would aid in analysing the trends over time. This will enable the policymakers and stakeholders at making best decisions to address cancer prevention and control in the state.

The survey objectives included:

Primary objectives: To generate prevalence of key cancer and other NCD related risk factors and estimate health system response in the state of Assam.

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 state of Assam.
- To link or correlate risk factors with cancer incidence and burden collected by the PBCR in the Assam state.

Key findings

- The proportion of solid fuel use was high in rural areas (91.0%). Almost all (91.0%) the rural population used wood as cooking fuel. Nearly 88.9% of the rural population used 'open stove' or 'chulha' for cooking.

- Nearly half of the respondents (48.4%) were current tobacco users, comprising 67.1% men and 29.4% women.
- Nearly quarter (23.4%) of men were current users of smoked tobacco and more than half (58.3) of the men are current users of smokeless tobacco.
- 31.3% of the respondents reported to have consumed alcohol over the past 12 months and 25.9% reported alcohol use within the past month.
- The mean number of days on which either fruits or vegetable were consumed was 6.3 days in a week.
- According to the WHO criteria, the proportion of those who were obese was 2.1%, while the prevalence of obesity was higher (14.1%) using Asian cut off points.
- The prevalence of raised blood pressure was 28.5%, of which the proportion of newly detected (16.6%) was higher than previously known (11.9%).
- The proportion of respondents whose blood glucose level was over 126 mg/dl was 6.9%, among whom the proportion of known diabetics was 2.9%.
- Nearly 88.9% of the cancer patients had sought health care within the state, the majority (63.2%) were availing of treatment at a government health facility.
- Half of the (47.4%) of the cancer patients were self-financing their treatment; none of the patients were covered by health insurance.
- Cancer screening for all three types of cancers (cervical, breast, oral) was available in none of the CHCs' and only 28.6% at DHs.
- A few DHs' had a specialist in position in the following departments: medicine (14.3%) and gynaecology (14.3%).
- Nearly 18.5% of the General Duty Medical Officers at the CHCs' and 28.6% at 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.
- All the CHCs and DHs have the availability of routine blood investigations.

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## Chapter 1: Introduction

The National Cancer Registry Programme was established as early as 1981, with its coordinating centre at NCDIR, Bengaluru. The role of NCRP is vital in assessing indicators like incidence of cancer, the mortality trends and the quality of the healthcare systems being provided in different regions. The relevant health indicators are then collected, assessed, analyzed and interpreted to provide inputs that help in formulating policies, programmes, and research activities. The cancer data is collected from the respective state PBCR for the aforementioned analysis. The PBCRs of Assam are situated in Cachar (Silchar Medical College, Silchar), Dibrugarh (Assam Medical College & Hospital, Dibrugarh), Kamrup (Dr. B. Borooah Cancer Institute, Guwahati) and Karimganj (Cachar cancer hospital and research centre, Silchar). The data analyzed from these PBCRs helps not only to study the cancer pattern of the population of a defined region, but also helps with time trend analysis of predominant cancers in the state. This in turn leads to formulation of prevention and control strategies for cancers prevalent in the region.

Sociodemographic profile of Assam		
	Population	Literacy Rate
<b>Males</b>	15939443	77.9 %
<b>Females</b>	15266133	66.3%
<b>Total</b>	31205576	72.2%,

Source: (1)

PBCR Coverage – Assam				
PBCR Name	Kamrup district - PBCR	Dibrugarh district - PBCR	Cachar district - PBCR	Karimganj
PBCR situated in	Dr. B. Borooah Cancer Institute, Guwahati	Assam Medical College & Hospital, Dibrugarh	Silchar Medical College, Silchar	Cachar cancer hospital and research centre, Silchar
Coverage Area	Urban Areas of Kamrup district & Kamrup Metropolitan district	Dibrugarh upto 2019 & Sibsagar, Jorhat Tinsukia, Golaghat Lakhimpur & Dhemaji from 2019	Silchar Town Up to 2006 & Cachar district from 2007	Karimganj, Hailakandi and Dima Hasao
PBCR Established Year	2003	2003	2003	2016
Number of sources of registration	81	345	33	48
Area (in Sq. km)	5082	21706	3786	8026
Urban and Rural Covered (P)	13.8 and 86.2	13.3 & 86.7	18.2 and 81.8	10.5 & 89.5

(Source: Report on Cancer Burden in North Eastern States of India., Bengaluru)

### 1.1 Profile of cancer in Assam<sup>2</sup>

Cancer is among the top five leading causes of death in the state <sup>[3]</sup>. In Cachar district, among males, the leading cause of cancer is that of the oesophagus (11.6%), the hypopharynx (9.8%) as the second and followed by lung cancer (8.6%). Whereas, in females, the cervix uteri form the highest proportion (15.4%) followed by breast (14.1%) and that of the Gall bladder (11.1%). In Dibrugarh district, the proportion of oesophageal cancer (15.7%) is the highest among the males, followed by the hypopharynx (11.6%) and stomach cancer (7.3%) ranks third. In females, the highest proportion is of the breast (20.3%) followed by gall bladder (10.3%) and ovary (9.3%). In Kamrup urban, among males, the proportion of oesophageal cancer (14.3%) is the leading site, followed by the hypopharynx (9.6%) and lung cancer (7.9%). In females, the breast is a leading cancer site (17.5%) followed by oesophagus (9.5%) and gall bladder (9.1%). More than half a proportion (54.0%) of cancers in males recorded and close to one fourth (23.4%) in females are due to tobacco use related cancer sites. Oesophagus (11.6% in males; 7.5% in females) constitutes as the leading cancer site among them in the district of Cachar. Also, over a half (51.8%) of cancers in males and

close to one-fifth (21.8 %) in females are tobacco use related cancer sites in Dibrugarh. Among these, oesophagus (15.7% in males; 9.1% in females) is the leading cancer site.

Similarly, to Cachar, in Kamrup Urban, more than half (51.6%) of cancers in males and close to one fourth (23.5%) in females are also, tobacco use related cancer sites. Among these, oesophagus (14.3% in males; 9.5% in females) is the leading cancer site which is similar in all three PBCRs.

**Table.1.1 Number of cancer cases and Age Adjusted Incidence Rate (AAR) per 1,00,000 population**

Gender	Cachar District		Dibrugarh District		Kamrup Urban	
	Number of New Cancer Cases	AAR	Number of New Cancer Cases	AAR	Number of New Cancer Cases	AAR
<b>Males</b>	4663	129.0	2535	91.9	6223	213.0
<b>Females</b>	3943	104.8	2238	76.8	4790	169.6

(Source: ICMR-NCDIR, Profile of Cancer and Related Health Indicators in the North East Region of India – 2021, Bengaluru, India.)

**Table 1.2 Probability of One in number of Persons developing any of the leading cancer in 0-74 years' age in Males & Females, Cachar District, Assam**

Sl.No	Cachar district			
	Males		Females	
	Type of Cancer	Probability	Type of Cancer	Probability
<b>1.</b>	Oesophagus	1 in 53	Cervix Uteri	1 in 63
<b>2.</b>	Hypopharynx	1 in 64	Breast	1 in 73
<b>3.</b>	Lung	1 in 66	Gallbladder	1 in 76
<b>4.</b>	Tongue	1 in 84	Oesophagus	1 in 103
<b>5.</b>	Mouth	1 in 88	Mouth	1 in 144

(Source: ICMR-NCDIR, Profile of Cancer and Related Health Indicators in the North East Region of India – 2021, Bengaluru, India.)

**Table 1.3 Probability of One in number of Persons developing any of the leading cancer in 0-74 years' age in Males & Females, Dibrugarh, Assam.**

Sl.No	Dibrugarh			
	Males		Females	
	Type of Cancer	Probability	Type of Cancer	Probability
1.	Oesophagus	1 in 54	Breast	1 in 63
2.	Hypopharynx	1 in 73	Gallbladder	1 in 105
3.	Stomach	1 in 114	Oesophagus	1 in 106
4.	Mouth	1 in 124	Ovary	1 in 151
5.	Lung	1 in 155	Cervix Uteri	1 in 190

(Source: ICMR-NCDIR, Profile of Cancer and Related Health Indicators in the North East Region of India – 2021, Bengaluru, India.)

**Table 1.4 Probability of One in number of Persons developing any of the leading cancer in 0-74 year's age in Males & Females, Kamrup Urban, Assam.**

Sl.No	Kamrup Urban			
	Males		Females	
	Type of Cancer	Probability	Type of Cancer	Probability
1.	Oesophagus	1 in 27	Breast	1 in 32
2.	Hypopharynx	1 in 42	Oesophagus	1 in 44
3.	Lung	1 in 44	Gallbladder	1 in 51
4.	Stomach	1 in 61	Cervix Uteri	1 in 61
5.	Mouth	1 in 66	Ovary	1 in 93

(Source: ICMR-NCDIR, Profile of Cancer and Related Health Indicators in the North East Region of India – 2021, Bengaluru, India.)

### 1.3 Availability of Health Services related to Cancer Care in Assam State

The geographical indisposition, rugged terrain, vast hilly areas, and many ethnic groups contribute to the shortage of quality cancer-related health care facilities. Treatment seeking behavior and delay in diagnosis often impact the mortality of the population in Assam. The public health cancer continuum ranges from prevention to screening to treatment, including palliative care.

**Table. 1.5 Availability of public health care services**

A. Public sector health facilities <sup>[4,5,6]</sup>	Number
Sub centres (SC)	4678
Health and Wellness Centre - Sub Centre (HWC-SC)	765
Primary Health Centres (PHC)	1001
Health and Wellness Centre - Primary Health Centre (HWC-PHC)	379
Community Health Centres (CHC)	199
Sub-district Hospitals (SDH)	14
District Hospitals (DH)	24
Number of government allopathic doctors and dental surgeons	6626
B. Tertiary health care facilities	
Medical Colleges <sup>[7]</sup>	08
State cancer institute <sup>[8]</sup>	01
Regional cancer care centre <sup>[9]</sup>	01
C. State government health scheme <sup>[10]</sup>	<ol style="list-style-type: none"> <li>1. The Assam Arogya Nidhi (AAN)</li> <li>2. Atal Amrit Abhiyan</li> <li>3. Chief Minister's Free Diagnostic Services</li> </ol>

## 1.5 Background

This survey was conducted as a part of cancer research in the North East Region (CaRes NER), a multidisciplinary programme for preventing and controlling cancer in the north-eastern states run by ICMR-NCDIR, Bengaluru. It aims to form a baseline database of cancer and other NCD-related risk factors for comparison in subsequent surveys, which would help establish an NCD risk factor surveillance program. As cancer registration is an integral part of cancer surveillance, ongoing surveillance of risk factors will correlate with cancer incidence and risk factors. Moreover, with the set time-bound and attempts provided by NCD targets (10) and indicators (21) by 2025 <sup>[11]</sup> to achieve universal health coverage, ongoing surveillance would determine outcomes of national health programmes. Therefore, the establishment of a surveillance system is of vital importance to track changes and evaluate interventions. The survey objectives are as follows.

## 1.6 Objectives

### 1.6.1 Primary objective

To generate key cancer and other NCD related risk factors and health system response indicators in the PBCR covered regions of Assam

### 1.6.2 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 PBCR covered regions of Assam

To link or correlate risk factors with cancer incidence in the region. The survey included four broad components

1. Household level Interview
2. Adult Interview
3. Cancer patient interview
4. Health Facility Interview

## 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<sup>[12]</sup> 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 behavioral risk factors for cancer and other NCDs (including tobacco use, alcohol consumption, and physical inactivity). The sample size was 2880 for the state of Assam with 100% coverage by all the PBCRs as show in the table below:

Table 2.3.1 Sample size charting for the survey

SL No.	Registry Name	State Name	State Total Population	State Total Population (Age 18+)	Total Population (Age 18+) covering PBCR	Total Population of Study site (as per census 2011)- (Age 18+)	% of under PBCR covering area	Total sample size per Study Site (Approximately)	Total PSUs (48 HH per PSU)
1.	Cachar-PBCR	Assam (Cachar District)				1073847	11.8	384	8
2.	Kamrup District and kamrup Metropolitan - PBCR	Assam (2 districts)	3,12,05,576	19109031	9087202	1862323	20.5	576	12
3.	Dibrugarh – Upper assam PBCR	Assam (7 districts)				4929169	54.2	1536	32
4.	Karimganj-PBCR	Assam(3 districts)				1221863	13.4	384	8
<b>Total Sample Size and Total PSU</b>								<b>2880</b>	<b>60</b>

## 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 [9,10,11].

## 2.5 Survey Period

The survey was conducted in a phased manner between November 2019 and December 2020.

## 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 state of Assam with four PBCRs, one of the PBCRs was selected as an implementing agency, with the other PBCR designated as 'collaborator'. The details have been provided in **Annexure 2**.

## 2.7 Quality Assurance and Training

The quality control measures were followed to standardize the survey at all stages and all levels of governance. This included preparing training materials, undertaking training, calibration and standardization 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.

Principal Investigators (PI) and Co-Principal Investigators (Co-PI) from all the four PBCRs were trained in all survey procedures as part of the CCA's two-day Training of Trainers program held between 30<sup>th</sup> September – 1<sup>st</sup> October, 2019 at ICMR-NCDIR, Bengaluru. A classroom-based training, demonstrations, hands-on and mock field drills were undertaken for the Dibrugarh research team from 13<sup>th</sup>-15<sup>th</sup> November, 2019, at Assam Medical College, Dibrugarh. Regional

training for the Kamrup, Cachar and Karimganj research teams was held at Dr B Booroah Cancer Institute from the 3<sup>rd</sup> - 5<sup>th</sup> of December, 2019.

## **2.8 Data Management and Analysis**

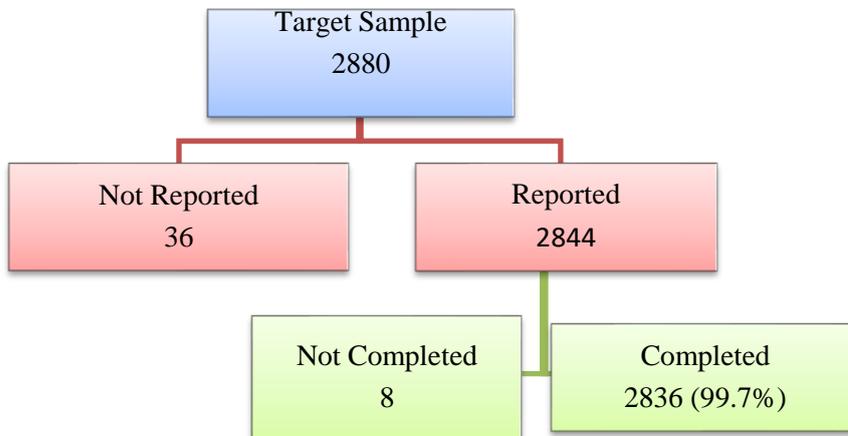
The field team used the handheld devices loaded with the software application for data collection and entered the field itself. Provision of keeping back up of data in SD cards in the handheld was also present. The data from the handheld devices were uploaded/ synced to the Central server at ICMR-NCDIR.

The data from all PSUs' 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.

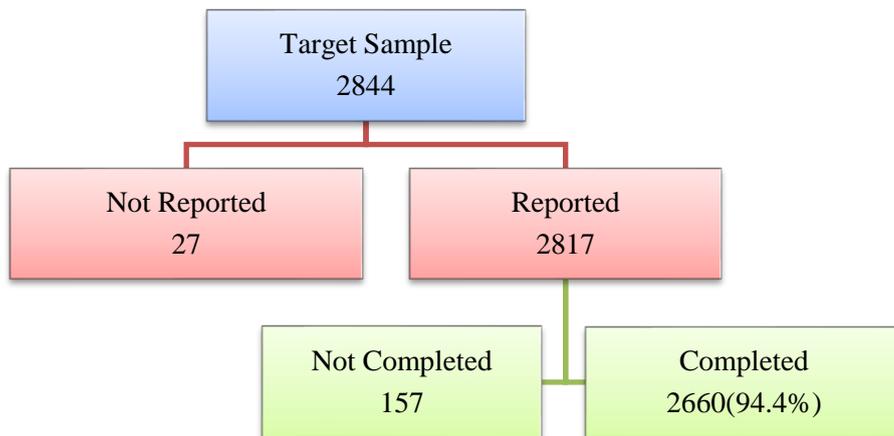
## **2.9 Ethical Considerations**

The survey received ethical clearance from the Ethics review committee of the CCA, ICMR – NCDIR (NCDIR/CaRes/NER/2/2019/17/735). Assam PBCR received its institutional ethical clearance from their institutional ethics committee

## 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

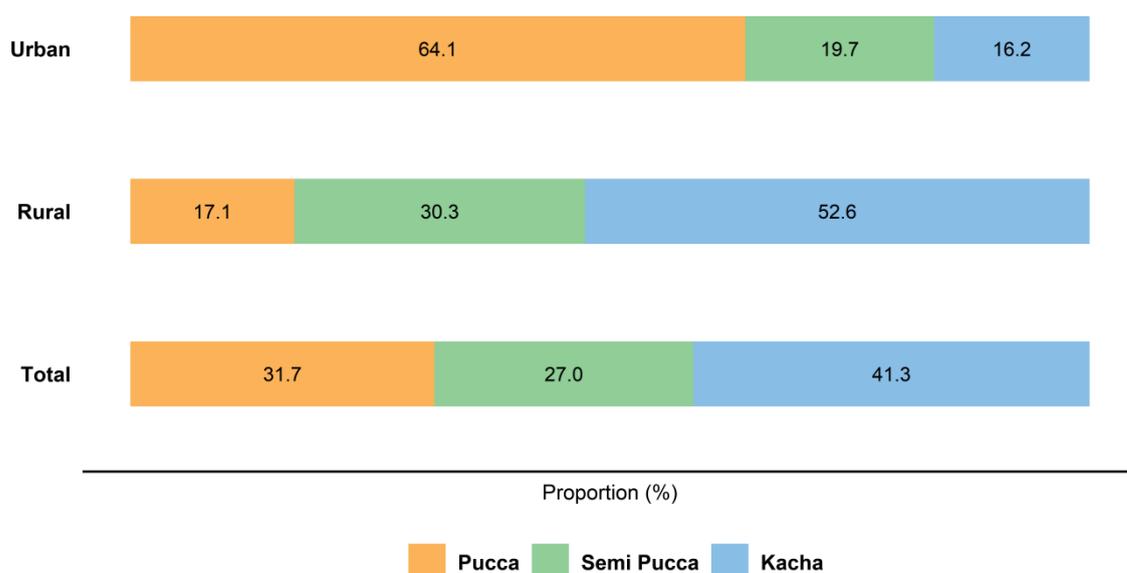
	Urban	Rural	Combined
Median	4 (2)	5 (2)	4 (2)

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 recognize 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\*



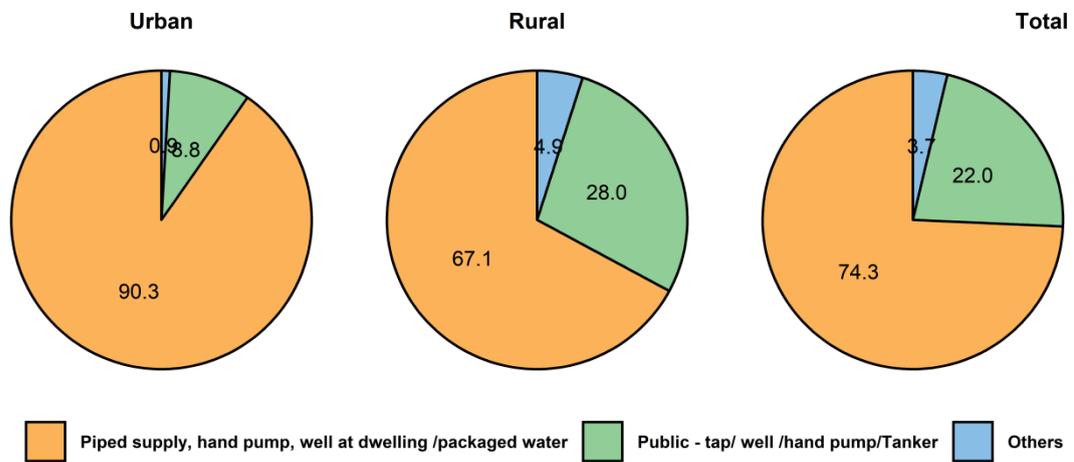
\*Type of house is defined based on roof, floor and walls.

**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.

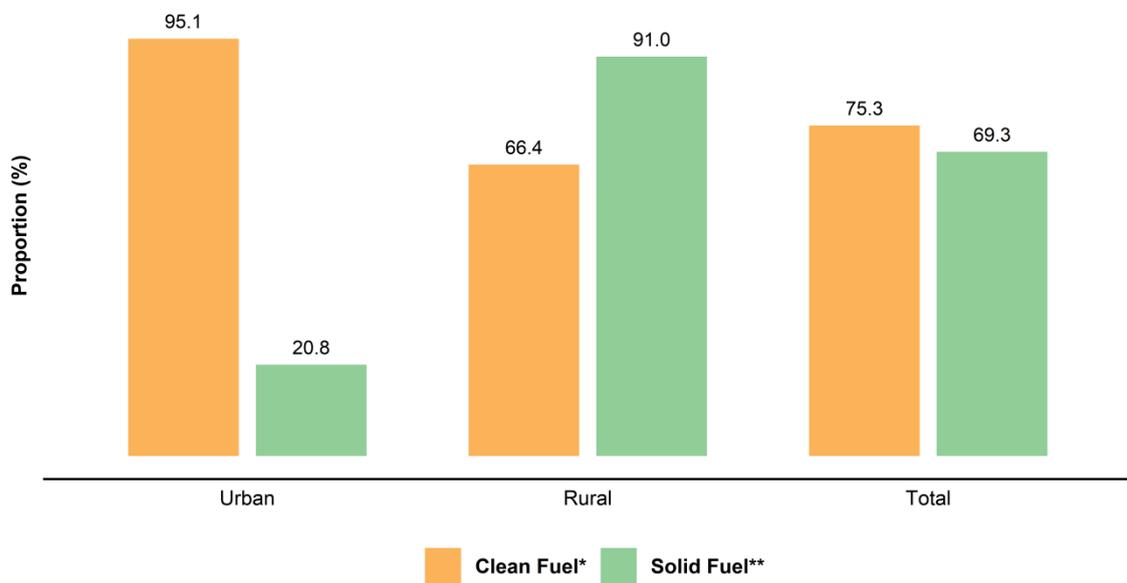
**Kutch House:** The walls and /or roof are made of material other than those mentioned above, such as unburnt bricks, bamboos, mud, grass, reeds, thatch, loosely packed stones, etc.

### 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)

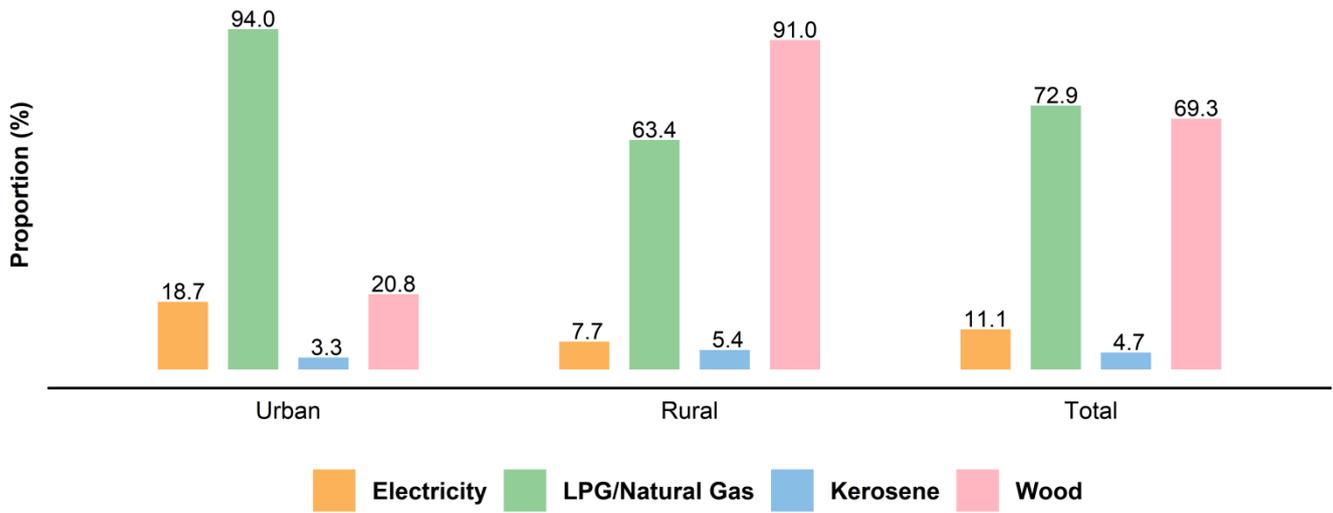
#### 3.1.3(a) Type of fuel



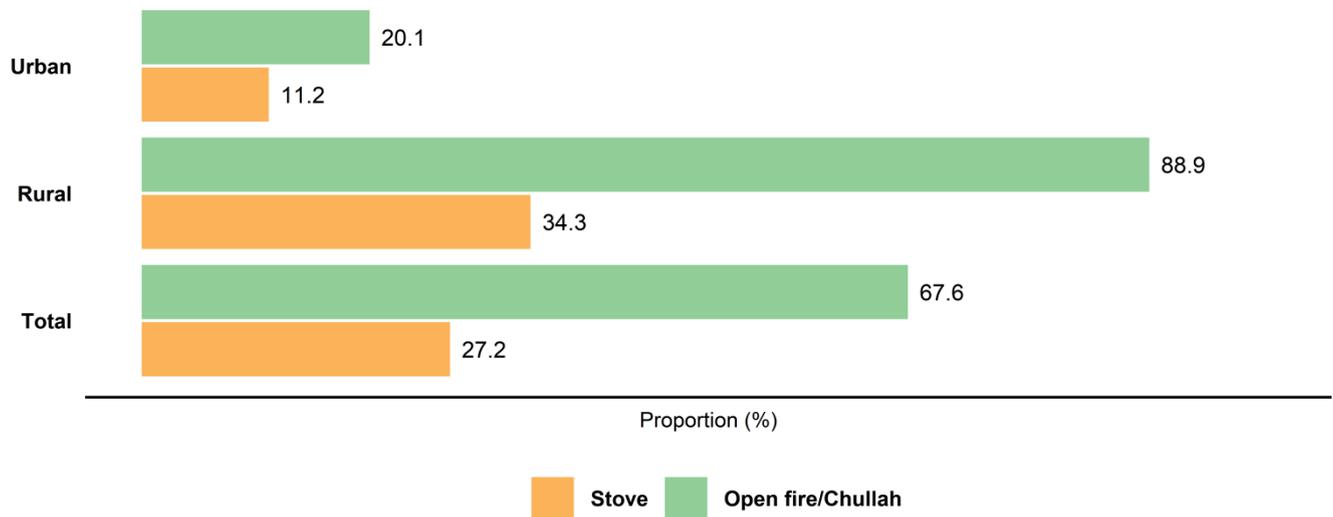
\*Clean fuel: Electricity, LPG/Natural Gas, Biogas

\*\*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 fuel



### 3.2 Awareness and Attitudes towards Cancer

	Urban	Rural	Combined
Awareness about HPV Vaccine	2.1	0.2	0.8
Felt ashamed or hesitant to talk about cancer	0.2	0.2	0.2

### 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=53)	Rural (N=2121)	Combined (N=2660)
Percentage of households with diagnosed cancer cases			
Percentage–alive	7 (1.3)	12 (0.6)	19 (0.7)
Percentage–deceased	49 (9.1)	129 (6.1)	178 (6.7)

#### 3.3.2 –Duration of Cancer from the time of diagnosis by place of residence

	Urban	Rural	Male	Female	Combined
<b>Duration of diagnosis for cancer patients who are alive</b>	<b>(N=8)</b>	<b>(N=13)</b>	<b>(N=8)</b>	<b>(N=11)</b>	<b>(N=19)</b>
< 6months	0 (0.0)	1 (7.7)	0 (0.0)	1 (9.1)	1 (5.3)
6-12months	0 (0.0)	2 (15.4)	1 (12.5)	1 (9.1)	2 (10.5)
13– 24months	1 (12.5)	3 (23.1)	3 (37.5)	1 (9.1)	4 (21.1)
> 24months	5 (62.5)	5 (38.4)	3 (37.5)	7 (63.6)	10 (52.6)
Don't know	2 (25.0)	2 (15.4)	1 (12.5)	1 (9.1)	2 (10.5)
<b>Duration between diagnosis and death of the patient</b>	<b>(N=56)</b>	<b>(N=136)</b>	<b>(N=78)</b>	<b>(N=100)</b>	<b>(N=178)</b>
< 6months	24 (42.9)	39 (28.7)	23 (29.5)	33 (33.0)	56 (31.5)
6-12months	3 (5.4)	6 (4.4)	3 (3.8)	6 (6)	9 (5.1)
13– 24months	14 (25.0)	34 (25.0)	19 (24.4)	27 (27.0)	46 (25.8)
> 24months	11 (19.6)	31 (22.8)	21 (26.9)	17 (17.0)	38 (21.3)
Don't know	4 (7.1)	26 (19.1)	12 (15.4)	17 (17.0)	29 (16.3)

\* 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	Male	Female	Combined
Average duration of cancer (alive)	66.0	43.8	65.4	42.0	51.6
Average duration of cancer (deceased)	12.7	18.3	16.9	16.0	16.4
Average duration of cancer(alive/deceased)	18.2	20.6	21.6	18.8	20.0

\*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
<b>Age(in years)</b>					
18–44	66.8	69.1	66.6	70.5	68.5
45 –69	28.9	26.2	28.5	25.2	26.9
70 and above	4.3	4.7	4.9	4.3	4.6
<b>Marital Status</b>					
Never married	18.7	11.8	18.1	8.9	13.6
Currently married /co-habiting	73.6	80.1	79.4	77.5	78.4
Separated/ Not living together/ Divorced	1.3	0.6	0.8	0.8	0.8
Widowed	6.1	7.5	1.7	12.7	7.1
Don't want to tell	0.3	0.0	0.0	0.1	0.1
<b>Highest level of Education</b>					
Less than class 6	13.8	24.7	21.6	21.6	21.6
Class 6 to10	38.2	54.5	47.1	53.0	49.8
Class 11 or12	21.5	14.8	17.3	16.0	16.7
Graduation or diploma completed	22.4	5.4	12.4	7.7	10.2
Post-graduation	4.0	0.6	1.6	1.6	1.6
No response	0.1	0.04	0.0	0.1	0.1
<b>Occupation</b>					
Professional	10.5	4.6	8.7	3.5	6.1
Medium or large Business	1.7	1.1	2.1	0.4	1.3
Middle / Senior Executive/officer in organization	2.7	0.2	1.5	0.1	0.8
Agricultural land owner	0.0	3.6	5.3	0.1	2.7

Sales and Marketing executives/Clerical	3.9	0.5	2.5	0.2	1.3
Self-employed and small business	15.2	6.8	14.8	2.8	8.9
Skilled manual laborer	8.8	9.5	15.6	3.0	9.3
Unskilled manual/ agricultural laborer	6.4	27.8	34.3	10.1	22.4
Student	7.6	2.2	4.3	2.9	3.6
Homemaker	31.8	35.0	0.4	68.9	34.2
Retired	3.9	1.5	3.1	1.0	2.1
Unemployed(able to work)	4.7	3.6	3.6	4.1	3.8
Unemployed (unable to work)	2.8	3.4	3.7	2.8	3.3
No response	0.0	0.1	0.0	0.1	0.1
Others	0.0	0.1	0.1	0.0	0.1

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

	Urban	Rural	Men	Women	Total
<b>Religion</b>					
Hinduism	84.7	85.1	84.2	85.8	85.0
Islam	14.9	11.9	13.0	12.4	12.7
Christianity	0.4	2.3	2.0	1.5	1.8
Sikhism	0.0	0.0	0.0	0.0	0.0
Buddhism	0.0	0.7	0.7	0.3	0.5
Jainism	0.0	0.04	0.1	0.0	0.03
None	0.0	0.0	0.0	0.0	0.0
Others	0.0	0.03	0.04	0.0	0.02
<b>Social Group</b>					
General	67.2	23.4	34.0	35.2	34.6
OBC	20.7	47.7	40.4	41.2	40.8
SC	7.8	12.0	11.3	10.3	10.8
ST	4.0	12.8	10.6	10.5	10.6
Others	0.3	2.4	2.0	1.8	1.9
Don't know	0.0	1.7	1.7	1.0	1.3
No response	0.0	0.03	0.04	0	0.02

### 3.5 Obstetric History of Adult Females

	Urban	Rural	Total
Ever Pregnant (%)	79.6	88.7	86.3
Age at first Pregnancy (%)			
<18Years	8.6	19.3	16.7
18 –29Years	85.7	77.4	79.4
≥30 Years	5.7	3.3	3.9
Average age at first pregnancy*(in years)	22.4	20.5	20.9
Gravida*#	2.1	2.5	2.4
Ever breast fed	97.2	98.2	97.9
Never breast fed	2.8	1.8	2.1
Median duration (in months) of breast feeding among ever pregnant women@	39.6	50.2	47.7

\*Values are expressed as Mean;

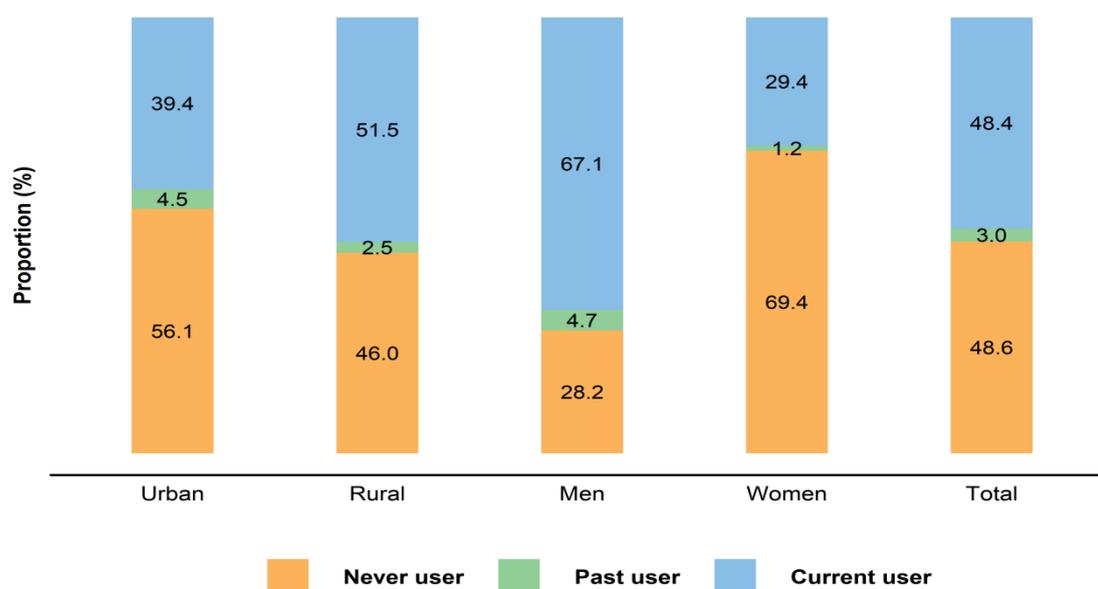
#Includes total number of confirmed pregnancies that a woman has had (includes abortion, still births or live births)

@Combined breastfeeding duration of all live births

### 3.6 Behavioral 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*	84.6	83.5	68.3	99.6	83.8
Past user**	3.5	4.4	8.3	0.0	4.2
Current user***	11.9	12.1	23.4	0.4	12.0

\* 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	61.3	51.6	39.0	69.5	54.1
Past user	3.8	1.3	2.7	1.2	1.9
Current user	34.9	47.1	58.3	29.3	44.0

### 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	4.6	4.4	8.7	0.1	4.5
Only Smokeless Tobacco	27.6	39.4	43.7	29.0	36.4
Both Smoked and Smokeless Tobacco	7.3	7.7	14.7	0.3	7.6
Either Smoked or Smokeless Tobacco	39.5	51.5	67.1	29.4	48.5

### 3.6.1.5 –Current daily tobacco\*use by place of residence and gender (Percentage)

	Urban	Rural	Men	Women	Total
Only Smoked Tobacco	4.8	3.7	7.6	0.2	4.0
Only Smokeless Tobacco	25.4	38.3	45.3	24.5	35.0
Both Smoked and Smokeless Tobacco	4.5	2.9	6.4	0.1	3.3
Either Smoked or Smokeless Tobacco	34.7	44.9	59.3	24.8	42.3

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
<b>Smoked Tobacco</b>					
Bidis	16.4	34.2	29.7	34.2	29.7
Manufactured Cigarettes	62.3	19.2	30.6	0.0	30.1
Hand-rolled Cigarettes	0.0	3.8	2.9	0.0	2.8
Pipes/Chillum	1.7	0.8	1.0	0.0	1.0
Cigars, Cheroots	0.0	0.0	0.0	0.0	0.0
Hookah/No. of Shisha session	0.0	1.5	1.0	12.0	1.2
Local smoked tobacco products	0.0	0.6	0.4	0.0	0.4
Others	0.0	0.0	0.0	0.0	0.0
<b>Smokeless Tobacco</b>					
Chewing tobacco	46.3	49.5	53.4	39.6	48.9
Pan with Zarda, Betel with Tobacco quid	41.0	36.3	30.9	50.2	37.3
Tuibur, Tobacco Snuff, by mouth	29.2	23.8	33.5	7.3	24.9
Snuff, by nose	0.4	0.2	0.1	0.4	0.2
Others	0.0	0.0	0.0	0.0	0.0

\*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
<b>Age at initiation</b>					
Any form of tobacco*	21.3	20.8	20.5	21.9	20.9
Smoked tobacco	20.6	20.8	20.7	22.8	20.7
Smokeless tobacco	21.4	21.1	20.8	21.9	21.1
<b>Age at cessation</b>					
Any form of tobacco**	40.7	35.7	37.0	38.2	37.0
Smoked tobacco	43.6	35.7	37.2	0.0	37.2
Smokeless tobacco	38.0	36.3	36.9	38.2	37.2

\*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)

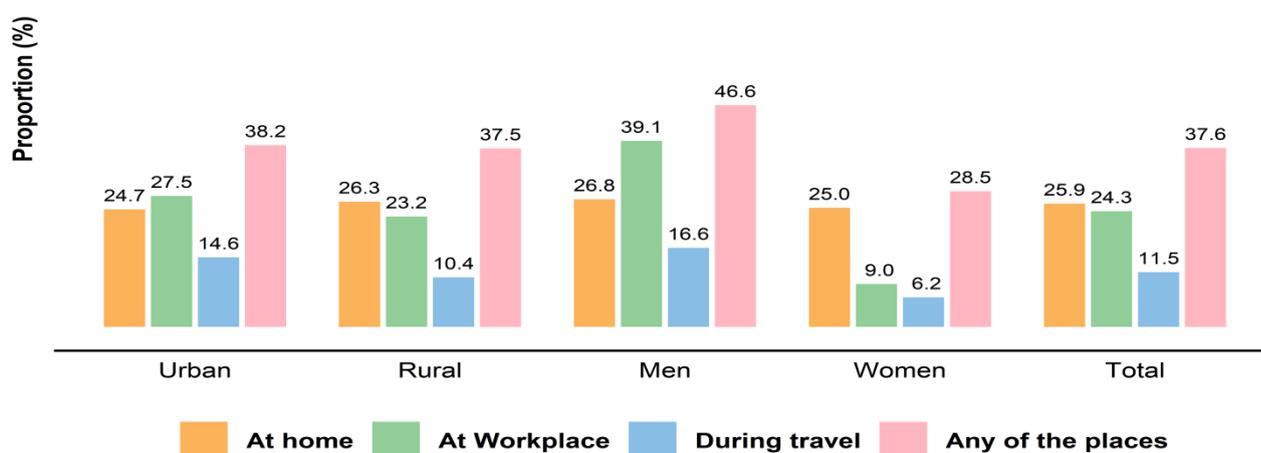
	Urban	Rural	Men	Women	Total
Any form of tobacco	20.0	16.0	17.2	14.6	17.0
Smoked tobacco	23.4	15.2	16.8	0.0	16.8
Smokeless tobacco	16.8	16.1	17.0	14.6	16.5

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
<b>Attempted to quit</b>					
Smoked tobacco (among Current users)	18.6	11.7	13.4	15.1	13.4
<b>Advised to quit</b>					
Any form of tobacco use	3.2	3.4	4.3	2.4	3.4
Smoked tobacco use	2.2	1.5	2.4	0.8	1.7
Smokeless tobacco use	2.8	3.2	3.8	2.3	3.1

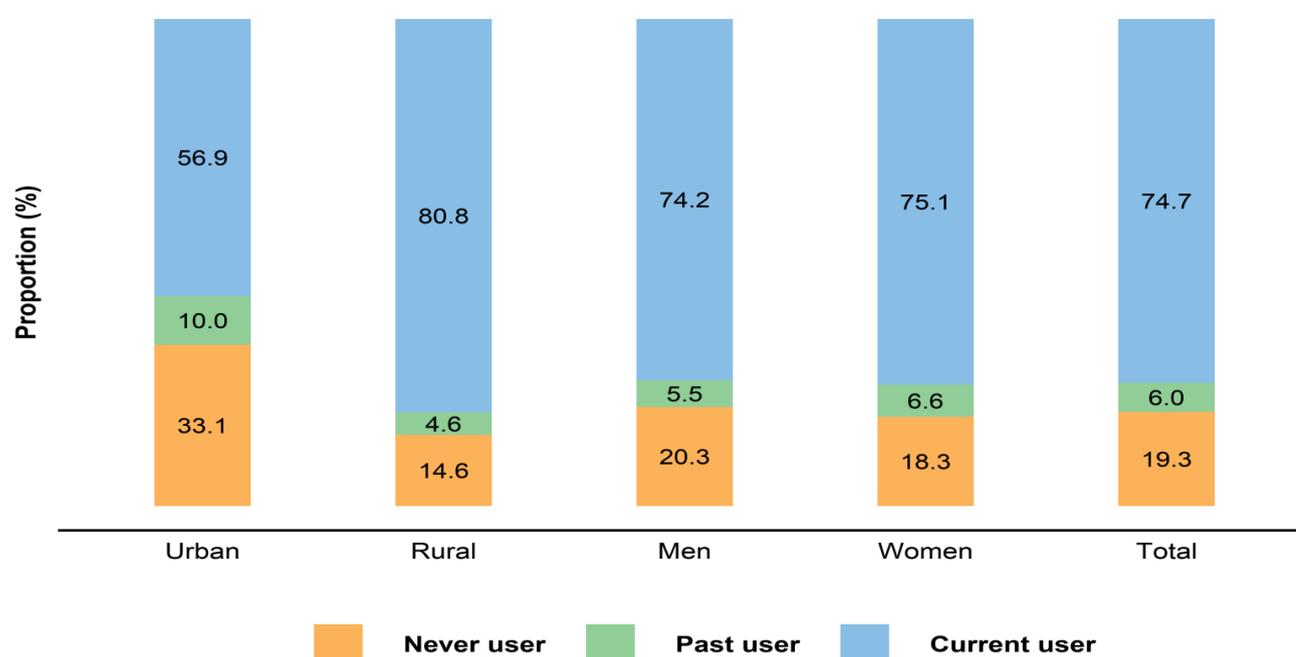
### 3. 6.2 Exposure to Second Hand Smoke

3.6.2.1-Exposure to second hand tobacco smoke in the past 30days 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)



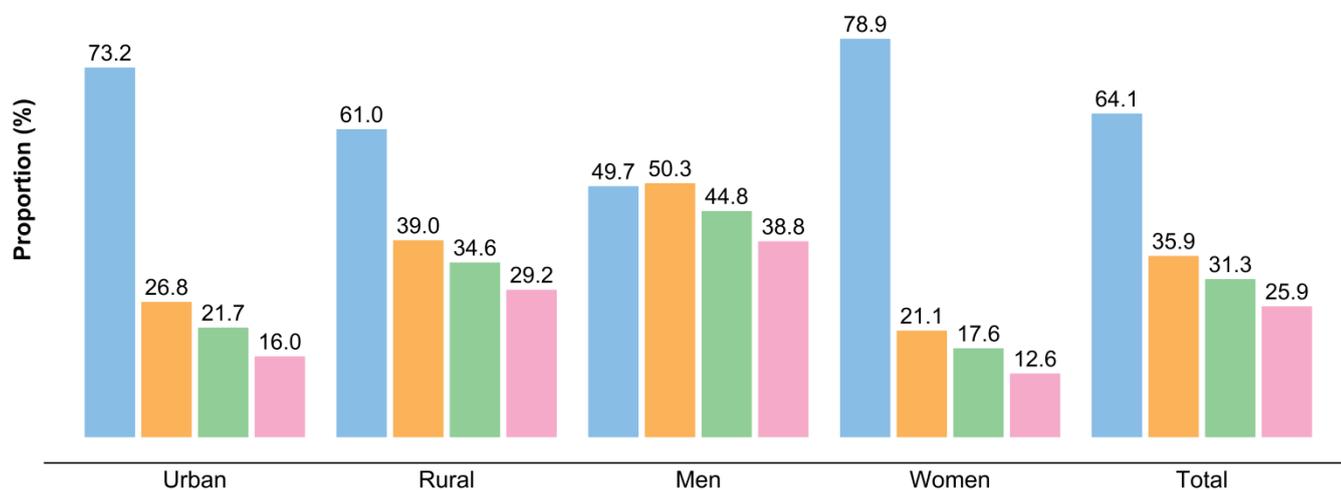
\*Includes pan masala, betel quid, areca nut.

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

	Urban	Rural	Men	Women	Total
<b>Pan Masala</b>					
Never user	67.0	75.5	67.7	79.0	73.3
Past user	16.3	12.9	16.6	11.0	13.8
Current user	16.7	11.6	15.7	10.0	12.9
<b>Betel quid</b>					
Never user	57.0	64.7	62.0	63.5	62.7
Past user	9.6	4.4	6.0	5.5	5.8
Current user	33.4	30.9	32.0	31.0	31.5
<b>Areca nut</b>					
Never user	37.1	16.1	23.0	19.9	21.4
Past user	12.8	7.3	7.9	9.4	8.7
Current user	50.1	76.6	69.1	70.7	69.9

### 3.6.4 Alcohol Use

#### 3.6.4.1 –Alcohol use\*by place of residence and gender(Percentage)



■ Life time abstainers ■ Ever Consumed ■ Consumed in the past 12 months ■ Consumed in the past 30 days

\*Life time 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	23.1	22.4	22.2	23.4	22.5

#### 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
<b>Unable to stop drinking</b>					
Never	66.5	87.3	79.6	94.1	83.6
Daily/ almost daily	6.8	2.0	3.9	0.1	2.9
Weekly	8.3	4.0	6.2	0.9	4.8
Monthly	4.3	2.5	3.1	2.1	2.8
Less than Monthly	10.4	3.3	5.3	2.6	4.6
<b>Failed to do usual routine work due to drinking habit</b>					
Never	84.8	91.7	87.5	98.3	90.5

Daily/ almost daily	1.9	1.1	1.8	0.0	1.3
Weekly	0.4	1.4	1.7	0.0	1.2
Monthly	2.0	1.9	2.3	1.0	1.9
Less than Monthly	6.5	2.5	4.2	0.5	3.2
<b>Need of first drink in the morning</b>					
Never	93.3	96.3	94.2	99.9	95.8
Daily/ almost daily	0.0	0.7	0.8	0.0	0.6
Weekly	2.3	0.8	1.5	0.0	1.1
Monthly	1.8	0.7	1.2	0.0	0.9
Less than Monthly	0.9	0.2	0.4	0.0	0.3

\*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	5.3	10.1	14.9	3.0	8.9
45 – 69 Years	5.9	14.7	18.4	5.1	12.3
70 and above	0.0	5.5	4.8	3.5	4.2
18+ years	5.3	11.1	15.4	3.6	9.6

\*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
18-44Years	2.5	1.4	2.3	1.1	1.7
45 –69Years	1.7	2.5	3.9	0.3	2.3
70andabove	0.0	2.5	3.6	0.0	1.9
18+years	2.2	1.7	2.8	0.9	1.9

### 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	2.7	1.6	1.9	1.9	1.9
Vegetables	6.3	6.2	6.2	6.2	6.2
Fruits and/ or Vegetables	6.4	6.2	6.2	6.3	6.3
Fruit or Vegetable juice	0.7	0.3	0.4	0.4	0.4

**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	0.6	0.3	0.4	0.4	0.4
Vegetables	2.4	2.2	2.3	2.3	2.3
Fruits and/ or Vegetables*	3.0	2.6	2.7	2.7	2.7
Fruit or Vegetable Juice	0.1	0.1	0.1	0.1	0.1

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

*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	1.9	1.6	1.7	1.6	1.7
Fish	2.6	2.5	2.6	2.6	2.6
Red Meat	1.2	1.2	1.2	1.2	1.2
Either Birds/ Poultry or Fish or Red Meat*	2.8	2.6	2.7	2.7	2.7

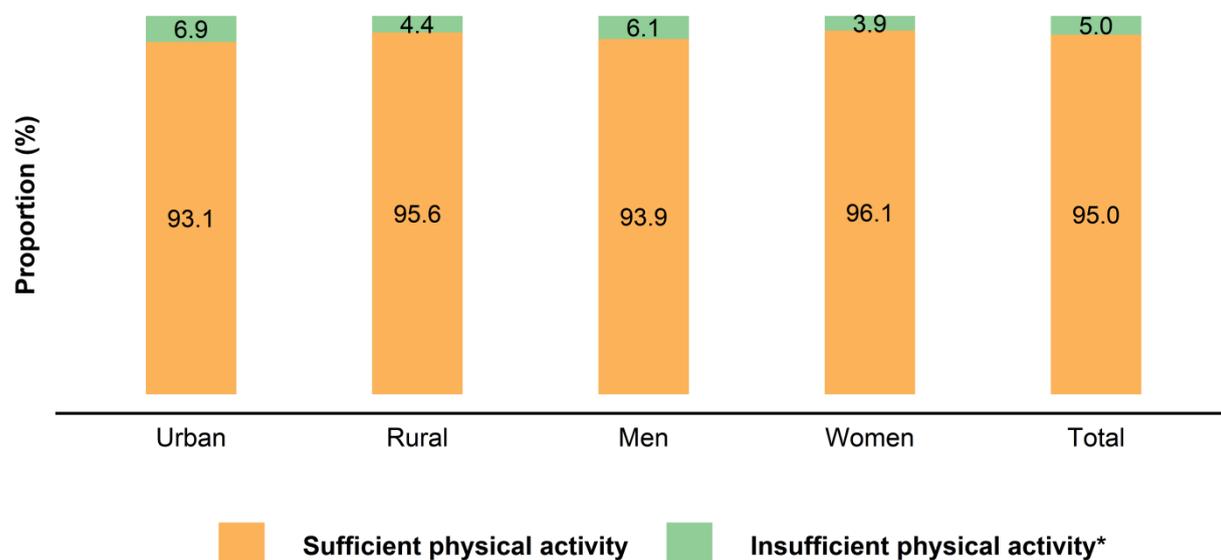
*\*If an adult consumed more than one meat item, the maximum number of days for any one item was considered*

**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	80.2	71.4	72.8	74.5	73.7
Mean number of days of consumption	2.9	2.3	2.4	2.5	2.5

### 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*

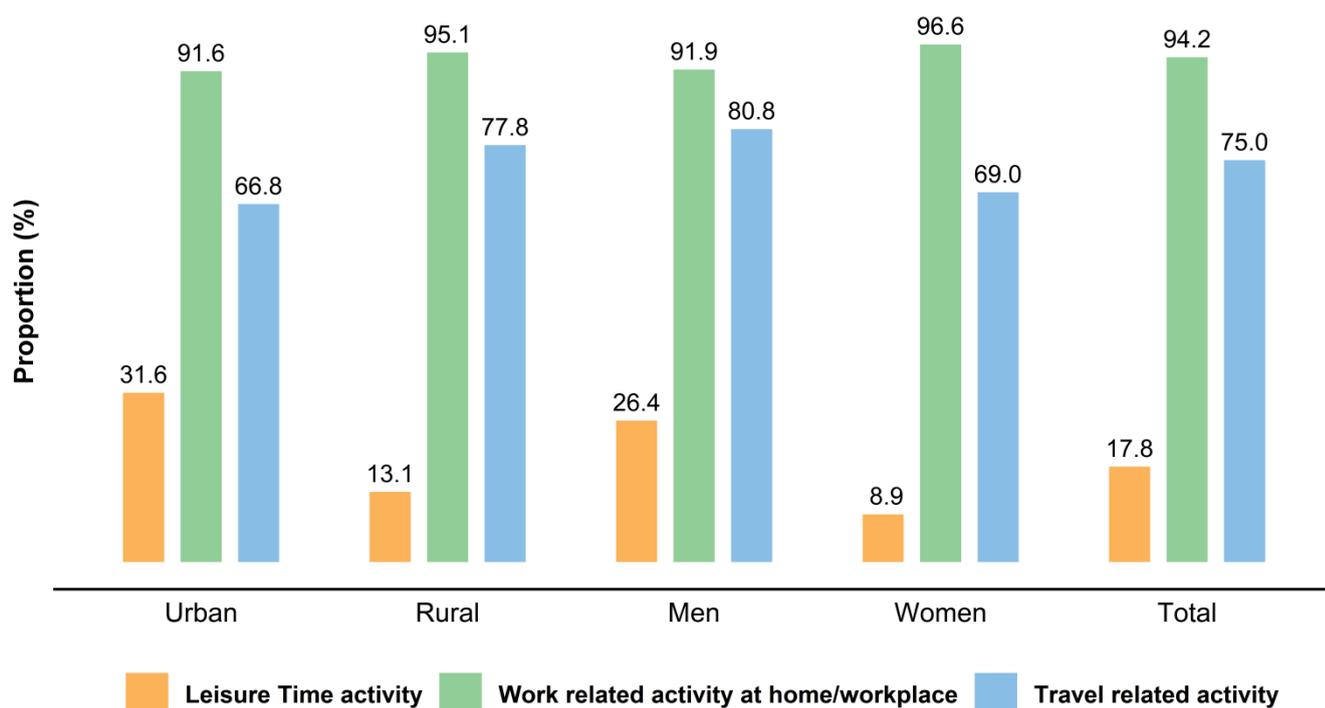
#### 3.6.6.2 Nature of physical activity in which the participants are engaged by place of residence and gender(Percentage)

	Urban	Rural	Men	Women	Total
<b>Routine work at home/workplace</b>					
Vigorous-intensity activity*	20.2	42.9	49.5	24.5	37.1
Moderate intensity activity**	91.3	93.3	89.2	96.6	92.8
<b>Recreational/ leisure activities</b>					
Vigorous-intensity activity	5.4	5.5	9.1	1.7	5.4
Moderate intensity activity	30.1	11.3	23.3	8.7	16.1

*\* 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	3.9	1.5	1.5	2.7	2.1
45 –69 Years	9.4	2.1	4.3	3.9	4.1
70 and above	0.0	1.7	2.4	0.0	1.3
18+years	5.3	1.7	2.3	2.9	2.6

**3.6.7 High risk behavior 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	70.5	69.9	64.7	75.5	70.1

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

	Urban	Rural	Men	Women	Total
<15 Years	0.9	1.4	0.2	2.2	1.3
15 –19 Years	20.6	34.7	9.2	50.3	31.1
20 -24 Years	36.3	36.9	39.9	34.0	36.7
>25 Years	42.2	27.0	50.7	13.5	30.9

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

	Urban	Rural	Men	Women	Total
Single sexual partner	76.1	89.5	81.6	90.7	86.1
Multiple sexual partner*	4.1	2.0	4.3	0.7	2.5

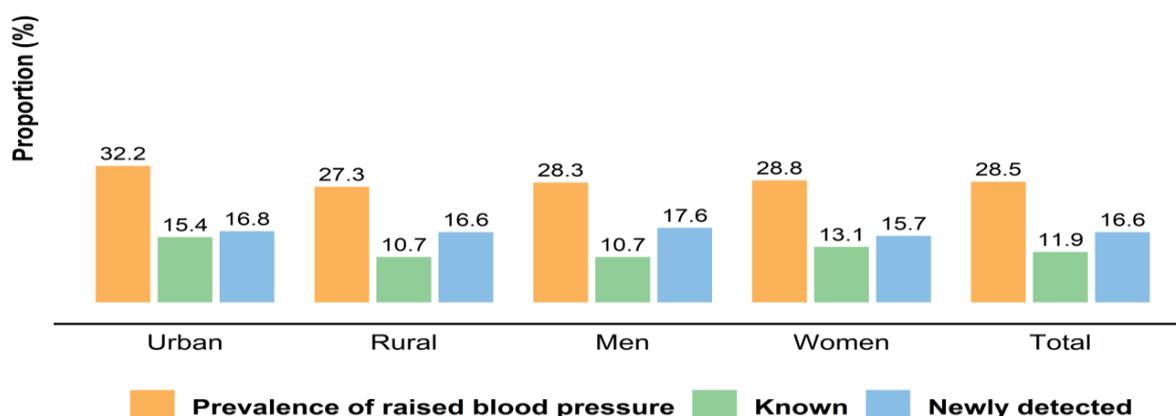
\*Two or more sexual partner

### 3.6.7.4 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	4.1	3.3	1.2	5.9	3.5
<b>Type of symptoms</b>					
Urethral/vaginal discharge	70.3	56.1	13.6	70.2	60.3
Blisters or ulcers(sores) on the mouth, lips, genitals, anus, or surrounding area	7.9	12.8	31.8	7.0	11.4
Burning or pain during urination	51.0	55.5	96.4	45.2	54.1
Warts or bumps on the genitals, anus, or Surrounding areas	0.0	5.3	0.0	4.5	3.7
Small, dimpled bumps or lesions on the skin	4.8	4.2	12.0	2.8	4.4

## 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	30.1	34.5	24.2	42.8	33.4
Pre -Hypertension	40.6	41.0	49.6	32.0	40.9
Hypertension–Stage1	22.1	16.4	18.4	17.4	17.9
Hypertension–Stage2	7.2	8.1	7.8	7.8	7.8

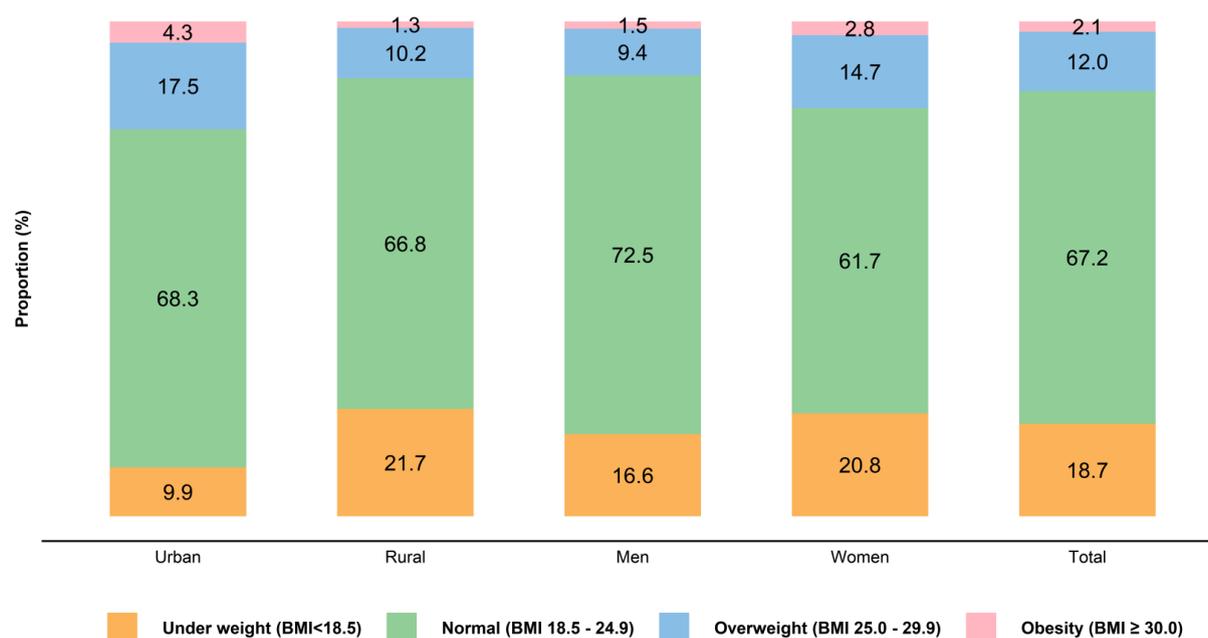
\*\*Normal-(SBP<120, DBP<80); Pre –hypertension (SBP:120-139 DBP:80-89);

Hypertension Stage 1(SBP:140-159, DBP:90-99); Hypertension Stage2(SBP≥ 160; DBP≥100) among measured.

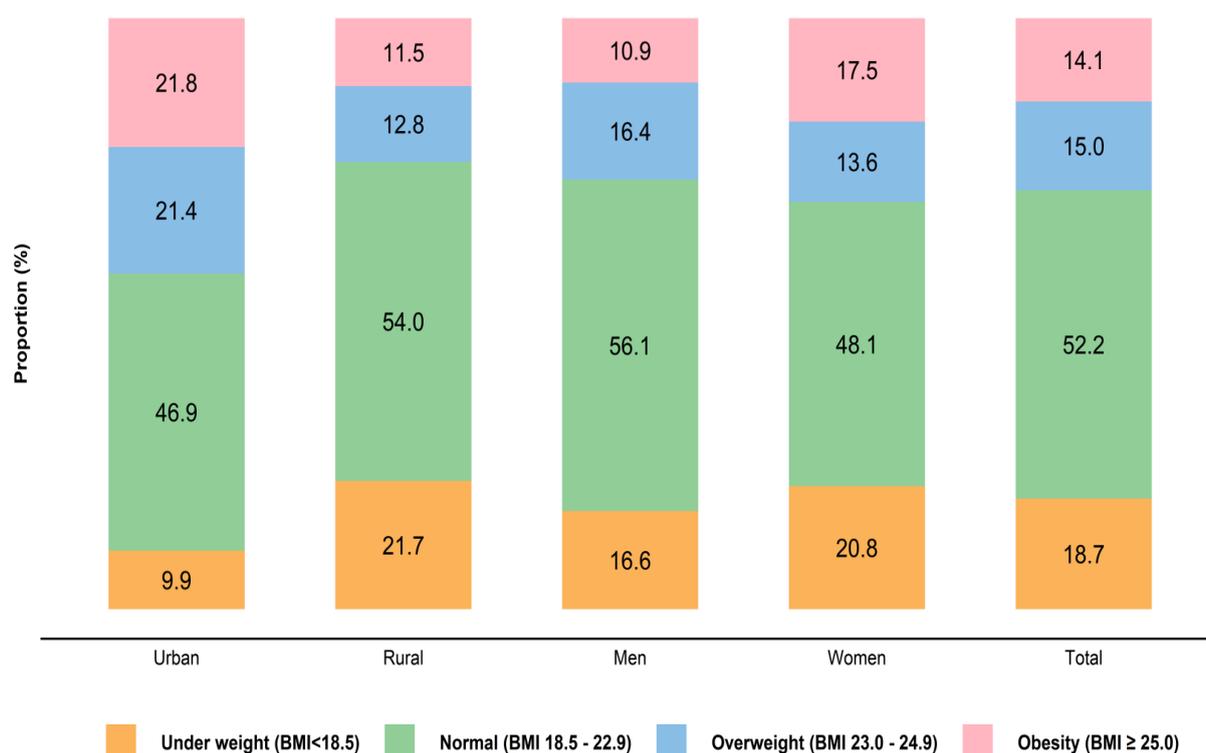
## 3.8 Physical Measurement

### 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 Obese by place of residence and gender (Percentage)

	Urban	Rural	Men	Women	Total
Overweight(BMI≥25.0)	21.8	11.5	10.9	17.5	14.1
Obese(BMI ≥30.0)	4.3	1.3	1.5	2.8	2.1

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

	Urban	Rural	Men	Women	Total
18-44Years	38.2	23.8	9.9	44.7	27.4
45 –69Years	59.0	30.6	24.3	54.6	38.3
70andabove	30.8	29.6	22.5	38.8	29.9
18+years	43.9	25.9	14.6	47.0	30.5

\*A waist circumference of ≥ 90 cm in males and ≥ 80 cm 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
18-44Years	3.6	1.9	1.9	2.7	2.3
45 –69Years	4.2	2.1	2.0	3.4	2.7
70andabove	0.0	3.4	3.0	2.1	2.6
18+years	3.6	2.0	2.0	2.8	2.4

### 3.9 Blood Glucose Measurement

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

	Urban	Rural	Men	Women	Total
Prevalence of raised blood glucose	9.6	7.5	8.3	7.7	8.0
Known	6.1	1.9	3.4	2.5	2.9
Newly detected	3.5	5.6	4.9	5.2	5.1

\*Raised fasting blood glucose- $\geq 126$ 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
<100mg/dl	<b>81.0</b>	<b>80.2</b>	<b>79.0</b>	<b>81.9</b>	<b>80.4</b>
100– 109mg/dl	<b>4.3</b>	<b>7.0</b>	<b>6.8</b>	<b>5.9</b>	<b>6.4</b>
110– 125mg/dl	<b>6.5</b>	<b>6.2</b>	<b>7.2</b>	<b>5.4</b>	<b>6.3</b>
$\geq 126$ mg/dl	<b>8.1</b>	<b>6.6</b>	<b>7.1</b>	<b>6.8</b>	<b>6.9</b>

### 3.10 Clustering of risk factors

3.10.1 Clustering of atleast  $\geq 3$  risk factors\* among adults by place of residence and gender (Percentage)

	Urban	Rural	Men	Women	Total
18-44 Years	20.2	16.6	21.5	13.6	17.5
45 –69 Years	50.7	39.2	45.2	39.1	42.4
70 and above	32.0	53.8	42.4	55.8	48.6
18+years	29.5	24.3	29.3	21.9	25.6

\*Clustering of risk factors – Presence of  $\geq 3$  risk factors like daily tobacco use, inadequate fruits and/or vegetable consumption, insufficient physical activity, overweight ( $\geq 25.0$  Kg/m<sup>2</sup>), 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	21.3	28.5	36.2	16.9	26.7
Measured ever in life	78.7	71.5	63.8	83.1	73.3
Within past1year	49.6	39.3	35.2	48.7	41.9
>1year	29.1	32.3	28.5	34.4	31.5

##### 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	84.8	82.5	81.3	84.9	83.3
On treatment*	52.9	30.8	39.3	37.1	38.1
Adherence to treatment**	37.4	16.6	25.9	21.5	23.5
Blood pressure under control ***	20.4	26.7	20.6	27.9	24.6

\* 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
<b>Source of measurement of blood pressure*</b>					
Government screening camp/ Health facility	33.6	59.2	48.2	53.9	51.5
Private/ NGO screening camp/ Health facility	66.4	40.8	51.8	46.1	48.5
<b>Current source of consultation for raised blood pressure</b>					
Allopathic doctor from Public sector	26.7	27.5	20.4	33.0	27.3
Allopathic doctor from Private/ NGO health facility	39.6	14.6	27.8	18.7	22.8

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

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
18-44Years	51.2	46.7	36.1	59.2	47.8
45 –69Years	72.4	56.6	55.6	67.1	60.9
70andabove	89.4	66.0	70.8	72.6	71.6
18+years	59.0	50.2	43.3	61.8	52.4

### 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	46.7	66.6	68.0	54.8	61.5
Measured ever in life	53.3	33.4	32.0	45.2	38.5
Measured in the past					
Within1year	22.2	14.4	13.6	19.2	16.4
>1year	31.1	19.1	18.4	26.0	22.1

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	98.3	66.1	79.8	87.5	83.0
On treatment*	70.3	40.0	58.5	52.4	55.9
Adherence to treatment**	60.1	31.7	49.1	43.2	46.6
Blood glucose under control***	33.9	50.7	43.6	39.5	41.9

\* 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 BloodGlucoselevel $\leq$ 126mg/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	35.4	65.3	44.7	62.4	55.0
Private/ NGO screening camp/ Health facility	64.6	34.7	55.3	37.6	45.0
Current consultation for raised blood glucose					
Allopathic doctor from Public sector	15.7	29.9	18.3	28.2	22.4
Allopathic doctor from Private/ NGO health facility	58.0	25.6	48.0	35.2	42.7

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

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

	Urban	Rural	Men	Women	Total
18-44Years	31.6	18.2	14.7	28.1	21.5
45 –69Years	48.8	25.9	30.5	34.1	32.2
70andabove	52.9	37.8	48.5	33.3	41.5
18+years	37.5	21.1	20.9	29.9	25.3

## 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
<b>Awareness levels by age groups</b>					
18-29Years	41.7	23.1	26.5	29.4	28.0
30 –49Years	45.9	15.5	22.6	23.3	23.0
50-69Years	35.1	17.3	25.7	17.7	22.1
70andabove	29.0	5.2	13.4	8.1	10.9
18+years	42.0	17.2	23.7	23.3	23.5
<b>Source of information*</b>					
TV/Newspaper/social media	91.8	58.9	76.2	71.5	73.9
Friends/family	74.6	64.0	71.3	66.2	68.8
Health worker	44.9	49.1	45.2	49.3	47.2
Health awareness camps	18.7	20.0	21.0	17.8	19.4

\*Among those who are aware of cancer screening.

**3.12.2 –Adults who had ever under gone oral/breast/cervical cancer screening by place of residence (Percentage)**

	Urban	Rural	Total
Cervical cancer	0.0	0.0	0.0
Breast cancer*	1.4	0.4	0.7
Oral cancer	0.4	0.2	0.2

\*Among women more than 30years of age

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

Screening for breast cancer	Urban	Rural	Total
<b>Forms of screening*</b>			
Only clinical breast examination by doctor/healthcare professional	100.0	59.4	82.1
Only Ultrasound of breast or mammogram	0.0	59.4	26.2
Performed breast self-examination	0.0	59.4	26.2

\*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	-	-	-
PAP	-	-	-
HPV-DNA	-	-	-
Others	-	-	-

\*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	0.05	0.05	0.3	0.2
Breast Cancer*	1.0	0.2	0.0	0.4	0.4
Cervical Cancer*	0.0	0.0	0.0	0.0	0.0

\*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=6)	Rural(n=46)	Total(n=52)
<b>Types of services</b>			
Outpatient services	5 (83.3)	46 (100.0)	51 (98.1)
In patient services	0 (0.0)	18 (39.1)	18 (34.6)
Emergency services	3 (50.0)	27 (58.7)	30 (57.7)
<b>Availability of functional Telephone facility</b>	6 (100.0)	41 (89.1)	47 (90.4)
<b>Availability of ambulance facility<sup>1</sup></b>	5 (83.3)	28 (60.9)	33 (63.5)
<b>Electricity and Functional electricity back up</b>	5 (83.3)	37 (80.4)	42 (80.8)

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

<sup>1</sup>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=6)	Rural(n=46)	Total(N=52)
<b>Written standard treatment guidelines under NPCDCS availability</b>	2 (33.3)	10 (21.7)	12 (23.1)
<b>Cancer screening availability</b>			
Oral Cancer	0 (0.0)	7 (15.2)	7 (13.5)
Cervical Cancer	0 (0.0)	4 (8.7)	4 (7.7)
Breast Cancer	0 (0.0)	7 (15.2)	7 (13.5)
All three cancers	0 (0.0)	4 (8.7)	4 (7.7)
<b>Method of screening cancer</b>			
Organized Screening*	0 (0.0)	7 (15.2)	7 (13.5)
Opportunistic screening**	0 (0.0)	2 (4.3)	2 (3.8)
<b>Place of referral of patients found positive after screening</b>			
CHC	0 (0.0)	1 (2.2)	1 (1.9)
DH	0 (0.0)	3 (6.5)	3 (5.8)
Tertiary Care Hospital	0 (0.0)	2 (4.3)	2 (3.8)
Private Health facility	0 (0.0)	1 (2.2)	1 (1.9)
<b>Availability of Physiotherapy facility</b>	0 (0.0)	3 (6.5)	3 (5.8)

\* 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 behavior

	Urban(n=6)		Rural(n=46)		Total(N=52)	
	In house	In Vicinity	In house	In Vicinity	In house	In Vicinity
Availability of Counselling facilities for risk behavior through counsellor or specialized personnel*						
Tobacco cessation	2 (33.3)	0 (0.0)	13 (28.3)	3 (6.5)	15 (28.8)	3 (5.8)
Dietary Modification	2 (33.3)	0 (0.0)	10 (21.7)	4 (8.7)	12 (23.1)	4 (7.7)
Physical Activity	2 (33.3)	0 (0.0)	8 (17.4)	2 (4.3)	10 (19.2)	2 (3.8)
Alcohol Cessation	2 (33.3)	0 (0.0)	10 (21.7)	5 (10.9)	12 (23.1)	5 (9.6)

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

### 3.13.4 – Availability of IEC material on cancer

	Urban(n=6)	Rural(n=46)	Total(N=52)
IEC materials related to Cancer displayed/available in the patient waiting room / outpatient department			
Posters	1 (16.7)	22 (47.8)	23 (44.2)
Videos	0 (0.0)	2 (4.3)	2 (3.8)
Pamphlets	1 (16.7)	15 (32.6)	16 (30.8)
Booklets	0 (0.0)	2 (4.3)	2 (3.8)

### 3.13.5 Availability of Human Resources

Staff	Urban (n=6)		Rural(n=46)		Total(N=52)	
	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)	6 (100.0)	4 (66.7)	41 (89.1)	16 (34.8)	47 (90.4)	20 (38.5)
AYUSH Medical Officer	1 (16.7)	1 (16.7)	14 (30.4)	0 (0.0)	15 (28.8)	1 (1.9)
Staff Nurse	6 (100.0)	0 (0.0)	40 (87.0)	14 (30.4)	46 (88.5)	14 (26.9)
Auxiliary Nurse Midwife (ANM)	6 (100.0)	1 (16.7)	40 (87.0)	11 (23.9)	46 (88.5)	12 (23.1)

Lady Health Visitor/ Female Health Assistant/PHN	1 (16.7)	0 (0.0)	18 (39.1)	2 (4.3)	19 (36.5)	2 (3.8)
Male Health Assistant	2 (33.3)	0 (0.0)	9 (19.6)	1 (2.2)	11 (21.2)	1 (1.9)
Accountant cum data entry operator	5 (83.3)	0 (0.0)	35 (76.1)	4 (8.7)	40 (76.9)	4 (7.7)
Pharmacist	6 (100.0)	0 (0.0)	39 (84.8)	3 (6.5)	45 (86.5)	3 (5.8)
Lab Technician	5 (83.3)	0 (0.0)	39 (84.8)	3 (6.5)	44 (84.6)	3 (5.8)
Health educator	1 (16.7)	0 (0.0)	12 (26.1)	0 (0.0)	13 (25)	0 (0.0)
Cold Chain & Vaccine Logistic Assistant	6 (100.0)	0 (0.0)	20 (43.5)	3 (6.5)	26 (50)	3 (5.8)

### 3.13.6 Availability of Laboratory procedures and equipment & supplies

	Urban(n=6)	Rural(n=46)	Total(N=52)
<b>Availability of Laboratory <sup>1</sup></b>			
Routine investigations <sup>2</sup>	6 (100.0)	43 (93.5)	49 (94.2)
Cancer screening <sup>3</sup>	0 (0.0)	5 (10.9)	5 (9.6)
<b>Equipment &amp; supplies available in stock</b>			
General <sup>4</sup>	6 (100.0)	46 (100.0)	52 (100.0)
Cancer screening <sup>5</sup>	4 (66.7)	31 (67.4)	35 (67.3)

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=27)	DH(n=7)
<b>Location</b>		
Rural	19 (70.4)	1 (14.3)
Urban	8 (29.6)	6 (85.7)
<b>Types of services</b>		
Outpatient services	27 (100.0)	7 (100.0)
Inpatient services	27 (100.0)	7 (100.0)
Emergency services	25 (92.6)	7 (100.0)
Intensive Care Unit(ICU) or Cardiac Care Unit	1 (3.7)	3 (42.9)
<b>Availability of functional Telephone facility</b>	25 (92.6)	7 (100.0)
<b>Availability of ambulance facility<sup>1</sup></b>	25 (92.6)	7 (100.0)
<b>Electricity and Functional electricity backup</b>	26 (96.3)	7 (100.0)

<sup>1</sup> Includes ambulance owned by health center, centralized ambulance services, outsourced and hired as and when required

#### 3.14.2 Availability of Cancer related services

	CHC(n=27)	DH(n=7)
Written standard treatment guidelines under NPCDCS availability	<b>13 (86.7)</b>	<b>2 (66.7)</b>
Cancer screening availability		
Oral Cancer	<b>0 (0.0)</b>	<b>2 (28.6)</b>
Cervical Cancer	<b>0 (0.0)</b>	<b>2 (28.6)</b>
Breast Cancer	<b>0 (0.0)</b>	<b>2 (28.6)</b>
All three cancers	<b>0 (0.0)</b>	<b>2 (28.6)</b>
Method of detecting cancer		
Organized Screening	<b>0 (0.0)</b>	<b>2 (28.6)</b>
Opportunistic screening	<b>0 (0.0)</b>	<b>1 (14.3)</b>
Management of patients with Cancer		
Fixed days/ day in a week	<b>0 (0.0)</b>	<b>0 (0.0)</b>
Seen daily, no dedicated day	<b>0 (0.0)</b>	<b>1 (14.3)</b>
All are referred/ Not managed	<b>0 (0.0)</b>	<b>1 (14.3)</b>
Availability of Day care facility for management of cancer patients (for Chemotherapy)	<b>2 (7.7)</b>	<b>0 (0.0)</b>

### 3.14.3 Availability of counselling facilities for risk behaviour and Cancer related IEC materials

	CHC(n=27)	DH(n=7)
<b>Availability of Counselling facilities for risk behavior through counsellor or Specialized personnel*</b>		
Tobacco cessation	7 (25.9)	4 (57.1)
Dietary Modification	6 (22.2)	4 (57.1)
Physical Activity	5 (18.5)	3 (42.9)
Alcohol Cessation	6 (22.2)	4 (57.1)
IEC materials related to Cancer displayed/ available in the patient waiting room/outpatient department		
Posters	17 (63.0)	6 (85.7)
Videos	0 (0.0)	3 (42.9)
Pamphlets	8 (29.6)	3 (42.9)
Booklets	2 (7.4)	3 (42.9)
Others	0 (0.0)	0 (0.0)

\*Available in-house and in vicinity (within5km)

### 3.14.4 Availability of Human Resources (Medical Staff)

	CHC(n=27)		DH(n=7)	
	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	5 (18.5)	0 (0.0)	5 (71.4)	1 (14.3)
Surgery	3 (11.1)	0 (0.0)	4 (57.1)	0 (0.0)
Gynaecology	16 (59.3)	1 (3.7)	6 (85.7)	1 (14.3)
Radiology	5 (18.5)	0 (0.0)	6 (85.7)	0 (0.0)
Pathology	6 (22.2)	0 (0.0)	4 (57.1)	0 (0.0)
General duty Medical Officer	26 (96.3)	5 (18.5)	7 (100.0)	2 (28.6)
AYUSH	15 (55.6)	2 (7.4)	6 (85.7)	1 (14.3)
Paediatrics	12 (44.4)	1 (3.7)	7 (100.0)	1 (14.3)

### 3.14.5 Availability of Human Resources (paramedical / other Staff)

	CHC(n=27)		DH(n=7)	
	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 (NCDrelated)/State program
Staff Nurse	27 (100.0)	12 (44.4)	7 (100.0)	2 (28.6)
Pharmacist	27 (100.0)	3 (11.1)	7 (100.0)	2 (28.6)
Lab Technician	27 (100.0)	6 (22.2)	7 (100.0)	2 (28.6)
Physiotherapist	2 (7.4)	0 (0.0)	4 (57.1)	0 (0.0)
Radiographer	20 (74.1)	1 (3.7)	7 (100.0)	0 (0.0)
O.T technician	6 (22.2)	0 (0.0)	2 (28.6)	0 (0.0)
Social worker	3 (11.1)	1 (3.7)	1 (14.3)	1 (14.3)
Data Entry Operator	16 (59.3)	3 (11.1)	5 (71.4)	1 (14.3)
Rehabilitation therapist	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Counsellor	12 (44.4)	1 (3.7)	5 (71.4)	2 (28.6)
Others	23 (85.2)	20 (74.1)	5 (71.4)	4 (57.1)

### 3.14.6 Availability of prevention/treatment procedures

	CHC(n=27)	DH(n=7)
HPV Vaccination	0 (0.0)	1 (14.3)
General surgical procedures	6 (22.2)	4 (57.1)
Laparoscopic procedures	12 (44.4)	4 (57.1)
Radiotherapy	0 (0.0)	0 (0.0)
Palliative care	0 (0.0)	2 (14.3)

### 3.14.7 Availability of prevention/ treatment procedures, laboratory and Equipment & supplies in Public Secondary Health Care facilities (Percentage)

	CHC(n=27)	DH(n=7)
<b>Laboratory and other investigations<sup>1</sup></b>		
<b>Routine blood investigations<sup>2</sup></b>	<b>27 (100.0)</b>	<b>7 (100.0)</b>
<b>Biochemistry<sup>3</sup></b>	<b>26 (96.3)</b>	<b>7 (100.0)</b>
<b>Cardiac investigations<sup>4</sup></b>	<b>1 (3.7)</b>	<b>4 (57.1)</b>
<b>Radiology<sup>5</sup></b>	<b>22 (81.5)</b>	<b>7 (100.0)</b>
<b>Endoscopy<sup>6</sup></b>	<b>0 (0.0)</b>	<b>0 (0.0)</b>

<b>Histopathology</b>	<b>1 (3.7)</b>	<b>0 (0.0)</b>
<b>Cervical cancer screening<sup>7</sup></b>	<b>1 (3.7)</b>	<b>0 (0.0)</b>
<b>Available equipment in stock</b>		
<b>Essential<sup>8</sup></b>	<b>17 (63.0)</b>	<b>6 (85.7)</b>
<b>Imaging<sup>9</sup></b>	<b>2 (7.4)</b>	<b>5 (71.4)</b>
<b>Cardiopulmonary<sup>10</sup></b>	<b>0 (0.0)</b>	<b>0 (0.0)</b>
<b>Dental<sup>11</sup></b>	<b>12 (44.4)</b>	<b>5 (71.4)</b>
<b>Laboratory<sup>12</sup></b>	<b>8 (29.6)</b>	<b>3 (42.9)</b>
<b>Cancer screening<sup>13</sup></b>	<b>0 (0.0)</b>	<b>1 (14.3)</b>

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 at least one of each adult weighing scale, Stadio meter / 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, 12Channel 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, Gluco-strips, 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.*

#### a. Private Secondary Health Care Facility

##### 3.15.1 Infrastructure and available services

	<b>Urban(n=26)</b>	<b>Rural(n=4)</b>	<b>Total(n=30)</b>
	<b>Types of services</b>		
Outpatient services	26 (100.0)	4 (100.0)	30 (100.0)
Inpatient services	26 (100.0)	4 (100.0)	30 (100.0)
Emergency services	21 (80.8)	4 (100.0)	25 (83.3)
Intensive Care Unit	16 (61.5)	1 (25.0)	17 (56.7)
	<b>Cancer screening availability</b>		
Oral Cancer	3 (11.5)	0 (0.0)	3 (10.0)

Cervical Cancer	2 (7.7)	0 (0.0)	2 (6.7)
Breast Cancer	3 (11.5)	0 (0.0)	3 (10.0)
Other Cancers	2 (7.7)	0 (0.0)	2 (6.7)
	<b>Method of detecting cancer</b>		
Organized Screening	3 (11.5)	0 (0.0)	3 (10.0)
Opportunistic screening	5 (19.2)	0 (0.0)	5 (16.7)
Treatment provided for Cancer	9 (34.6)	1 (25.0)	10 (33.3)
Availability of standard Treatment guidelines for cancer	8 (30.8)	0 (0.0)	8 (26.7)

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

	Urban(n=26)	Rural(n=4)	Total(n=30)
Availability of Counselling facilities for risk behavior through counsellor or specialized personnel*			
Tobacco cessation	5 (19.2)	0 (0.0)	5 (16.7)
Dietary Modification	5 (19.2)	0 (0.0)	5 (16.7)
Physical Activity	5 (19.2)	0 (0.0)	5 (16.7)
Alcohol Cessation	5 (19.2)	0 (0.0)	5 (16.7)

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

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

	Urban(n=26)	Rural(n=4)	Total(n=30)
Posters	<b>7 (26.9)</b>	<b>1 (25.0)</b>	<b>8 (26.7)</b>
Videos	<b>0 (0.0)</b>	<b>0 (0.0)</b>	<b>0 (0.0)</b>
Pamphlets	<b>2 (7.7)</b>	<b>0 (0.0)</b>	<b>2 (6.7)</b>
Booklets	<b>0 (0.0)</b>	<b>1 (25.0)</b>	<b>1 (3.3)</b>

### 3.15.4 –Availability of Human Resources

Staff	Urban(n=26)	Rural(n=4)	Total(n=30)
Medical Officer (MBBS and above)	26 (100.0)	4 (100.0)	30 (100.0)
Specialist*	21 (80.8)	3 (75.0)	24 (80.0)
Staff Nurse	24 (92.3)	4 (100.0)	28 (93.3)
Lab Technician	26 (100.0)	4 (100.0)	30 (100.0)
Radiographer	25 (96.2)	3 (75.0)	28 (93.3)

Medical imaging and therapeutic equipment technicians	9 (34.6)	2 (50.0)	11 (36.7)
Radiation therapy technologist	1 (3.8)	0 (0.0)	1 (3.3)
Counselor/ dietician/ educator/care coordinator	6 (23.1)	1 (25.0)	7 (23.3)
Others	15 (57.7)	1 (25.0)	16 (53.3)

*\*Includes Physician/Surgeon/ Oncosurgeon/ /Medical oncologist/ Haematologist/ /Radiologist/ Nuclearmedicine/ Medical physicist/RadiationOncologist/PalliativecarePhysician*

### 3.15.5 –Availability of prevention/treatment procedures

	Urban(n=26)	Rural(n=4)	Total(n=30)
<b>HPV Vaccination</b>	6 (23.1)	0 (0.0)	6 (20.0)
<b>General surgical procedures</b>	25 (96.2)	4 (100.0)	29 (96.7)
<b>Laparoscopic procedures</b>	24 (92.3)	2 (50.0)	26 (86.7)
<b>Radiotherapy</b>	1 (3.8)	0 (0.0)	1 (3.3)
<b>Chemotherapy</b>	9 (34.6)	1 (25.0)	10 (33.3)
<b>Palliative care</b>	6 (23.1)	0 (0.0)	6 (20.0)

### 3.15.6 –Availability of prevention/treatment procedures, laboratory and Equipment & supplies

	Urban(n=26)	Rural(n=4)	Total(n=30)
<b>Laboratory and other investigations<sup>1</sup></b>			
<b>Routine blood investigations<sup>2</sup></b>	26 (100.0)	4 (100.0)	30 (100.0)
<b>General pathology<sup>3</sup></b>	4 (15.4)	0 (0.0)	4 (13.3)
<b>Biochemistry<sup>4</sup></b>	26 (100.0)	4 (100.0)	30 (100.0)
<b>Cardiac investigations<sup>5</sup></b>	24 (92.3)	2 (50.0)	26 (86.7)
<b>Radiology<sup>6</sup></b>	25 (96.2)	4 (100.0)	29 (96.7)
<b>Nuclear Imaging<sup>7</sup></b>	0 (0.0)	0 (0.0)	0 (0.0)
<b>Endoscopy<sup>8</sup></b>	10 (38.5)	1 (25.0)	11 (36.7)
<b>Cancer</b>	1 (3.8)	0 (0.0)	1 (3.3)
<b>Available Technology</b>			
<b>Essential<sup>9</sup></b>	22 (84.6)	3 (75.0)	25 (83.3)
<b>Imaging<sup>10</sup></b>	9 (34.6)	0 (0.0)	9 (30.0)
<b>Cardiopulmonary<sup>11</sup></b>	2 (7.7)	0 (0.0)	2 (6.7)
<b>Dental<sup>12</sup></b>	8 (30.8)	1 (25.0)	9 (30.0)
<b>Laboratory<sup>13</sup></b>	12 (46.2)	2 (50.0)	14 (46.7)

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 Xray, 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 atleast one of each adult weighing scale, Stadiometer / Wall markings for height, Measuring tape, Stethoscope and B.P Apparatus
10. Includes Xray 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, Haemoglobinmeter, Biochemical analyser, Lancets, Glucostrips, Urine strips, Microscope and Reagents /kits for Glucose test

#### *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	7	12	9	10	19

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

	Urban (n=7)	Rural (n=12)	Male (n=9)	Female (n=10)	Combined (n=19)
Age at diagnosis	50.7	54.1	54.8	51.2	52.8
Duration of cancer*	33.1	63.6	74.8	33.4	51.8

\*months

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

	Urban (n=7)	Rural (n=12)	Male (n=9)	Female (n=10)	Combined (n=19)
<b>Site of Cancer</b>					
Oesophagus	0 (0.0)	2 (16.7)	1 (12.5)	1 (10.0)	2 (11.1)
Lung	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Stomach	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Throat	2 (33.3)	3 (25.0)	4 (50.0)	1 (10.0)	5 (27.8)
Mouth	0 (0.0)	1 (8.3)	1 (12.5)	0 (0)	1 (5.6)
Cervix	1 (16.7)	2 (16.7)	0 (0.0)	3 (30.0)	3 (16.7)
Gallbladder	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Breast	3 (42.9)	0 (0.0)	1 (11.1)	2 (20.0)	3 (15.8)
<b>Diagnosed with co-morbidity</b>					
<b>Type of comorbidity</b>					
Tuberculosis	1 (14.3)	0 (0.0)	1 (11.1)	0 (0.0)	1 (5.3)
Kidney failure	0 (0.0)	1 (8.3)	1 (11.1)	0 (0.0)	1 (5.3)
Diabetes Mellitus	1 (14.3)	0 (0.0)	0 (0.0)	1 (10)	1 (5.3)
Heart Failure	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Stroke	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Others	0 (0.0)	2 (16.7)	0 (0.0)	2 (20.0)	2 (10.5)

**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 (n=7)	Rural (n=12)	Male (n=9)	Female (n=10)	Combined (n=19)
<b>Type of health facility/ healthcare provider</b>					
Within the state	5 (71.4)	11 (100.0)	9 (100.0)	7 (77.8)	16 (88.9)
Outside the state*	2 (28.6)	0 (0.0)	0 (0.0)	2 (22.2)	2 (11.1)
Govt facility	4 (57.1)	8 (66.7)	7 (77.8)	5 (50.0)	12 (63.2)
Private facility**	3 (42.9)	3 (25.0)	2 (22.2)	4 (40.0)	6 (31.6)
Self-healers	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Alternative form of medicine (AYUSH)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Others	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)

\*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 (n=7)	Rural (n=12)	Male (n=9)	Female (n=10)	Combined (n=19)
Self-Financing/Taking loan/Sale of assets	3 (42.9)	6 (50.0)	4 (44.4)	5 (50.0)	9 (47.4)
Family support	2 (28.6)	3 (25.0)	1 (11.1)	4 (40.0)	5 (26.3)
Health Insurance Schemes/ Hospital Incentives	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)

## ***Key Findings***

### ***I. Behavioural risk factors***

#### *Tobacco use*

- The prevalence of current tobacco use (smoked or smokeless) was 48.4%. The prevalence of smokeless tobacco use (44%) was higher than smoked tobacco use (12%).
- Close to half (42.3%) of current tobacco users (smoked or smokeless) were daily users.
- The mean age at initiation of use was 20.9 years.
- The average duration of tobacco use among past smokers was 17 years.
- Only 13.4 % of the smoked tobacco users had made self-attempts to quit smoking, while only 3.4% had been advised to quit tobacco use by doctor/health worker

#### *Exposure to second hand smoke*

- Over quarter of the respondents (37.6%) reported exposure to second hand tobacco smoke in the past 30 days, either at home, during travel or at the work place.

#### *Non tobacco betel products*

- As many as 74.7% of the respondents were current users of non-tobacco betel products in the form of pan masala, betel quid or areca nut. The use of areca nut (69.9%) was highest among current users.

#### *Alcohol use*

- Around 31.3% of the respondents had consumed alcohol over the past 12 months, while over a quarter (25.9%) had consumed alcohol over the past 30 days.
- The mean age of initiation of alcohol use was 22.5 years.
- Among those who consumed alcohol in the past 12 months, 2.9% were daily users and 0.6 % felt the need for a drink first thing in the morning every day.
- 9.6% of the respondents engaged in heavy episodic drinking
- Only 1.9% of the respondents had been advised to quit alcohol use by doctor/health worker

### Diet

- The average number of days of fruit intake was 1.9
- The average number of servings of fruits and vegetables was 2.7 per day.
- Over 1.2% of the respondents consumed red meat and 73.7% of the respondents consumed preserved/salt curated and fermented products.
- Around 95% of surveyed adults reported to be having sufficient level of physical activity.

### ***II Raised blood pressure***

- Prevalence of raised blood pressure was reported to be 28.30% in males and 28.80% in females. It was found to be slightly higher in adults from urban than in rural region
- Close to half of the respondents (40.9%) were pre-hypertensive.

### ***III Overweight/Obesity***

- According to WHO cut off values, 12% of the respondents were overweight, while 2.1% were obese.
- The prevalence of obesity was higher in females (2.8%) than males (1.5%).
- 30.5% of the respondents had central obesity

### ***IV Raised blood glucose***

- The prevalence of raised fasting blood glucose was 8%.

### ***V Clustering of risk factors***

- Over one fourth (25.6%) of respondents had a clustering of  $\geq 3$  risk factors

### ***VI Health seeking behaviour***

- As many as 26.7% of respondents had never had their blood pressure ever measured in life.
- Among those with raised blood pressure, only 24.6% had their blood pressure under control.

### ***VII Cancer screening***

- 23.5% of the respondents were aware of cancer screening for the three common cancers: Oral, breast and cervical cancer.

### ***VIII: Health system response:***

- Less than 10% of the surveyed PHCs' provided cancer screening services.
- Less than a quarter of the PHCs' had availability of counselling facilities for risk behaviour through counsellor or specialized personnel
- 38.5% of the Medical Officers positioned at the PHCs' Proportion had been trained for NPCDCS/NHM (NCD related)/State program.
- Over 90% of the PHCs' reported to shortage of lab facilities for cancer detection.
- None of the CHCs' or District Hospitals provided cancer screening services.
- Physicians and surgeons were available only in a little over 10% of the CHCs. Gynaecologists were available in only about half of the CHCs' and over 80% in district hospitals.
- Only 10% private secondary health facilities that were surveyed provided cancer screening, and only 33.3% had cancer treatment facilities.
- HPV vaccination was provided by 14.3% of the district hospitals' and 20.0% of the private health facilities. None of the CHC had the provision of HPV vaccination

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## Recommendations

This report gives a detailed current health system scenario in the state of Assam. This survey conducted among the PBCRs of Assam helps in iterating the need for cancer awareness and strengthening of the health care system for the provision of its treatment. The recommendations hence can be described under the following topics:

### **Risk reduction:**

- The report shows that the prevalence of tobacco is around 48.4% with a mean age of initiation as early as 20.9 years among its population. With almost 50% prevalence among the respondents, initiation of preventive measures should be started early to iterate the burden of the disease. Facilitating the tobacco quit line services( 1800112356) in the region by local multi-sectorial joint ventures
- Also, over 30% of the population being consumers of alcohol with a mean initiation of alcohol intake as young as 17.7 years, indirectly points to the prolonged duration of alcohol exposure.
- This signifies the need for risk reduction focus on preventive measures in the younger population. This could be made into a more targeted approach through awareness camps, activities among school, college students and young adults. Student centric counselling services needs to be made available for providing help during early adulthood. Encouraging face to face cessation counselling, community participation increases effectiveness with proven methods such as BCC, FGD etc.,
- Increased levels of salt intake are seen in 80% of the respondents, whereas intake of fruits and vegetables is recorded for an average of 2.3 days. Lifestyle modifications, adapting healthy diet and increase in level of physical activity needs to explained at grassroot level for the community to actively incorporate such habits for a favorable outcome.

### **Early detection and Screening:**

Cancer of oesophagus among males and that of cervix among the females are recorded as leading sites followed by Hypopharynx, Breast and Gallbladder. Surveillance for behavioral and metabolic risk factors related to these cancers should

be given utmost importance followed by those for other cancers. Such screening measures will help us with early detection and be effective to reduce the incidence among the population.

State specific recommendations:

1. Very strong awareness drive should be carried out to alleviate the lack of awareness and prevailing taboos and misconception regarding cancer
2. Empowering women (socio economical, educational)
3. The high level of tobacco use initiation and current use situations, stringent tobacco control laws and policies and strict implementation required in these regions
4. Introducing more face to face tobacco cessation counseling at the PHC and CHC level
5. Facilitating the tobacco quit line services( 1800112356) in the region by local multi-sectorial joint ventures
6. Training of the local PHC, CHC staff to carry out basic screening services and awareness drives in these regions

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# Photographs of the Survey

