



Ministry of Health & Family Welfare
Government of India

INTEGRATED DISEASE SURVEILLANCE PROJECT (IDSP)

NON-COMMUNICABLE DISEASE RISK FACTORS SURVEY

2007-08

India

Phase - I States

Andhra Pradesh
Kerala
Madhya Pradesh
Maharashtra

Mizoram
Tamil Nadu
Uttarakhand



National Institute of Medical Statistics

New Delhi

(National Nodal Agency)

National Institute of Communicable Diseases
New Delhi

(IDSP Central Surveillance Unit)

Indian Council of Medical Research
New Delhi

(National Implementing Agency)

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Foreword

Globally, non-communicable diseases (NCDs) are the major cause of morbidity and mortality. According to WHO Report 2004, they account for almost 60% of deaths and 47% of the global burden of disease. In India, estimated deaths due to non-communicable diseases were double than those from communicable diseases. A progressive rise in the disease pattern of NCD foretells a serious public health issue. The major risk factors for non-communicable diseases are tobacco and alcohol abuse, a sedentary lifestyle, and an unhealthy diet. It is believed that about half of non-communicable disease-related premature deaths could be prevented through healthy diet, regular physical activity and by avoiding tobacco and alcohol.

Envisaging the magnitude of the public health problem of chronic diseases, the Government of India through National Institute of Communicable Disease, MoHFW and Indian Council of Medical Research initiated NCD risk factors survey, phase-I in seven states of India. It is a well planned large community based survey providing state wise estimates of major NCD risk factors in different strata of population. It is needless to mention that the estimated NCD risk factors are important input for targeted prevention of NCD and effective health care planning. The National Technical Advisory Committee (NTAC) and National Monitoring Committee constituted by MoHFW, provided valuable technical guidance and support to complete the study.

The Indian Council of Medical Research through its Division of Non-communicable Diseases has implemented the study with all the partners including the National Institute of Medical Statistics as a National Nodal Agency, Regional Resource Centers and State Survey Agencies.

I congratulate the Team for successfully completing the survey and bringing out Phase-I report of NCD Risk Factors which would be of immense use for prevention and control of non-communicable diseases.

(Dr. V.M. Katoch)

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Preface

Non-Communicable Diseases (NCD) account for a large proportion of morbidity and mortality amongst the adult population of our country. The high prevalence of major risk factors viz. tobacco and alcohol consumption, inappropriate diet, physical inactivity, high blood pressure, high blood glucose and dyslipidemias are driving the epidemic of NCDs. The Division of Non-Communicable Diseases at ICMR was identified as the nodal point for surveillance of NCDs and their risk factors by the World Health Organization, and multi-site studies helped us in developing a sound strategy for NCD risk factor surveys at the national level under IDSP. The survey methodology developed by ICMR was incorporated by IDSP into the overall survey protocol provided to ICMR for implementation.

The Indian Council of Medical Research signed a Memorandum of Understanding (MOU) with IDSP for the standardization and quality assurance of the NCD risk factor surveys under the World Bank funded IDSP on behalf of Ministry of Health, Govt. of India. As per IDSP plan, these surveys were to be carried out in three phases so as to cover all States and UTs of the country. In the present Phase I, the State based estimates of the risk factors in seven States (Andhra Pradesh, Kerala, Madhya Pradesh, Maharashtra, Mizoram, Tamil Nadu and Uttarakhand) were arrived at through the IDSP identified seven State Survey Agencies, five Regional Research Centers and a National Nodal Agency under the overall guidance and supervision of ICMR Headquarters through the National Technical Advisory Committee. I am grateful to the Director General, ICMR for supporting the Division of Noncommunicable Diseases ICMR to implement the surveys. The untiring effort of our partner agencies is commendable and is duly acknowledged.

This report marks an important milestone in surveillance activities for NCDs in the country. The results would be useful for planning and monitoring an effective response in a coordinated manner by the Government. It should also stimulate further analysis and research in the area.


(Dr. Bela Shah)

Acknowledgements

The National Institute of Medical Statistics was identified as National Nodal Agency (NNA) to conduct the IDSP-NCD Risk Factors Survey Phase-I in India. The survey was carried out with the joint efforts of all partner organizations including Division of Non-Communicable Diseases of Indian Council of Medical Research as the implementing agency; and Center for Community Medicine, All India Institute of Medical Sciences, New Delhi; Regional Medical Research Centre for Tribal, Jabalpur; National Institute of Epidemiology, Chennai; Sri Chitra Tirunal Institute of Medical Sciences and Technology, Thiruvananthapuram; Regional Medical Research Centre, Dibrugarh as Regional Resource Centers; Department of Community Medicine of Chhatrapati Shahuji Maharaj Medical University, Lucknow; Government Medical College, Nagpur; Pune Health Care Management and Research Centre, Pune; Indian Institute of Health and Family Welfare, Hyderabad; Madras Diabetes Research Foundation, Chennai; Clinical Epidemiology Unit, Medical College, Thiruvananthapuram; Regional Institute of Medical Sciences, Imphal, Manipur as State Survey Agencies respectively.

We sincerely acknowledge the Ministry of Health and Family Welfare (MoHFW), Government of India for granting us responsibility of conducting the IDSP NCD Risk Factors Survey Phase-I in India. We acknowledge the World Bank for providing financial support to conduct the Phase-I survey in seven states. We gratefully acknowledge the technical support and valuable guidance provided by Dr. N.K. Ganguly, Chairman and all members of National Technical Advisory Committee (NTAC) and Dr. Shiv Lal, Special Director General Health Services, Director NICD and all the members of National Monitoring Committee. Thanks go to Dr. G. Ramana and J. Gowrinath Sastry from World Bank; Dr. Cherian Varghese, WHO; Dr. D. Bachani, Dr. R.L. Ichhpujani, Dr. A.C. Dhariwal, Dr. Shah Hossain and Dr. Pradeep Khasnobis from IDSP Central Surveillance Unit, NICD for their support in undertaking the survey. We are grateful to Dr. L.M. Nath and Dr. K. Anand, AIIMS, New Delhi and Dr. B.N. Bhattacharya, Indian Statistical Institute, Kolkatta for their technical guidance and review of the reports. We are extremely thankful to Dr. Bela Shah and her colleagues Dr. D.K. Shukla and Dr. Prashant Mathur at ICMR for providing leadership to implement the survey.

The team of NIMS including Dr. H.K. Chaturvedi, Dr. D. Sahu, Dr. Tulsi Adhikari, Dr. Atul Juneja, Mr. Jiten Kumar Singh and all other supporting staff involved in the study deserve appreciation and acknowledgement. We are grateful to all the Regional Resource Centers and State Survey Agencies for supervising, data collection and data entry in different states of the survey.

The hard work of all the field investigators, field supervisors and data entry operators are highly appreciable and acknowledged. Last but not the least, I express my heartiest thanks to all the respondents and other peoples including local health administrators of districts and states who helped in completing the survey.



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Definitions

Current Smoker / Smokeless Tobacco User: Someone who at the time of the survey, smokes / uses tobacco in any form either daily or occasionally.

Current Daily Smoker / Smokeless Tobacco User: Someone who smokes / uses tobacco everyday with rare exceptions such as not on days of religious fasting or during acute illness.

Past- Daily Smokers / Smokeless Tobacco User: These are those individuals who were smoking daily in past, but have not smoked ever in one year preceding the survey.

Non-Smoker / Never Used Smokeless Tobacco: These are those individuals who have never smoked / used smokeless tobacco in the lifetime.

Current Drinker: Those who consumed one or more than one drink of any alcohol in the year preceding the survey.

Former Drinker: Those who have consumed alcohol but those who did not consume one or more drink during the year preceding the survey.

Lifetime Abstainer: Those who have never consumed one or more drink of any type of alcohol in lifetime.

High Risk Drinker (Binge Drinker): Those who drink more than 5 (for women 4) standard drinks on any single day.

Standard Drink: It is defined as any standard drink with net alcohol content of 10 gm ethanol.

Standard Serving: One standard serving of fruits and vegetables is equivalent to 80 grams, translated into different units of cups depending on type of vegetables and fruits.

MET (Metabolic Equivalent): MET is the ratio of a person's working metabolic rate relative to the resting

metabolic rate. One MET is defined as the energy cost of sitting quietly, and is equivalent to a caloric consumption of 1 kcal/kg/hour. It is estimated that, compared to sitting quietly, a person's caloric consumption is four times as high when being moderately active, and eight times as high when being vigorously active.

Central Obesity: Central obesity (measured as waist circumference or waist to hip ratio) is more strongly associated with coronary heart disease than BMI. Waist measurement is taken at the level of mid point between the inferior margin of the rib and crest of the ileum in the mid-axillary plane, using a non-stretchable tape, without clothing, that is, directly over the skin (or over light clothing). A cut-off level of 102 cms in males and 88 cms in females have been recommended for developed countries (ATP 3 Guidelines), however, much lower cut-off levels are appropriate for Indians of 90 cms in males and 80 cms in females (South Asia Pacific Guidelines).

Hypertensive Stage I : The upper and lower limit of the systolic and diastolic blood pressure for hypertensive stage I is 140-159 mm Hg systolic or 90-99 mm Hg for diastolic.

Hypertensive Stage II : The upper and lower limit of the systolic and diastolic blood pressure for hypertensive stage II is ≥ 160 mm Hg systolic or ≥ 100 mm Hg for diastolic.

Under Weight: The person with BMI less than 18.5 kg/m^2 is categorised as under weight.

Normal Weight: The person whose BMI is between 18.5 to 24.9 kg/m^2 is categorized as normal weight.

Over Weight: The person whose BMI is 25 kg/m^2 or more is categorized as over weight.

Acronyms

AYUSH	Ayurveda Unani Shidha and Homeopathy
BMI	Body Mass Index
BP	Blood Pressure
CETMC	Clinical Epidemiology Unit, Trivendrum Medical College
CSMMU	Chhatrapati Shahuji Maharaj Medical University
CEB	Census Enumeration Block
DHO	District Health Officer
GMC	Government Medical College
ICMR	Indian Council of Medical Research
IDSP	Integrated Disease Surveillance Project
IEC	Information Education Communication
LPG	Liquid Petroleum Gas
MDRF	Madras Diabetes Research Foundation
MET	Metabolic Equivalent
NCD	Non-communicable Diseases
NICD	National Institute of Communicable Diseases
NIE	National Institute of Epidemiology
NIHFW	Indian Institute of Health & Family Welfare
NIMS	National Institute of Medical Statistics
NMC	National Monitoring Committee
NNA	National Nodal Agency
NTAC	National Technical Advisory Committee
PSU	Primary Sampling Unit
PHCMRC	Pune Health Care Management & Research Centre
RIMS	Regional Institute of Medical Science
RMRC	Regional Medical Research Centre
RRC	Regional Resource Centre
SCTIMST	Sri Chitra Tirunal Institute for Medical Sciences & Technology
SSA	State Survey Agency
WHO	World Health Organization

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IDSP-NCD Risk Factor Survey

Fact Sheet - India Phase - I States

State	AP	MP	MH	MZ	KE	TN	UTK
Population							
Household surveyed	4905	4998	4997	4569	4430	4799	4932
Individual surveyed	6218	5853	6091	4495	4859	5105	5443
Household Characteristics (%)							
Religion							
Hindu	82	92	86	2	56	89	88
Muslim	7	6	9	1	23	5	11
Christian	11	1	1	92	20	6	1
Access to piped drinking water (%)							
Urban	75	26	82	69	24	86	65
Rural	94	69	97	86	42	84	85
Rural	68	10	71	49	18	87	58
Sanitation (%)							
Flush Toilet							
Urban	47	15	54	64	92	43	33
Rural	89	48	73	87	97	74	76
Rural	32	2	38	36	90	19	18
Source of Lighting (%)							
Electricity							
Urban	93	68	93	94	95	93	75
Rural	99	97	95	99	97	96	99
Rural	91	57	92	88	94	90	67
Type of House (%)							
Pucca House							
Urban	54	23	37	17	67	73	58
Rural	70	60	56	24	73	86	90
Rural	49	10	21	4	64	62	47
Kachha House							
Urban	19	52	14	24	7	14	14
Rural	5	18	35	9	23	5	2
Rural	24	64	61	42	27	21	18
Fuel use for Cooking (%)							
LPG/Gas							
Urban	31	19	54	64	38	37	36
Rural	72	59	85	91	53	62	82
Rural	17	4	28	33	33	19	20
Wood							
Urban	65	72	41	34	61	57	57
Rural	21	33	8	7	46	26	13
Rural	81	87	68	66	66	80	72
Individual Characteristics (%)							
Education -Illiterate							
Urban (Male)	45	44	24	9	10	33	26
Urban (Female)	17	12	6	2	5	15	9
Rural (Male)	36	32	18	3	11	28	22
Rural (Female)	41	37	24	11	6	30	17
Rural (Female)	64	71	48	20	16	53	44
Behavioural Information (%)							
Current Tobacco users							
Smokers							
Male	18	22	10	44	13	14	20
Female	32	41	16	67	27	27	35
Female	4	1	3	19	0.2	*	5
Smokeless tobacco users							
Male	9	39	33	51	5	11	12
Female	14	54	41	47	7	14	21
Female	5	23	24	55	3	8	2
Any form of Tobacco use							
Male	24	47	37	68	16	22	28
Female	39	68	48	76	29	36	48
Female	8	23	24	60	3	8	7

AP: Andhra Pradesh, MP: Madhya Pradesh, MH: Maharashtra, MZ: Mizoram, KE: Kerala, TN: Tamil Nadu, UTK: Uttarakhand
 *figure not shown, based on fewer than 25 unweighted cases

Integrated Disease Surveillance Project (IDSP)

State	AP	MP	MH	MZ	KE	TN	UTK
Mean age of Initiation (in years)							
Smoking	19	19	20	17	20	20	19
Male	19	*	20	17	20	20	19
Female	14	19	20	19	*	*	19
Smokeless tobacco	20	20	20	18	20	20	20
Male	20	20	20	17	19	20	20
Female	23	15	20	18	*	20	20
Alcohol Consumption (%)							
Consumed Alcohol (last 30 days)	14	14	10	6	11	11	12
Male	27	24	16	11	24	21	24
Female	2	3	3	1	*	*	*
Consumed Alcohol (last 12 Months)	20	19	14	11	18	15	16
Male	37	33	24	21	36	30	32
Female	3	4	3	1	*	0.1	*
Consumed alcohol (%) (in last 7 days)							
Binge Drinkers	23	13	7	9	11	47	52
Male	24	14	7	8	11	47	52
Female	11	4	3	*	*	*	*
Mean age of Initiation Alcohol (in years)							
Male	20	20	21	21	22	21	21
Female	15	18	21	23	26	*	*
Fruits and Vegetables consumed(%)							
Less than five servings per day	88	83	76	85	87	99	89
Urban	86	71	74	79	82	98	88
Rural	90	88	77	91	92	99	89
Physical Activity (%)							
Low Physical Activity	68	42	81	71	76	66	67
Urban	78	68	86	79	79	71	92
Rural	64	32	77	63	75	62	58
Hypertension (%)							
Pre hypertension	43	47	47	58	47	43	46
Urban	46	45	50	62	48	44	45
Rural	41	46	45	54	46	42	47
Stage I and II hypertension	20	24	24	19	24	20	21
Urban	20	27	21	20	24	22	25
Rural	21	23	26	19	23	19	18
Physical Measurement - BMI (%)							
Under weight	23	39	23	14	16	25	28
Urban	18	27	18	13	14	18	19
Rural	27	44	27	16	16	30	32
Over weight (grade I,II,III)	13	8	13	10	27	23	14
Urban	17	20	17	12	31	32	27
Rural	10	4	10	9	26	15	9
Central Obesity	14	11	14	12	43	25	18
Urban	19	22	19	8	45	33	33
Rural	10	7	10	16	42	18	12

AP: Andhra Pradesh, MP: Madhya Pradesh, MH: Maharashtra, MZ: Mizoram, KE: Kerala, TN: Tamil Nadu, UTK: Uttarakhand
 *figure not shown, based on fewer than 25 unweighted cases

Executive Summary

Introduction

The Government of India through the Ministry of Health & Family Welfare (MOHFW) initiated a decentralized, state based Integrated Disease Surveillance Project (IDSP) in the country with the assistance of the World Bank in the year 2004. The component of non-communicable disease surveillance planned periodic community based surveys of population aged 15-64 to provide data on the risk factors. It is in line to help the state health administrators to plan strategies for the control of non-communicable diseases by modifying the risk factors. All Indian states were proposed to be surveyed in a phased manner under the project. The first phase of the survey included seven states namely Andhra Pradesh, Kerala, Madhya Pradesh, Maharashtra, Mizoram, Tamil Nadu and Uttarakhand.

The overall objective of the NCD risk factors survey was to improve the information available to the Government health services and care providers on a set of high-priority risk factors, with a view to improve the quality health care and services. The survey also aimed to establish the baseline database of NCD risk factors needed to monitor trends in population health behavior and risk factors for chronic diseases over time. This would provide evidence for evolving strategies and interventions for identified risk factors in the community to reduce the burden of non-communicable diseases.

A National Technical Advisory Committee was constituted to provide the technical guidance to the survey and a National Monitoring Committee was formed for monitoring the overall progress of the project. Indian Council of Medical Research was the implementing agency while the National Institute of Medical Statistics (NIMS) was appointed as the National Nodal Agency (NNA) for coordinating the survey. Five medical institutes/ colleges were selected as a Regional Resource Centre (RRC) for monitoring the quality of data collection and technical support to State Survey Agency (SSA) of seven states selected in the first phase for conducting the survey.

Survey Methodology

WHO STEPS methodology for NCD Risk Factor Surveillance has been adopted for the survey after

carrying out suitable modifications, based on a multi-site ICMR-WHO collaborative initiative for NCD risk factor surveillance¹. The survey was designed to provide prevalence estimates of risk factors for each 10 years age group (15-24 through 55-64) by sex (male/female) and place of residence (urban/rural). The survey used uniform sample design, bilingual schedules (English and the regional language of the state concerned), field protocol for data collection and physical measurements to facilitate comparability across states and also to ensure high quality data. For the present survey, appropriate sampling weights for households were used for urban and rural areas of the state. From each selected household one member aged 15-54 was selected using the KISH Method and all members aged 55-64 were selected. Such post stratification was used for improvement of efficiency of the estimators. For each state, post stratification weights for individuals were constructed using the age distributions by sex.

Two types of questionnaires - one at household level and another for individual level were used for the survey. At household level, information was elicited on religion, household facilities, ownership of agricultural land and livestock, and possession of durable goods for each selected household. The Individual questionnaire collected information from the selected individuals regarding demographic, behavioral and physical measurements. The individual questionnaire was divided into two segments based on WHO STEP methodology. The first section (Step-1) collected the demographic information of individuals including age, sex, marital status, education, and occupation. In the behavioural information section, information about tobacco use, alcohol consumption, diet, physical activity, history of raised blood pressure and history of diabetes were collected. In the second section (Step-2), physical measurements of individual such as height, weight, waist circumference (not measured for pregnant women), blood pressure, and pulse rate were recorded.

Characteristics of survey population

A total of 5000 households were contacted in urban and rural area of each of the seven states. The overall household response for the survey ranged from 88.6%

in Kerala to 99.9% in Madhya Pradesh and Maharashtra. More than four-fifth (82%) of the households were Hindu in all the states except Mizoram and Kerala. In Mizoram, 92% of the households were Christian whereas in Kerala, 56% were Hindu, 23% Muslim and 20% Christian.

Four in every five households in Andhra Pradesh, Maharashtra, Uttarakhand and Tamil Nadu used drinking water from a piped or hand pump whereas 73% of households in Madhya Pradesh, 70% of households in Mizoram and 28% of households in Kerala used such drinking water. Almost all the households in the seven states under study had flush or pit toilet facility. More than 90% of households in all the states except Madhya Pradesh and Uttarakhand had electricity as the main source of lighting. Three quarter households in Uttarakhand and more than two third households in Madhya Pradesh, had electricity as main source of lighting. More than half of the households in Maharashtra and Mizoram were using LPG as cooking fuel and in rest of the states it varied from a low 19% of households in Madhya Pradesh to a high 38% in Kerala. The use of wood as cooking fuel was prevalent in 72% of households in Madhya Pradesh, 65% of households in Andhra Pradesh, 61% of households in Kerala and 57% of households in Uttarakhand and Tamil Nadu. Over half of the households in Madhya Pradesh and Uttarakhand had own agricultural land. However, it was only 15% in Kerala and 30-40% in rest of the states.

The percentage of illiterate respondents ranged from a low 9% in Mizoram to a high 45% in Andhra Pradesh. Between 67-77% of the respondents were currently married in all the states except Mizoram where it was only 53%. Majority of the respondents in all the states were engaged in agriculture, domestic or manual work.

BEHAVIOURAL RISK FACTORS FOR NCD

Tobacco Smoking

As per the WHO STEPS guidelines, the smokers are presented into the categories of *Current Smokers*, *Current*

Daily Smokers, *Past Daily Smokers* and those who have never smoked in lifetime are classified as *Non-Smokers*. The percentage of current daily smokers varied between a low 9% in Maharashtra and high 42% in Mizoram.

The mean number of smoking *beedis* ranged from a low of 3 in Maharashtra to a high of 14 in Uttarakhand. The mean number of smoking manufactured cigarette in a day was low in Madhya Pradesh (<1) and a high 11 in Mizoram. The average age of onset of smoking ranged from 17 years in Mizoram to 20 years in Maharashtra, Kerala and Tamil Nadu and in rest of the states it was 19 years.

In Andhra Pradesh, Kerala, Tamil Nadu and Uttarakhand, 4-12% respondents were current daily users of smokeless tobacco. In rest of the states, it ranged from 32-48%. The mean frequency of chewing

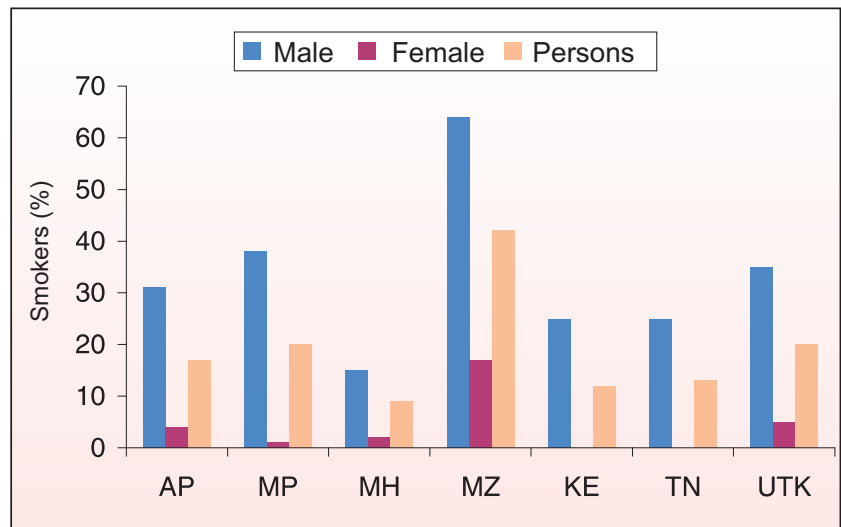


Figure 1. Current daily smokers (%) by sex and phase-I states

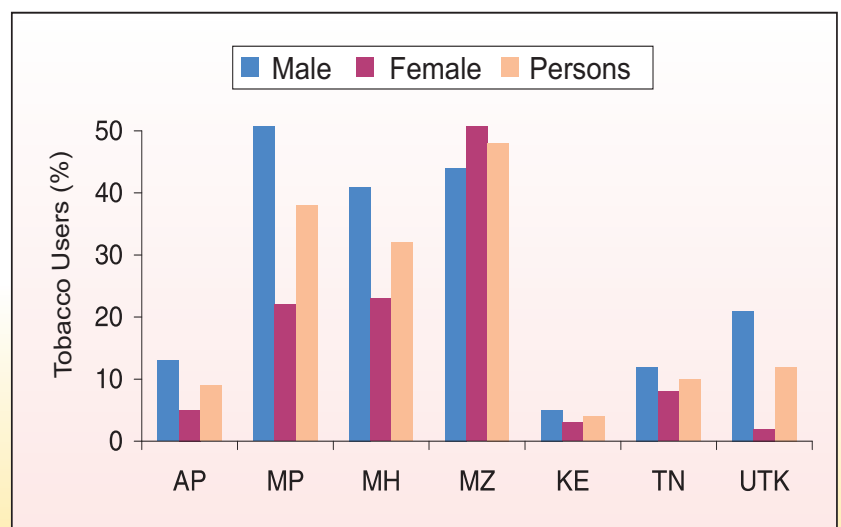


Figure 2. Current smokeless tobacco users (%) by sex and phase-I States

tobacco in a day ranged from less than 1 in Kerala and Andhra Pradesh to 10 in Mizoram. The mean frequency of chewing pan with tobacco ranged from a low <1 in Madhya Pradesh and Maharashtra to a high 9 in Mizoram. The mean age of initiation of smokeless tobacco use was 18 years in Mizoram and 20 years in rest of the states among young respondents (15-34 years).

Alcohol Consumption

In the survey, percentage of the respondents reported to have consumed alcohol in past 12 months ranged from a low 11% in Mizoram to high 20% in Andhra Pradesh. Except Andhra Pradesh and Kerala, the prevalence of alcohol consumption was higher among rural respondents than their urban counterparts. The average number of standard drinks consumed on a drinking day ranged from a low of 2 in Madhya Pradesh and Maharashtra to a high 8 in Uttarakhand. The mean age of initiation of alcohol consumption regularly in the age group 15-34 years was 20-22 years in all the seven states.

Fruits and Vegetables Consumption

In a week, people consumed vegetables 4-7 days and fruits only 2-3 days in all the states. The mean number of days in a week, when fruits were consumed, was higher among urban population as compared to rural. There was not much difference between urban and rural respondents in the mean number of days consumed vegetables in a week. The percentage of respondents consumed less than five servings of fruits and vegetables per day ranged from a low 76% in Maharashtra to high 99% in Tamil Nadu.

The edible oil used commonly for cooking were mustard and soyabean oil in Madhya Pradesh, Mizoram and Uttarakhand; groundnut, soyabean and palm oil in Andhra Pradesh and Tamil

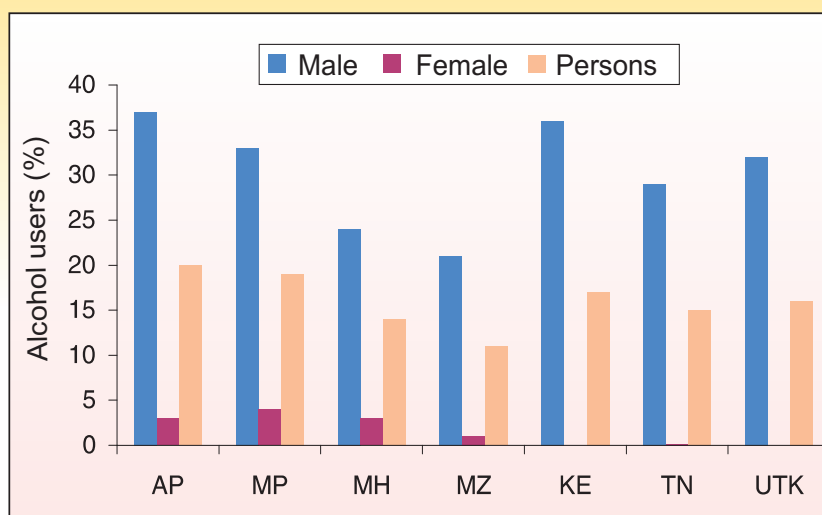


Figure 3. Respondents consumed alcohol in last 12 months (%) by sex and phase-I states

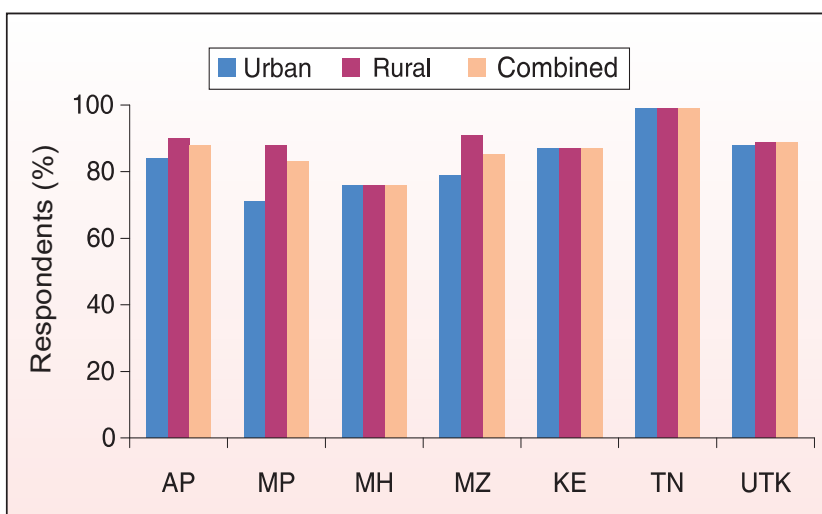


Figure 4. Respondents consumed less than five servings of fruits & vegetables (%) per day by residence and phase-I states

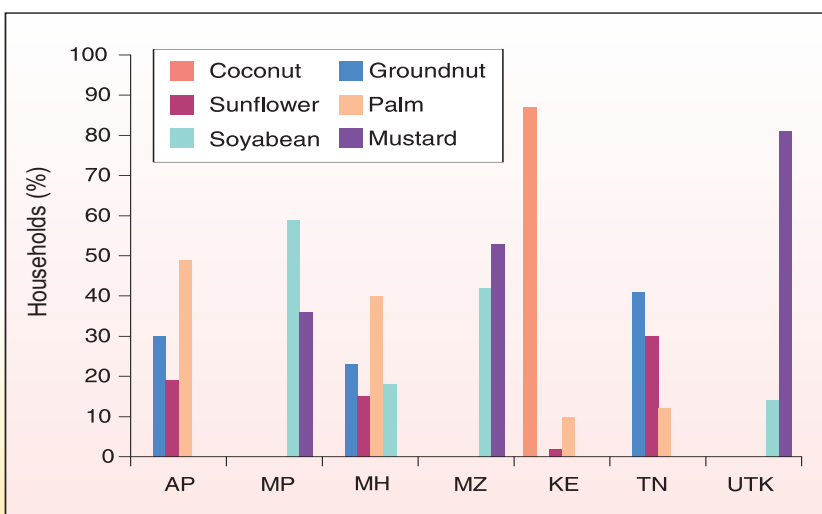


Figure 5. Type of oil consumption among the households for cooking (%) in phase-I states

Nadu. In Maharashtra, the edible oil used commonly were groundnut, soyabean, palm and sunflower oil. Coconut oil was the only edible cooking oil used commonly in Kerala.

Physical Activity

The lack of physical activity leads to obesity, hyper-lipidemia, diabetes mellitus, hypertension, and coronary heart disease. The present survey found that the mean time spent on work related physical activity ranged from a low 128 minutes per day in Maharashtra to a high 293 minutes per day in Madhya Pradesh. Most time spent was mainly related to work only. The mean time spent in travel related activities (cycling/walking) ranged from a low 31 minutes per day in Andhra Pradesh to a high 69 minutes per day in Uttarakhand. The survey also reported that the mean time spent in recreational activities was low (4 minutes per day) in Andhra Pradesh and high (67 minutes per day) in Madhya Pradesh.

As per the WHO guidelines, the total physical activity of the individual has been categorized as low, medium and high. The proportion of respondents reporting low physical activity was lowest (42%) in Madhya Pradesh and highest (81%) in Maharashtra.

HYPERTENSION AND DIABETES

Hypertension

The blood pressure is an important determinant of risk of cerebrovascular and ischemic heart diseases, congestive cardiac failure and renal failure. In the survey, the reported cases of hypertension diagnosed by health professionals, ranged from 2% in Madhya Pradesh to 9% in Kerala. Among those who were diagnosed with hypertension, majority of them were on prescribed drugs. The advice on dietary modification and lose weight ranged from a low 22% to high 71% in all the states. A low 1% of such cases in

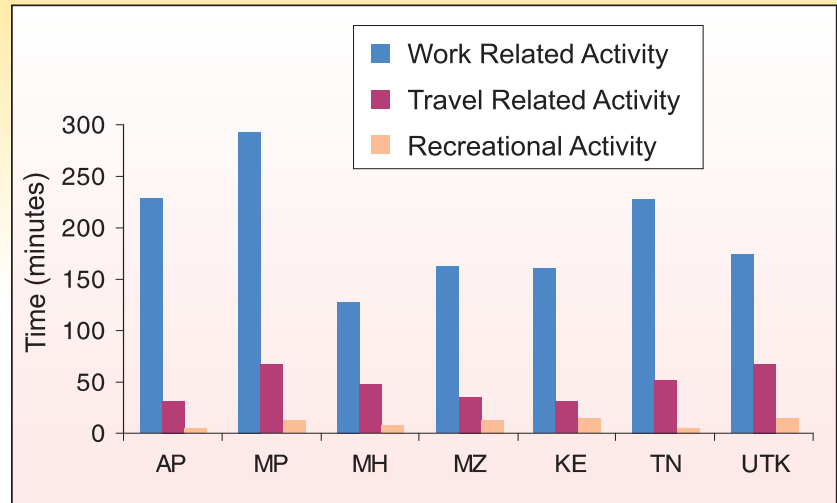


Figure 6. Mean time spent on physical activity per day (minutes) in phase-I states

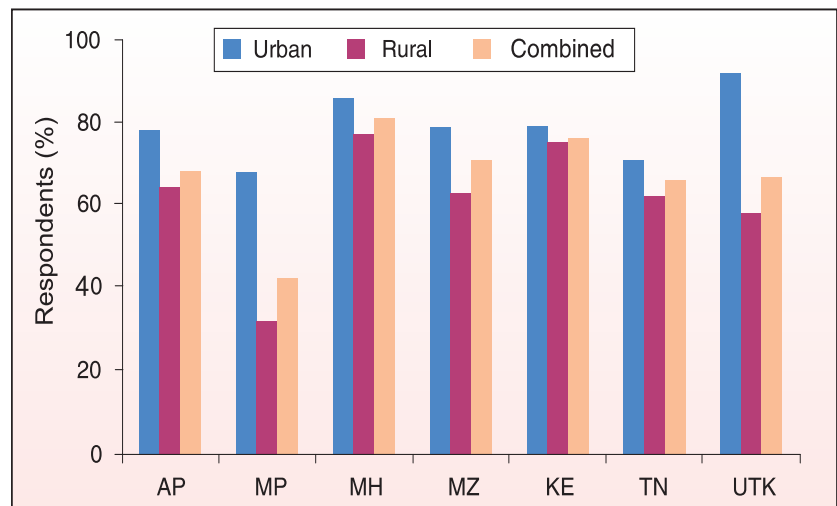


Figure 7. Low physical activity of respondents (%) by residence and phase-I states

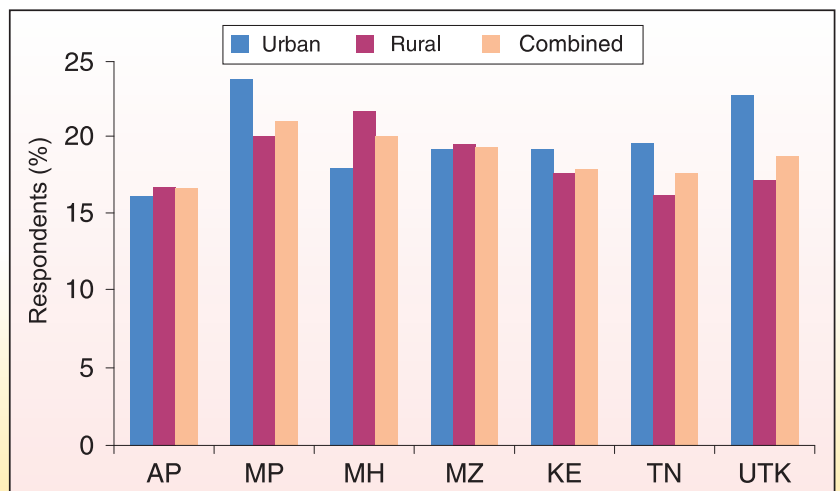


Figure 8. Stage I & II hypertension (%) by residence and phase-I states

Madhya Pradesh to high 22% in Maharashtra consulted AYUSH practitioners. Of those consulted AYUSH, a low 24% in Madhya Pradesh to high 81% in Uttarakhand were taking treatment from the same. The survey also carried out measurement of blood pressure as a part of step-2 of individual questionnaire. The mean systolic blood pressure in the population ranged from 123 mm Hg in Maharashtra and Andhra Pradesh to 126 mm Hg in Madhya Pradesh. Mean diastolic blood pressure ranged from 77 mm Hg in Andhra Pradesh and Kerala to 81 mm Hg in Mizoram. By categories of hypertension, 17-21% of the respondents in all the states were found in stage I or stage II hypertension.

Diabetes

Diabetes mellitus is an important marker of risk for the arterial disease of the coronary, cerebral and peripheral arterial trees, and for micro vascular disease leading to blindness and renal failure. The survey also included information on history of diabetes. A low 1% of the respondents in Mizoram, Madhya Pradesh and Maharashtra and high 6% in Kerala reported to have history of raised blood sugar. Of which, 12-46% were taking insulin and 66-87% were on oral drugs. A large number of them were advised life style modification such as diet modification, lose weight and increase physical activity. About a low 3% and high 31% (of the diagnosed) in all the states had consulted AYUSH practitioners for the elevated blood sugar levels and the compliance to the prescribed treatment of system ranged from 58-93%.

PHYSICAL MEASUREMENTS

Body Mass Index (BMI)

World wide researches have shown that there is a strong association between BMI and health risk. On the other hand, low BMI is an indicator of risk to health, often being associated with tobacco, alcohol use and drug addiction. The survey recorded height, weight and waist circumference of the surveyed individuals. The

mean BMI in all the seven states ranged between 20 to 23 kg/m² with mean height ranging from 157 to 160 cm and mean weight 50 to 58 kg. The respondents in under weight category were 14% in Mizoram 15% in Kerala and 39% in Madhya Pradesh. In other four states, respondents in the underweight category ranged from 23 to 28%. The grade I overweight was only 7% in Madhya Pradesh closely followed by 9% in Mizoram, 11% in Uttarakhand and Maharashtra where as it was 15% in Andhra Pradesh, 18% in Tamil Nadu and 22% in Kerala. The obesity of grade 2 and above was around 5% in Tamil Nadu, Andhra Pradesh and Kerala and it was around 2 to 3% in rest of the states.

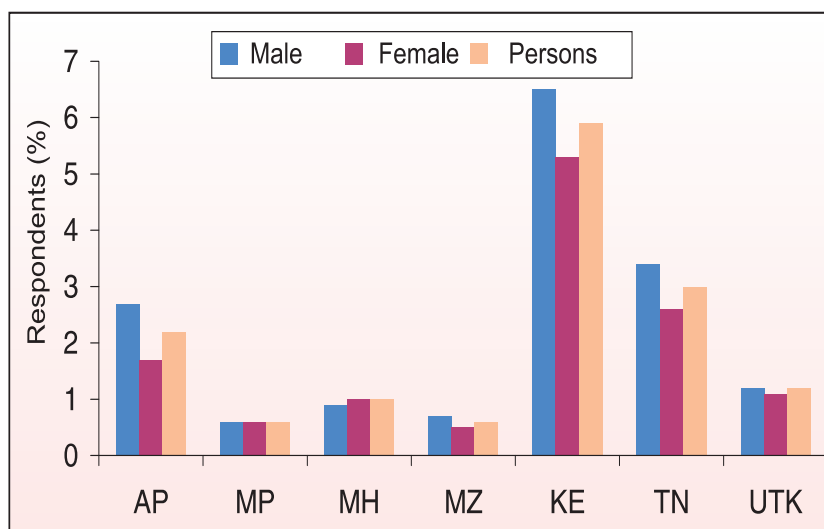


Figure 9. History of raised blood sugar (%) by sex and phase-I states

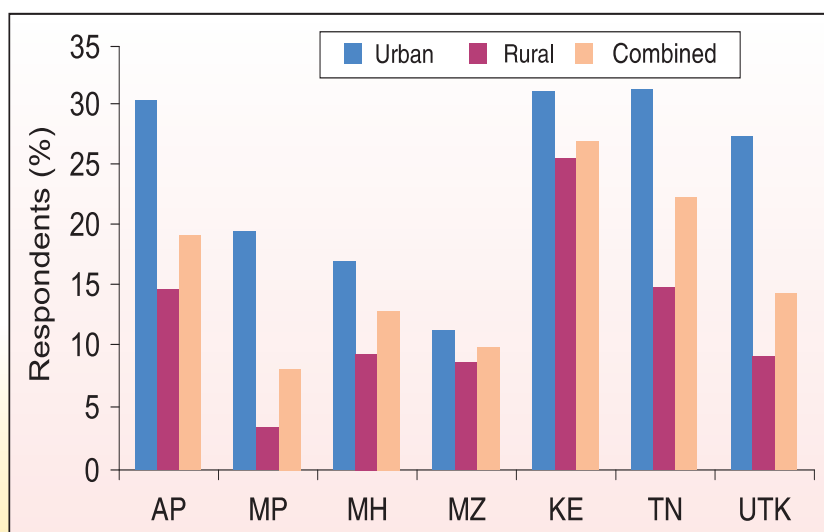


Figure 10. Overweight respondents (%) by residence and phase-I states in India

SOCIO-DEMOGRAPHIC DIFFERENTIALS

Tobacco is mainly used as smoking and other smokeless forms in different states of India. In phase-I states, the prevalence of smoking was recorded high in Mizoram (44%) followed by Madhya Pradesh (22%) and Uttarakhand (20%). The increasing pattern of prevalence of smoking was recorded with increasing age group of respondents in all the states. Overall, the prevalence was declining with increasing levels of education in all the states. Prevalence of smoking among female respondents was very low compare with males in all the phase-I states except Mizoram. Occupation is an important socioeconomic indicator. The differences in prevalence of smoking were higher from one category of occupation to another. Prevalence of smoking in the occupational categories of manual work, service and agriculture was high in most of the states compare with other categories. A similar pattern of increasing in prevalence of smokeless tobacco users with age and decreasing with level of education was also observed in all the seven states. The prevalence of current alcohol drinkers was high among the adult population (25-44) which was declining in the older age group (55-64). The habits of tobacco and alcohol use starts at early young age which contributes to the high risk of NCD at productive stage of life or as grown older with such habits.

The fruits and vegetable consumption and regular physical activity reduce the risk of non-communicable diseases. But, the study indicates high proportion of population taking inadequate amount of fruits and vegetables (less than five servings of fruits and vegetables per day) in all the seven states. Prevalence of low consumption was high in all the states such as Tamil Nadu (99%), Uttarakhand (89%), Andhra Pradesh (88%), Kerala (87%) and others (76% to 85%). Marginal differences in prevalence were observed in age groups, levels of education, occupation and residence. However, more than half of the population was found in the category of low physical activity in almost all the states except Madhya Pradesh. The differences in the pattern of low physical activity by age, sex, education, occupation and residence were also observed. Among the older (55-64) and younger age groups (15-24), the people were doing less physical activity as compare with

other age groups. Female respondents were more in low physical activity compare with males across all the age groups. However, rural people were doing more physical work than urban and a similar pattern was observed across all age groups. The physical activity by education was observed low among higher levels education whereas it was comparatively high among lower levels. Occupational difference in physical work activity was also observed across all the categories. The people whose occupation was agriculture and manual work were doing more physical work compare with other occupational categories in all the seven states. Low physical activity was high among domestic worker, executive and business occupation in most of the states.

Hypertension is a major non-communicable disease risk factor especially related to cardiovascular disease. Prevalence of hypertension was varying from 17% to 21% in all the states with marginal rural-urban differences. Overall, pattern of prevalence was found increasing with age groups in all the states. Though hypertension was prevalent in all education levels, but it was high in the higher education levels of Uttarakhand, Mizoram and Madhya Pradesh. Hypertension was prevalent in all the occupational categories, but it was comparatively higher among the executive and service categories in all the states.

Overweight (obesity) is a major risk factor of Non-communicable diseases. High prevalence of overweight was recorded in all the age groups except the younger age (15-24). Prevalence of overweight was higher among females compare with males across all the age groups. Prevalence was also higher in urban population compare with rural. Low prevalence of overweight was recorded among lower level of education (illiterate and primary). Prevalence was recorded low among the people whose occupation was agriculture or manual work whereas it was high in other categories of occupation.

Overall, NCD risk factors were prevalent across all the socioeconomic and demographic categories of population in phase I state.

The results generated through this IDSP-NCD survey would certainly focus on major issues in bringing about change or initiate various programs related to control of non-communicable diseases.

CHAPTER 1

Introduction

1.1 BACKGROUND OF SURVEY

In response to a long felt need expressed by various expert committees, the Government of India through the Ministry of Health & Family Welfare initiated a decentralized, state based Integrated Disease Surveillance Project (IDSP) in the country with the assistance of the World Bank in the year 2004. The project envisaged detecting early warning signals of impending outbreaks; initiate an effective response in a timely manner. Unlike communicable diseases, most non-communicable diseases are latent type and they occur after a prolonged exposure to life style risk factors like smoking, raised blood sugar, raised blood pressure and hyper-cholestremia. Public health action would be primarily directed against preventive strategies for the disease and hence the priority was to monitor risk factors rather than non-communicable diseases themselves.

Periodic community based surveys covering representative adult population were planned under the IDSP to provide data on NCD risk factors at state level enabling states to develop strategies and activities to prevent and control the non-communicable diseases. It was taken up as a collaborative project of the Ministry of Health & Family Welfare, Govt. of India's National Institute of Communicable Diseases and the Indian

Council of Medical Research with National Institute of Medical Statistics (NIMS) as the National Nodal Agency (NNA), and the Regional Resource Centres (RRCs) and State Survey Agencies were identified based on their experience and knowledge about the local conditions. The division of non communicable diseases at ICMR coordinated the overall activities and guided in the project development, implementation, monitoring and evaluation.

The NIMS provided the technical assistance at all stages of the survey including development of survey protocol, sampling methodology, survey questionnaire etc. with the approval of the National Technical Advisory Committee (NTAC). The survey in each State was supervised and monitored by the respective RRCs for quality assurance. The RRCs were identified in order to provide training to the field investigators, monitoring of data collection and technical support to the field agencies particularly for the anthropometrical and blood pressure measurements. All states were proposed to be covered in a phased manner. The states included in the first phase are Andhra Pradesh, Kerala, Madhya Pradesh, Maharashtra, Mizoram, Tamil Nadu and Uttarakhand.

The distribution of states to the Regional Resource Centers and State Survey Agencies for conducting the NCD Risk Factors Survey Phase-I are given below:

States	State Survey Agency (SSA)	Regional Resource Center (RRC)
Uttarakhand	Department of Community Medicine, CSMMU, Lucknow	Department of Community Medicine, AIIMS, New Delhi
Maharashtra	Pune Health Care Management and Research Centre, Pune	Regional Medical Research Centre for Tribal, Jabalpur
Madhya Pradesh	Govt. Medical Collage, Nagpur	
Tamil Nadu	Madras Diabetes Research Foundation, Chennai	National Institute of Epidemiology, Chennai
Andhra Pradesh	Indian Institute of Health & Family Welfare, Hyderabad	
Kerala	Clinical Epidemiology Unit, Trivendrum Medical Collage, Trivendrum.	SCTIMST, Trivendrum
Mizoram	Regional Institute of Medical Sciences, Imphal	Regional Medical Research Centre, N.E. Region, Dibrugarh, Assam

1.2 OBJECTIVES

The overall objective of the NCD-risk factors survey was to improve the information available to the Government health services and care providers on a set of high-priority risk factors, with a view to improve on-the-ground responses to such risk factors. It also aimed to provide essential data to monitor progress of on going disease control programmes and reallocate health resources more optimally. The specific objectives of the survey were to:

1. Assess the prevalence of NCD risk factors in different strata of population in the states;
2. Establish a baseline database of NCD risk factors needed to monitor trends in population health behavior and risk factors for chronic diseases over a period of time in the states; and
3. Provide evidence for evolving strategies and interventions for identified risk factors in the community to reduce the burden of Non-Communicable Diseases in the population

1.3 NON-COMMUNICABLE DISEASE (NCD) RISK FACTORS

A “risk factor” refers to any attribute, characteristic, or exposure of an individual, which increases the likelihood of developing a non-communicable disease. The major (modifiable) behavioural risk factors identified in the World Health Report 2002² are tobacco use, harmful alcohol use, unhealthy diet (low fruit and vegetable consumption) and physical inactivity. On the other hand, the major biological risk factors identified are overweight and obesity, raised blood pressure, raised blood glucose and raised total cholesterol. These major behavioural and biological risk factors were included in non-communicable disease risk factors survey except raised

blood sugar and total cholesterol, because they have the greatest impact on non-communicable disease mortality and morbidity, and modification is possible through effective prevention.

Tobacco use is a known or probable cause of about 25 diseases including heart disease; cancer, stroke, chronic obstructive pulmonary disease and digestive tract disease, as well as, has significant adverse effects on pregnancy. Smokeless tobacco use causes oral cancer in the lip, tongue, mouth, and throat areas and digestive system cancers. The relationship between alcohol consumption and health and social outcomes is complex and multi-dimensional. Alcohol consumption is linked to more than 60 disease conditions including liver cirrhosis, several cancers (liver, laryngeal, esophageal and oropharyngeal cancers), injuries and hemorrhagic strokes.

Consumption of fruits and vegetables reduces the risk of NCDs, like cancers and cardiovascular diseases. Dietary patterns that include higher intakes of fruits and vegetables are associated with several health benefits, including a decreased risk for some types of cancer. Low consumption of fruit and vegetables has been identified as a risk factor in the development of a range of chronic diseases, including coronary heart disease, stroke and many forms of cancer. Research has indicated that the required intake of fruit for optimal health benefits is five daily servings of fruit and vegetable.

Lack of physical activity leads to obesity, dyslipidemia (lower high-density lipoprotein levels), insulin resistance, diabetes mellitus and high blood pressure levels. Physical inactivity is a well-established risk factor for coronary heart disease (CHD) and is associated with about a twofold increase in risk of CHD.

RISK FACTORS COMMON TO MAJOR NCD'S

Risk factor	Non-communicable Disease			
	CVD	Diabetes	Cancer	Respiratory
Smoking/tobacco	+	+	+	+
Alcohol	+		+	
Nutrition	+	+	+	+
Physical Inactivity	+	+	+	+
Raised BP	+	+	+	
Raised blood Sugar	+	+		
Obesity	+	+	+	+
Blood lipids*	+	+	+	

+ Corresponds to Risk Factor;

* Not being included in Phase I; CVD - Cardiovascular Disease

1.4 SURVEY DESIGN AND IMPLEMENTATION

Sample Size

In order to achieve the aforesaid objectives, it was assumed that we should be able to estimate a parameter that has a level of 15% in a subgroup of population, with a relative precision of 30%, design effect as 1.25 and we would be able to achieve a response rate of 90%. Assuming that NCD risk factors are concentrated in 15-64 years for both males and females, the required sample size for each sex in 10-years age groups was estimated to be about 280. Further, it is a known fact that the proportion of population in the 10-year age groups decreases with increase in age. In any population, the proportion of population in the age-group 55-64 is lowest and varies in the range of 5-7 percent depending upon the fertility level (it is at the lower end, i.e., 5% in high fertility states, e.g. Uttar Pradesh, Madhya Pradesh, Bihar and Rajasthan, in the middle, i.e. 6% in moderate fertility states and at the upper end, i.e. 7% in low fertility states). Keeping such scenario of population composition in view and in order to have targeted 280 females and 280 males in age group 55-64, a sample of 5000 households for each State was considered to be adequate for the survey.

Sample Design

A uniform sample design with equal allocation in urban and rural area was adopted in all seven states of Phase-I. In each state, the rural sample was selected in two stages: the selection of Primary Sampling Units (PSUs), which are villages with probability proportional to population size (PPS) at the first stage, followed by the random selection of households within each PSUs at second stage using systematic random sampling. In urban areas, a three-stage procedure was followed. In the first stage, wards were selected with PPS sampling. In the second stage, one Census Enumeration Block (CEB) was randomly selected from each sampled ward. In the final stage households were randomly selected within each CEB using the systematic random sampling procedure. From each selected PSU in rural area and from each selected Census Enumeration Block (CEB) in urban area, 50 households were selected. From each selected household, one individual was selected from those who fall in the 15-54 age range by using KISH method³ whereas all who fall in the age group 55-64 were included in the sample.

Sample Selection in Rural Areas

In rural area, the 2001 Census list of villages served

as the sampling frame⁴. The list was stratified by a number of variables. The first level of stratification was geographic with villages classified into five contiguous regions. In each region, villages were further stratified by village size and the percentage of the population belonging to scheduled castes or scheduled tribes. The final level of stratification was implicit for all strata consisting of an ordering of villages within each stratum in ascending and descending order alternatively by the level of female literacy. From the list of villages so arranged, villages were selected systematically with probability proportional to the population of the village. Small villages with less than 75 households were linked with one or more adjoining villages to form PSUs. Villages with fewer than 5 households were excluded from the sampling frame.

In each selected sample PSU, a mapping and household listing was carried out prior to the data collection that provided the necessary frame for selecting households at the second stage. The household listing operation involved preparing up-to-date location map and layout sketch maps of each selected PSU, assigning numbers to structures, recording addresses or the location of these structures, identifying residential structures, and listing the names of the heads of all the households in residential structures in selected PSUs. The household listing operation was carried out by independent teams.

A complete listing of households was carried out in the villages with household up to 400 households. In case of villages with more than 400 households were divided into at least three segments of 150-300 households as average size of each segment and two segments were selected for households listing using the systematic random sampling method. In each selected PSU, 50 households were selected from the household list using systematic random sampling.

Sample Selection in Urban Areas

The 2001 Census list of wards was used as the sampling frame. All wards were stratified by geographic regions, size of ward and percentage of SC/ST population. Female literacy was used for implicit stratification. A sample of wards was selected systematically with probability proportional of the wards population size. One Census Enumeration Block (CEB), consisting of approximately 150-200 households, was selected from each selected ward using the PPS sampling method. The household listing operation was carried out in each selected census enumeration block similarly

as in the village in rural area, which provided the necessary frame for selecting 50 households from the CEB.

Sample Weights

Appropriate sampling weights for households were used for urban and rural areas of the state. In urban sector it consisted of factors reflecting ward selection probabilities, Census enumeration block (CEB) selection probabilities within wards; and household selection probabilities within CEB; and household non-response adjustments. In rural sector, the element of weight consisted of factors reflecting probability of selection of PSU, household selection probability within the PSU, and household non-response adjustments.

From each selected household, one member aged 15-54 was selected using the KISH method and all members aged 55-64 were selected. Since objective of the study was to obtain estimates for each age group (15-24 through 55-64) and by sex, post stratification was used for improvement of efficiency of the estimators. Post stratification weights for individuals are constructed using the state age distributions for both sex of the urban and rural sector, which are available on the population level (Appendix-A)⁵. The statistical package namely, STATA 10.0 and SPSS 15.0 were used for data management and analysis.

Sample Implementation

The NCD risk factors survey was conducted in seven states in Phase-I and data collection was completed in six to ten months i.e. from October 2007 to July 2008 in all the states except Mizoram, where it was completed by the end of October 2008. The household response rate was more than 95% in Andhra Pradesh, Madhya Pradesh, Maharashtra, Tamil Nadu and Uttarakhand, but it was slightly lower in Mizoram (91%) and Kerala (89%). From these completed interviewed

households, the individual interviews were completed more than 99% of selected individuals in Andhra Pradesh, Maharashtra, Mizoram and Uttarakhand whereas in other states it varies from 96% to 98% (Table 1.1)

Against the target sample size of 280, there is low turnout in certain age groups and high turn out in other (it may be seen in the subsequent table 2.2). It might be due to either misreporting of age or replacement of the individual who was selected but not available at the time of interview affecting the use of Kish method to give the required sample size. In fact, the Kish method was used in each selected household to select one respondent amongst those who were aged 15-54. It was done by the field investigator after listing of members of the household and arranging them according to age, sex and then selecting one respondent for the interview. There is possibility that some respondents in the age group 15-54 particularly males were not available at home during the survey (10 AM to 5 PM) and thereby might have been replaced by those household members who were present at the time of survey.

1.5 SURVEY INSTRUMENTS

The survey used two types of questionnaire, the Household Questionnaire and the Individual Questionnaire (Appendix-B). The overall content and format of the questionnaires were determined through a series of workshops and meetings held in 2006-07. The questionnaires for each state were bilingual (English and the principal language of the state concerned). In the household questionnaire, all usual residents age 12 years and above were listed, in each sample household. For each listed member, survey collected basic information on age, sex and relationship to the head of the household. The residential status (whether present in the household or temporary away from household) was gathered. The above information was used to identify the eligible individuals for the survey in the

Table 1.1 Sample coverage and response rate of household and individual by phase-I states of India, 2007-08

States	Households Contacted	Household Interviews completed	Household Response rate	Individuals Contacted	Individual Interviews completed	Individual response rate
Andhra Pradesh	5000	4905	98.1	6270	6218	99.2
Madhya Pradesh	5000	4998	99.9	5922	5853	98.8
Maharashtra	5000	4997	99.9	6124	6091	99.4
Mizoram	5000	4569	91.4	4495	4495	100.0
Kerala	5000	4430	88.6	5067	4859	95.9
Tamil Nadu	5000	4799	96.0	5177	5105	98.6
Uttarakhand	5000	4932	98.6	5444	5433	99.8

age group 15-64 years, for administering individual questionnaire. The Household Questionnaire also collected information on religion, ownership of a house, type of house with number of rooms, main source of drinking water, type of toilet facility, main source of lighting, type of cooking fuel, type of oil/cooking medium, ownership of agricultural land, ownership of livestock and possession of durable goods.

The Individual Questionnaire included questions seeking information from all the selected individuals (men and women) in the age group 15-64. The Individual Questionnaire covered information on demographic, behavioural and physical measurements under Step-1 and Step-2 with a number of sections into them. The first section of Step-1 included questions regarding the demographic information of individual, i.e., age, sex, marital status, education, and occupation. The behavioural information section included questions on tobacco use, alcohol consumption, diet, physical activity, history of raised blood pressure and history of diabetes.

Tobacco Use (Smoking & Smokeless): Questionnaire was used to elicit information on current and past use of tobacco (smoking & smokeless), age when started tobacco daily, past history of tobacco use, and age when stopped using tobacco.

Alcohol use: Questionnaire collected information on whether the individual was currently using alcohol, use of alcohol in past 12 months, frequency of drinks in past 12 months, average number of drinks consumed in one day, alcohol consumed within past 30 days, number of standard alcoholic drink consumed per day in past 7 days, past history of alcohol consumption, and age when started consuming alcohol regularly.

The contents and format of these questionnaires were though largely governed by the WHO STEP guidelines but they were finalized through a series of consultative meetings held at the Indian Council of Medical Research.

Diet: Questions were asked to collect information on number of days in a week when fruits were consumed, number of serving of fruits consumed in a day, number of days in a week when vegetables were consumed, number of serving of vegetables consumed in a day, frequency of consumption of cheese and butter, fried local food, red meat, eggs, chicken, fish, aerated soda, sweetened drinks, pizza/burger/French fries, cakes/pastries or other bakery items, chips/*namkeen*.

Physical Activity: Questions were asked about the intensity of physical activity in the daily work, frequency

of doing physical activity of varying intensity, time spent in doing physical activity of varying intensity per day, mode of travel to and from places, time spent walking or bicycling, type of vigorous/moderate intensity sports for recreation being practiced, frequency of doing such vigorous/moderate intensity sports in a week, time spent doing vigorous/moderate intensity sports per day, practice of yoga, frequency of practicing yoga, duration of time spent per day in yoga, time spent sitting or reclining etc.

History of Raised Blood Pressure: Questions were asked on history of hypertension, medicines prescribed by a doctor and the advice given regarding diet, weight lose, smoking and nature of physical activity undertaken.

History of Diabetes: Questions covering history of diabetes, medicines prescribed by a doctor and advice given regarding diet, weight lose and physical activities were asked.

Individual questionnaire included several biomarker measurements in Step-2. The height of the eligible individual participant was taken in centimeter by using a portable height measuring board and also measured weight in kilogram using a portable electronic weighting scale. Waist circumference (not measured for pregnant women) was taken two times to provide additional information on overweight and obesity. Constant tension tape (Figure finder tape) was used for waist circumference measurements. The measurement was taken without clothing, that is, directly over the skin or over light clothing. The privacy area was maintained for this measurement.

Blood pressure of the individual participants was taken three times using automated blood pressure measuring instrument (OMRON®) and pulse rate was also measured three times using the same device.

1.6 TRAINING

In order to maintain uniform survey procedure across the country, a manual dealing with various aspects of the survey were prepared by NIMS, ICMR. There are five sections: (1) Project Protocol, (2) Survey Methodology, (3) Coordinator's Guide, (4) Trainers Guide and (5) Interviewer's Guide. The Interviewer's Guide consists of guidelines to the interviewers regarding interviewing procedure, field procedures and method on asking each question and recording answers. The Coordinator's Guide contains a detail description of the role and responsibilities of the state coordinators. The Trainer's Guide includes training guidelines for the

training of the field staff including survey methodology, survey instruments, mapping and listing of households, preparation and collection of data.

The representatives of State Survey Agencies (SSAs) and Regional Resource Centres (RRCs) were trained in the Training of Trainers workshop organized by NIMS at the beginning of the data collection (18-20 July 2007). The purpose of the former workshop was to explain the objective of the NCD Risk Factors Survey and ensure uniform application of survey material to collect good quality of data. The survey documents such as training manuals, survey instruments, list of selected rural and urban PSUs etc. was provided to them for conducting the survey. The equipments required for survey was procured centrally by ICMR and distributed to the SSAs and RRCs. The personnel trained in these workshops subsequently trained the field staff and computer staff in their respective states.

Training of Field Staff

As mentioned, the field staff recruited for survey by the State Survey Agencies were trained and the officials of respective RRCs and NNA supervised the training process. The training consisted of lectures, classroom training, demonstration, practice interviews and field based training. After the training of field staff, 5 to 7 teams were formed headed by one Supervisor and 2 or 3 field investigators. It was ensured that each survey team comprised of at least one male and one female member.

Each trainee was given a training kit at the beginning of training, the training kit comprised of an interviewer's guide, household and individual schedules in local language, consent form, IEC message, set of show cards (e.g. diet chart, alcohol chart) and reference forms (e.g. Kish table, table of random numbers), flow chart of activities in field, identity card and supporting letters from Government mentioning purpose of visit. A field visit to a village was also arranged by the SSAs as part of practical training of investigators in field activities and procedure for conducting a survey and as part of pre-test. After the completion of training, letters were issued through Directorate of Health Services to DHOs, Municipal corporations and Municipalities across the state, and Deputy Director of Health Services requesting their cooperation in smooth conduction of the survey.

Data Entry Training

Data entry software in Epi-Info with its manual was developed by the NIMS, ICMR. A two-day data entry workshop cum training was organized by NIMS, ICMR during 10-11 December 2007 for the statisticians and data entry personnel of the state survey agencies (SSAs). The purpose of the workshop was to familiarize the participants with the software. Emphasis was made on double data entry in order to ensure high accuracy in data entry and to minimize data entry error. All the participants were provided with the Data Entry Software and its Manual.

1.7 DATA PROCESSING AND ANALYSIS

Following the data entry by the state survey agencies (SSAs), the validity and consistency check was carried out by the NIMS, ICMR for final analysis. Statistical analysis plan in terms of dummy tables was finalized in consultation with ICMR Review Group.

Prevalence of current smokers, current daily smokers and past daily smokers was calculated among the respondents by sex and place of residence. Those who smoke tobacco daily, the mean number of tobacco products (*bidis, cigarettes, pipes, cigars, etc.*) used daily was calculated taking denominator as all daily smokers. Though the age of initiation of smoking was collected from all daily smokers in completed years but for the past smokers it was calculated by imputation because it was not recorded. Finally average age of initiation of smoking was calculated in two age groups of smokers 15-34 years and 35-64 years. The same procedure was followed for the calculation of average age of initiation of smokeless tobacco. Prevalence of alcohol consumption was calculated for last twelve month, last thirty days and last seven days and presented as percentage. The mean age of initiation of alcohol consumption was also calculated. Mean number of servings fruit, vegetables, and combined (fruit and vegetables) consumed per day was computed from the information collected from the individual regarding number days in a week fruit, and vegetable consumed with the number of servings on a typical day.

Mean physical activity per day was computed by combining all types of physical activity (vigorous, moderate-intensity, travel and recreational) using METs (Metabolic Equivalent) score. Prevalence of reported cases of blood pressure and diabetes were also

calculated. Measurement of height, weight and waist circumference of individual respondent was used to compute BMI (body mass index) and central obesity.

1.8 QUALITY CONTROL MEASURES

A uniform project protocol, survey methodology, training manuals, survey instruments and data-management modules were developed and adopted across all the states. It was executed by State Survey Agencies (SSAs) and was monitored by the respective Regional Resource Centres (RRC) of the state. The

division of non-communicable disease, Indian Council of Medical Research with National Institute of Medical Statistics coordinated and supervised the survey in all the seven states. In addition, an independent check by collecting data in randomly drawn sample of 10% of PSUs in each state was carried out by respective RRCs. High level of concordance of some key indicators between the survey by SSA and independent checked by RRC was recorded (98-99%) and various activities hitherto were to maintain the highest level of the quality of data.



CHAPTER 2

Background Characteristics of the Households and Respondents

This chapter presents the demographic and socio-economic characteristics of the sample households and respondents of these households in seven states namely Andhra Pradesh, Madhya Pradesh, Maharashtra, Mizoram, Kerala, Tamil Nadu and Uttarakhand covered in the first phase of IDSP-NCD Risk Factor survey. It also describes key housing characteristics of the household and its population.

2.1 HOUSEHOLD CHARACTERISTICS

Table 2.1 provides the percentage distribution of households by various characteristics of the surveyed households. In six of seven states under the survey, majority of households belong to Hindu religion. The state where Hindu do not comprise the majority is Mizoram. It has more than 90% of households as Christian. The share of Muslim households was about one-fourth in Kerala where 56% of the households were Hindu. In other states, more than 80% of households were Hindu.

Structure of house (*Pucca, Semi-Pucca and Kachha*), source of drinking water, sanitation facilities, source of lighting, type of fuel used for cooking, availability of separate room for kitchen are important measures of the socio-economic status of the household and fundamental to health of its members.

Piped water or water from hand pump was used for drinking in a majority of households in all the states excepting Kerala. Only 28% of the households in Kerala had source of drinking water as piped or hand-pump. In Madhya Pradesh and Mizoram about 70% of the households had safe drinking water and in rest of the states it was more than 80%. The sanitation facility, i.e., households with flush toilets, ranges between the lowest 15% in Madhya Pradesh and highest 92% in Kerala. The proportion of households with access to such facility was 64% in Mizoram, 54% in Maharashtra, 47% in Andhra Pradesh, 43% in Tamil Nadu and 33% in Uttarakhand.

The urban households were more likely to have access to the flush toilets as compared to rural households in all the states.

While 93 - 95% of households have electricity as the main source of lighting in Andhra Pradesh, Maharashtra, Mizoram, Kerala and Tamil Nadu. Uttarakhand and Madhya Pradesh respectively have three-fourth and two-third households with such facility. There was no much difference between urban and rural households except in Madhya Pradesh and Uttarakhand. The percentage of households having *pucca* houses ranged from 17% in Mizoram to 73% in Tamil Nadu. Maximum proportion of *kachha* houses was in Madhya Pradesh (52%) and in rest of the states it was not more than 24%. In all the states except Kerala, there was wide variation between rural and urban households with respect to the percentage of *kachha* houses. The proportion of households using LPG for cooking ranged from a low 19% in Madhya Pradesh to a high of 64% in Mizoram. The use of LPG as cooking fuel was prevalent in 54% households in Maharashtra while it was used only in 30-40 % of households in Uttarakhand, Tamil Nadu, Andhra Pradesh and Kerala. The use of wood as cooking fuel was prevalent in 72% of household in Madhya Pradesh, 65% of households in Andhra Pradesh, 61% of households in Kerala and 57% of households Uttarakhand and Tamil Nadu.

Most of the households in Kerala (85%), Tamil Nadu (72%) and Andhra Pradesh (71%) do not own agriculture land. While two-third of households in Mizoram, 60% of households in Maharashtra do not own agriculture land. This proportion was 51% in Madhya Pradesh and 44% in Uttarakhand. The proportion of households having separate kitchen ranged low 34% in Madhya Pradesh and high 97% in Kerala. There was obvious variation between urban and rural households except for Kerala where 97% of households in urban area and 96% of households in rural area had separate room for kitchen.

Table 2.1 Percent distribution of households according to the background characteristics by phase-I states of India, 2007-08

Characteristics	Andhra Pradesh	Madhya Pradesh	Maharashtra	Mizoram	Kerala	Tamil Nadu	Uttarakhand
Religion of household head							
Hindu	81.7	92.3	85.8	2.1	56.3	89.0	87.8
Muslim	7.5	6.1	8.6	0.4	23.4	4.6	10.9
Christian	10.8	0.5	3.4	92.1	20.3	6.4	1.2
Buddhist	0.0	0.3	1.2	4.8	0.0	0.0	0.0
Others	0.0	0.8	1.0	0.6	0.0	0.0	0.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Source of drinking water							
Piped	74.9	26.2	82.4	68.8	24.2	85.6	64.6
Hand pump	15.6	46.9	11.0	1.0	3.5	6.4	21.0
Well water	8.1	26.1	6.3	13.5	0.3	7.5	0.5
Surface water	0.2	0.3	0.3	12.5	70.9	0.5	13.2
Others	1.2	0.5	0.0	4.2	1.1	0.0	0.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sanitation facility							
Flush Toilet	46.8	14.7	53.7	63.6	92.0	43.1	33.0
Pit Toilet	53.2	85.3	45.5	35.8	8.0	56.9	66.8
No Facility	0.0	0.0	0.8	0.6	0.0	0.0	0.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Main source of lighting							
Electricity	93.2	67.9	93.4	93.9	94.9	93.0	75.0
Kerosene	6.6	32.0	4.9	5.0	5.0	6.9	23.9
Gas/Oil	0.2	0.1	1.7	0.1	0.1	0.1	0.3
Others	0.0	0.0	0.0	1.0	0.0	0.0	0.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Type of house							
<i>Pucca</i>	54.2	23.3	37.0	16.7	66.5	72.5	58.2
<i>Semi-Pucca</i>	27.1	24.9	49.4	59.3	26.2	13.4	27.7
<i>Kachha</i>	18.7	51.8	13.6	24.0	7.3	14.1	14.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Cooking fuel							
LPG	31.3	18.9	53.8	63.6	37.8	37.4	35.8
Wood	65.3	71.9	40.5	34.0	61.2	56.5	57.0
Kerosene	1.6	1.0	4.7	0.4	0.4	6.0	0.6
Others	1.8	8.2	1.0	2.0	0.6	0.1	6.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Separate kitchen room							
Yes	43.7	34.2	76.6	45.9	96.5	61.9	61.9
No	56.3	65.8	23.4	54.1	3.5	38.1	38.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Agricultural land							
Own agriculture land(%)	28.9	49.4	38.9	33.6	15.0	28.4	56.1
Number	4905	4998	4997	4569	4430	4799	4932

2.2 AGE AND SEX COMPOSITION

The survey gathered information from individuals numbering 6218 (M: 2719, F: 3499) in Andhra Pradesh, 5853 (M: 2857, F: 2996) in Madhya Pradesh, 6091 (M:3084, F: 3007) in Maharashtra, 4495 (M: 2297,

F: 2198) in Mizoram, 4838 (M: 1710, F:3128) in Kerala 5105 (M: 2077, F: 3028) in Tamil Nadu and 5433 (M: 2147, F: 3286) in Uttrakhand. They are presented in 10 years age groups 15-24, 25-34, 35-44, 45-54 and 55-64 in Table 2.2. The number of respondents across the five

Table 2.2 Age and sex-wise number of respondents by place of residence (unweighted) in phase-I states of India, 2007- 08

State/ Age Group	Urban			Rural			Combined		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Andhra Pradesh									
15 - 24	227	302	529	236	350	586	463	652	1115
25 - 34	304	439	743	339	478	817	643	917	1560
35 - 44	291	301	592	302	384	686	593	685	1278
45 - 54	238	224	462	315	394	709	553	618	1171
55 - 64	197	227	424	270	400	670	467	627	1094
15 - 64	1257	1493	2750	1462	2006	3468	2719	3499	6218
Madhya Pradesh									
15 - 24	378	309	687	312	266	578	690	575	1265
25 - 34	311	413	724	377	371	748	688	784	1472
35 - 44	300	334	634	321	275	596	621	609	1230
45 - 54	159	213	372	175	218	393	334	431	765
55 - 64	250	313	563	274	284	558	524	597	1121
15 - 64	1398	1582	2980	1459	1414	2873	2857	2996	5853
Maharashtra									
15 - 24	332	290	622	292	276	568	624	566	1190
25 - 34	332	378	710	312	359	671	644	737	1381
35 - 44	367	260	627	331	289	620	698	549	1247
45 - 54	260	209	469	215	272	487	475	481	956
55 - 64	265	256	521	378	418	796	643	674	1317
15 - 64	1556	1393	2949	1528	1614	3142	3084	3007	6091
Mizoram									
15 - 24	252	292	544	279	308	587	531	600	1131
25 - 34	300	365	665	322	332	654	622	697	1319
35 - 44	271	244	515	305	198	503	576	442	1018
45 - 54	183	166	349	226	178	404	409	344	753
55 - 64	57	44	101	102	71	173	159	115	274
15 - 64	1063	1111	2174	1234	1087	2321	2297	2198	4495
Kerala									
15 - 24	161	196	357	156	215	371	317	411	728
25 - 34	146	353	499	128	361	489	274	714	988
35 - 44	193	346	539	136	327	463	329	673	1002
45 - 54	158	321	479	154	361	515	312	682	994
55 - 64	266	349	615	212	299	511	478	648	1126
15 - 64	924	1565	2489	786	1563	2349	1710	3128	4838
Tamil Nadu									
15 - 24	186	238	427	180	266	446	369	504	873
25 - 34	240	423	663	205	414	619	445	837	1282
35 - 44	243	322	565	197	311	508	440	633	1073
45 - 54	177	270	447	193	333	526	370	603	973
55 - 64	219	196	415	234	255	489	453	451	904
15 - 64	1068	1449	2517	1009	1579	2588	2077	3028	5105

State/ Age Group	Urban			Rural			Combined		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Uttarakhand									
15 - 24	289	333	622	262	412	674	551	745	1296
25 - 34	235	451	686	224	469	693	459	920	1379
35 - 44	235	338	573	215	323	538	450	661	1111
45 - 54	165	277	442	176	308	484	341	585	926
55 - 64	189	181	370	157	194	351	346	375	721
15 - 64	1113	1580	2693	1034	1706	2740	2147	3286	5433

age groups is depicted for males, females and total for both sex together, separately for urban and rural areas and combined. The number of respondents was least in the age group 45-54 in almost all the states except Mizoram where least individuals were surveyed in the age group 55-64

2.3 EDUCATION LEVEL

Table 2.3 presents the percentage of the respondents according to their literacy levels. Percentage of illiterate respondents ranged from a low 10% in Mizoram and Kerala to a high 45% in Andhra Pradesh and Madhya Pradesh. Education levels were much higher for urban respondents than for rural respondents in all the States. The proportion of illiterate respondents among rural females was about the twice as high as that among urban females. A higher percentage of males than that of females had completed

almost each level of schooling.

2.4 MARITAL STATUS

The second panel of Table 2.3 provides the percentage of respondents according to the three marital categories by the place of residence. The proportion of married individuals in Mizoram was low (53%) where as it was around 70% in other states. Less than 10% of individuals were widowed/divorced or separated.

2.5 OCCUPATION

Table 2.3 provides information on the current occupation of the respondents. In Madhya Pradesh, Uttarakhand, Tamil Nadu and Andhra Pradesh, over 70% of respondents were engaged in either agricultural or domestic works or manual work. In Mizoram, Kerala and Maharashtra only around 50-60% of the respondents were involved in these types of work.

Table 2.3 Percentage of respondents according to background characteristics and place of residence by phase-I states of India, 2007-08

Characteristics	State						
	AP	MP	MH	MZ	KE	TN	UTK
	Urban						
Education							
Illiterate	26.1	21.2	11.6	2.8	8.5	22.4	14.8
Primary	7.2	9.2	9.2	10.6	9.6	11.7	8.7
Middle	14.2	18.1	15.6	21.1	14.3	18.7	12.4
Secondary	20.6	15.5	28.0	26.3	36.6	23.3	18.6
Higher Secondary	13.4	12.1	16.6	19.2	14.0	12.6	19.3
College & Above	18.5	23.9	19.0	20.0	17.0	11.3	26.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Marital status							
Never married	23	28.0	20.6	43.2	16.6	15.4	31.2
Married	71.6	68.7	72.6	49.6	77.2	76.6	66.1
Widowed/Divorce/Separated	5.4	3.3	6.8	7.2	6.2	8.0	2.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Occupation							
Executive/Business	18.3	10.8	11.9	9.3	11.6	12.1	9.2
Agriculture	4.8	10.5	2.7	9.1	4.1	17.2	1.0
Domestic Work	33.1	26.2	34.5	16.0	27.6	47.8	35.1
Services/Sales	7.8	9.9	23.3	12.8	3.8	1.4	17.8

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Characteristics	State						
	AP	MP	MH	MZ	KE	TN	UTK
	Urban						
Manual Worker	20.0	20.6	10.4	22.7	14.9	20.8	12.4
Others	16.0	22.0	17.2	30.1	38.0	0.7	24.5
Total	100.0	100.0	100.0	100	100.0	100.0	100.0
Number	2750	2980	2,949	2174	2489	2517	2693
	Rural						
Education							
Illiterate	52.3	53.3	36.4	15.0	12.3	43.6	30.8
Primary	9.9	11.7	13.7	20.2	10.5	11.8	12.5
Middle	12.4	18.9	17.1	31.8	16.1	17.0	18.7
Secondary	14.6	9.6	19.8	22.0	36.5	17.6	18.3
Higher Secondary	6.0	4.3	8.2	5.7	14.3	6.2	12.3
College & Above	4.8	2.2	4.8	5.3	10.3	3.8	7.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Marital status							
Never married	18.6	19.6	14.3	34.6	16.0	13.8	27.4
Married	71.7	75.6	77.0	56.2	77.4	75.9	67.9
Widowed/Divorce/Separated	9.7	4.8	8.7	9.2	6.6	10.3	4.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Occupation							
Executive/Business	5.7	5.5	3.6	4.6	7.7	3.6	3.0
Agriculture	38.4	32.1	39.0	35.0	5.6	47.7	18.9
Domestic Work	21.4	14.9	30.5	21.6	27.3	35.0	39.3
Services/Sales	3.7	1.5	6.0	5.9	2.4	1.5	5.9
Manual Worker	20.2	33.8	9.8	11.4	16.0	12.0	13.3
Others	10.6	12.2	11.1	21.5	41.0	0.2	19.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	3468	2873	3,142	2321	2370	2588	2740
	Combined						
Education							
Illiterate	44.8	44.1	24.3	8.7	10.4	33.2	26.3
Primary	9.1	11.0	11.5	15.2	10.0	11.8	11.5
Middle	12.9	18.7	16.3	26.2	15.1	17.9	16.9
Secondary	16.3	11.3	23.8	24.3	36.5	20.3	18.3
Higher Secondary	8.2	6.5	12.2	12.7	14.1	9.3	14.3
College & Above	8.7	8.4	11.9	12.9	13.8	7.5	12.7
Total	100.0	100.0	100.0	100	100.0	100.0	100.0
Marital status							
Never married	19.8	22.0	17.3	39.0	16.3	14.6	28.5
Married	71.7	73.6	75.0	52.8	77.3	76.2	67.4
Widowed/Divorce/Separated	8.5	4.4	7.7	8.2	6.4	9.2	4.1
Total	100.0	100.0	100.0	100	100.0	100.0	100.0
Occupation							
Executive/Business	9.3	7.0	7.6	7.1	9.4	7.8	4.7
Agriculture	28.8	25.9	21.5	21.5	4.8	32.7	13.8
Domestic Work	24.8	18.1	32.4	18.6	27.5	41.4	38.1
Services/Sales	4.9	3.9	14.4	9.5	3.1	1.5	9.2
Manual Worker	20.1	30.0	10.1	17.3	15.7	16.4	13.2
Others	12.1	15.1	14.0	26.0	39.4	0.2	21.0
Total	100.0	100.0	100.0	100	100.0	100.0	100.0
Number	6218	5853	6,091	4495	4859	5105	5433

CHAPTER 3

Behavioural Risk Factors

This chapter provides the prevalence of certain behavioural risk factors for the non-communicable diseases in the survey population. The survey questionnaire asked questions about certain life style of respondents which could be considered as the behavioural risk factors for non-communicable diseases. They included tobacco smoking and chewing, alcohol consumption, consumption of fruits and vegetables and physical activity among men and women aged 15-64 years.

3.1 TOBACCO SMOKING AND CHEWING

As per the WHO STEPS guidelines to measure the prevalence of smoking habit among the respondents, the smokers are presented in the categories of *current smokers*, *current daily smokers*, *past daily smokers* and those who have never smoked in lifetime are classified as *non-smokers*.

Table 3.1.1 presents the percentage of respondents, both males and females as well as combined in various categories of smokers and non-smokers according to the place of residence (rural or urban). The proportion of current daily smokers ranged from a low 9% in Maharashtra to high 42% in Mizoram. In fact, it was mostly less than 20% in all the states except Mizoram. The prevalence of smoking was more among men than among women. By place of residence, more rural respondents were current smokers than urban respondents. The prevalence of smoking increases with age for the age group 15-54, after that it stagnates, except for Mizoram and Kerala where it kept increasing even for age group 55-64 (Table 3.1.1f).

Among the urban respondents the proportion of current smokers ranged from a low 9% in Maharashtra to high 39% in Mizoram. It was mostly less than 20% in all the states except Mizoram. The prevalence of smoking was more among men than among women. The prevalence of smoking increases with age for the age group 15-54, after that, it either stagnated or started decreasing.

Among the rural respondents the proportion of

current smokers ranged from a low 10% in Maharashtra to high 50% in Mizoram. It was mostly less than 25% in all the states except Mizoram. The prevalence of smoking was more among men than among women.

The prevalence of smoking increases with age for the age group 15-54, after that it stagnated or started decreasing, except for Andhra Pradesh, Mizoram and Kerala, where it kept increasing even for age group 55-64.

Among those who were current daily smoker of different product of tobacco, the mean number of smoking bidis per day ranged from a low 3 in Maharashtra to high 14 in Uttarakhand and Mizoram, and mean number of manufactured cigarettes ranged from a low <1 in Madhya Pradesh to high 11 in Mizoram. The Bidi and manufactured cigarettes smokers were mostly males. The mean frequency of smoking bidi was higher among rural respondents as compared to urban respondents. In case of manufactured cigarettes, however the mean number of smoking was high among urban respondents as compared to rural respondents (Table 3.1.2a-c).

Among the urban respondents, the mean number of smoking bidis per day ranged from a low 2 in Maharashtra to high 14 in Uttarakhand and mean number of manufactured cigarettes ranged from a low 2 in Madhya Pradesh to high 11 in Mizoram. The Bidi and manufactured cigarettes smokers were mostly males (Table 3.1.2a).

Table 3.1.3 presents the Mean age of initiation, age at stopped smoking and percentage of respondents (non-smokers) exposed to tobacco smoke. The mean age of initiation of smoking among young respondents aged 15-34 years was 17 years in Mizoram. The mean age of initiation was 19 years in Andhra Pradesh, Uttarakhand and Madhya Pradesh and it was 20 years in Tamil Nadu, Maharashtra and Kerala. Among respondents aged 35-64 years, the age of imitation of smoking ranged from a low 18 years in Mizoram to a high 22 years in Maharashtra and Kerala. The mean age of cessation of smoking for all those who stopped

Table 3.1.1a Percentage of respondents classified by smoking status across sex and place of residence (Urban), phase-I states of India, 2007- 08

State/ Sex	Smoking Status							
	Current smokers		Current daily smokers		Past daily smokers		Never smoked	
	P (%)	95% CI	P (%)	95% CI	P (%)	95% CI	P (%)	95% CI
Andhra Pradesh								
Male	23.9	(20.2,28.2)	23.0	(19.2,27.3)	6.5	(5.1,8.4)	69.5	(65.2,73.5)
Female	0.8	(0.5,1.4)	0.8	(0.5,1.4)	0.3	(0.1,0.8)	98.9	(98.1,99.3)
Total	12.6	(10.7,14.8)	12.2	(10.3,14.4)	3.5	(2.7,4.5)	83.8	(81.5,85.9)
Madhya Pradesh								
Male	28.5	(24.5, 32.8)	25.2	(21.5, 29.3)	5.1	(3.6, 7.1)	69.7	(65.9, 73.3)
Female	0.4	(0.2, 0.8)	0.3	(0.1, 0.8)	0.1	(0.0, 0.4)	99.6	(99.0, 99.8)
Total	15.3	(13.2, 17.7)	13.5	(11.6, 15.8)	2.7	(1.9, 3.8)	83.7	(81.6, 85.6)
Maharashtra								
Male	13.7	(11.0, 16.9)	13.1	(10.4, 16.5)	1.4	(0.7, 2.6)	84.9	(81.5, 87.8)
Female	2.3	(1.5, 3.6)	2.3	(1.5, 3.6)	*		97.7	(96.4, 98.5)
Total	8.5	(6.8, 10.5)	8.2	(6.5, 10.3)	0.8	(0.4, 1.4)	90.7	(88.7, 92.5)
Mizoram								
Male	61.8	(58.3,65.3)	59.0	(55.3,62.7)	3.2	(2.0,5.0)	35.0	(31.4,38.8)
Female	13.8	(10.5,17.3)	11.2	(8.5,14.5)	2.4	(1.3,4.5)	83.8	(79.8,87.2)
Total	38.7	(35.7,41.5)	35.9	(33.2,38.7)	2.8	(1.8,4.4)	58.5	(55.2,61.8)
Kerala								
Male	23.8	(20.7, 27.2)	21.6	(18.6, 25.0)	9.8	(7.6, 12.5)	66.4	(62.9, 69.5)
Female	0.1	(0.0, 0.2)	*	*	*	*	99.9	(99.6, 100.0)
Total	11.5	(9.9, 13.4)	10.5	(8.9, 12.3)	4.8	(3.8, 6.1)	83.7	(81.7, 85.4)
Tamil Nadu								
Male	25.0	(21.8,28.5)	23.3	(20.3,26.6)	6.5	(5.0,8.4)	68.5	(64.4,72.4)
Female	*		*		*		100.0	
Total	12.6	(10.9,14.5)	11.8	(10.2,13.6)	3.3	(2.5,4.2)	84.1	(81.9,86.2)
Uttarakhand								
Male	27.3	(24.2, 30.3)	26.7	(23.8, 29.7)	3.7	(2.8, 4.8)	69.0	(65.5, 72.3)
Female	0.6	(0.1, 1.0)	0.6	(0.3, 1.2)	0.3	(0.1, 0.8)	99.1	(98.3, 99.5)
Total	15.2	(13.6, 17.0)	14.9	(13.3, 16.6)	2.1	(1.6, 2.8)	82.7	(80.5, 84.5)

Table 3.1.1b Percentage of respondents classified by smoking status across sex and place of residence (Rural), phase-I states of India, 2007-08

State/ Sex	Smoking Status							
	Current smokers		Current daily smokers		Past daily smokers		Never smoked	
	P (%)	95% CI	P (%)	95% CI	P (%)	95% CI	P (%)	95% CI
Andhra Pradesh								
Male	34.5	(29.9,39.5)	33.9	(29.2,38.9)	4.3	(3.1,6.0)	61.1	(56.0,66.0)
Female	5.2	(3.3,8.3)	4.9	(2.9,8.0)	0.7	(0.4,1.2)	94.1	(90.9,96.2)
Total	19.9	(17.5,22.6)	19.4	(16.9,22.2)	2.5	(1.9,3.4)	77.6	(75.0,79.9)
Madhya Pradesh								
Male	46.4	(41.7, 51.2)	43.7	(38.6, 48.9)	3.9	(2.7, 5.6)	52.4	(47.2, 57.6)
Female	1.1	(0.6, 2.0)	0.8	(0.5, 1.5)	0.2	(0.1, 0.6)	98.9	(98.1, 99.4)
Total	24.7	(22.0, 27.7)	23.1	(20.2, 26.3)	2.2	(1.5, 3.1)	74.7	(71.4, 77.7)
Maharashtra								
Male	17.9	(14.0, 22.6)	16.8	(13.1, 21.3)	1.2	(0.7, 2.0)	80.9	(76.0, 85.1)
Female	2.7	(1.7, 4.4)	2.2	(1.3, 3.6)	*		97.3	(95.6, 98.3)
Total	10.4	(8.0, 13.5)	9.6	(7.4, 12.4)	0.6	(0.3, 1.0)	89.0	(85.9, 91.5)

Mizoram								
Male	72.7	(67.8,76.8)	70.1	(65.6,74.2)	3.7	(2.2,6.0)	23.6	(19.7,28.0)
Female	24.6	(19.9,30.1)	23.8	(18.6,28.3)	2.9	(1.7,4.9)	72.5	(66.5,76.6)
Person	49.9	(45.5,54.3)	47.8	(43.6,52.1)	3.7	(2.1,5.3)	46.4	(42.1,50.8)
Kerala								
Male	28.5	(24.9, 32.4)	26.5	(23.1, 30.2)	10.0	(7.7, 13.0)	61.5	(56.9, 65.8)
Female	0.2	(0.1, 0.9)	*	*	*	*	99.8	(99.1, 99.9)
Total	13.9	(12.1, 15.9)	12.8	(11.1, 14.7)	4.9	(3.8, 6.2)	81.2	(79.0, 83.3)
Tamil Nadu								
Male	29.4	(25.6,33.5)	26.5	(22.7,30.8)	5.0	(3.8,6.5)	65.6	(60.9,70.0)
Female	*		*		*		100.0	
Total	14.6	(12.4,17.0)	13.1	(11.0,15.6)	2.5	(1.9,3.3)	83.0	(80.2,85.4)
Uttarakhand								
Male	38.7	(34.1, 43.6)	38.1	(33.5, 42.9)	3.7	(2.7, 5.0)	57.6	(53.0, 62.1)
Female	6.5	(4.7, 8.7)	6.2	(4.4, 8.5)	0.8	(0.5, 1.5)	92.7	(90.1, 94.6)
Total	22.1	(19.3, 25.2)	21.7	(18.9, 24.8)	2.2	(1.7, 2.9)	75.7	(72.5, 78.5)

Table 3.1.1c Percentage of respondents classified by smoking status across sex and place of residence (Combined), phase-I states of India, 2007- 08

State/ Sex	Smoking Status							
	Current smokers		Current daily smokers		Past daily smokers		Never smoked	
	P (%)	95% CI	P (%)	95% CI	P (%)	95% CI	P (%)	95% CI
Andhra Pradesh								
Male	31.5	(28.0,35.2)	30.7	(27.2,34.5)	5.0	(4.0,6.2)	63.6	(59.8,67.2)
Female	4.0	(2.6,6.2)	3.7	(2.3,5.9)	0.6	(0.3,1.0)	95.4	(93.1,97.0)
Total	17.9	(16.0,19.8)	17.4	(15.5,19.4)	2.8	(2.3,3.5)	79.3	(77.4,81.1)
Madhya Pradesh								
Male	41.2	(37.6, 44.9)	38.3	(34.5, 42.2)	4.2	(3.3, 5.5)	54.6	(53.5, 61.3)
Female	0.9	(0.5, 1.5)	0.7	(0.4, 1.2)	0.2	(0.1, 0.5)	98.9	(98.6, 99.4)
Total	22.0	(20.0, 24.2)	20.4	(18.2, 22.7)	2.3	(1.8, 3.0)	75.7	(74.9, 79.5)
Maharashtra								
Male	15.9	(13.4, 18.8)	15.0	(12.7, 17.9)	1.3	(0.8, 1.9)	82.8	(79.8, 85.4)
Female	2.5	(1.8, 3.5)	2.2	(1.6, 3.1)	*		97.5	(96.5, 98.2)
Total	9.5	(8.0, 11.4)	8.9	(7.5, 10.7)	0.7	(0.4, 1.0)	89.8	(87.9, 91.4)
Mizoram								
Male	67.0	(64.0,69.9)	64.3	(61.3,67.3)	3.4	(2.4,4.8)	29.6	(26.6,32.5)
Female	18.8	(16.0,22.0)	16.8	(14.1,19.9)	2.7	(1.8,4.0)	78.5	(74.8,81.1)
Total	44.0	(41.4,46.6)	41.6	(39.1,44.2)	3.1	(2.2,4.2)	52.9	(50.0,55.5)
Kerala								
Male	27.3	(24.5, 30.2)	25.2	(22.6, 28.0)	10.0	(8.1, 12.2)	62.7	(59.3, 66.0)
Female	0.2	(0.0, 0.6)	*	*	*	*	99.8	(99.4, 99.9)
Total	13.3	(11.9, 14.8)	12.2	(10.9, 13.6)	4.8	(4.0, 5.9)	81.9	(80.2, 83.5)
Tamil Nadu								
Male	27.4	(24.8,30.1)	25.1	(22.5,27.8)	5.7	(4.7,6.8)	67.0	(63.8,69.9)
Female	*	*	*	*	*		100.0	
Total	13.7	(12.3,15.2)	12.5	(11.1,14.1)	2.8	(2.3,3.4)	83.5	(81.7,85.1)
Uttarakhand								
Male	35.2	(31.9, 38.7)	34.6	(31.3, 38.1)	3.7	(3.0, 4.6)	61.1	(57.7, 64.3)
Female	5.0	(3.7, 6.6)	4.8	(3.5, 6.5)	0.7	(0.4, 1.2)	94.3	(92.4, 95.7)
Total	20.2	(18.1, 22.4)	19.8	(17.7, 22.0)	2.2	(1.8, 2.7)	77.6	(75.3, 79.7)

Table 3.1.1d Percentage smoking status of respondents (P and 95% confidence interval) by age, residence (Urban) and phase-I states of India, 2007-08

State/Smoker	Age group						
	15 - 19	20 - 24	25 - 34	35 - 44	45 - 54	55 - 64	15 - 64
Andhra Pradesh							
Current smoker	2.2 (3.7,10.6)	6.4 (9.9,17.1)	13.1 (12.0,20.0)	15.6 (18.9,28.2)	23.2 (15.4,22.9)	18.9 (10.7,14.8)	12.6 (0.8,5.7)
Current daily smoker	1.6 (3.4,10.2)	6.0 (9.7,16.6)	12.7 (11.6,19.2)	15.0 (18.2,27.6)	22.6 (15.2,22.7)	18.7 (10.3,14.4)	12.2 (0.5,5.1)
Maharashtra							
Current smoker	0.0 (0.0)	2.0 (0.9,4.4)	8.71 (6.4,11.9)	3.0 (9.9,16.9)	14.7 (10.8,19.7)	15.1 (11.3,19.9)	8.5 (6.8,10.5)
Current daily smoker	0.0 (0.0)	2.0 (0.9,4.4)	8.0 (5.6,11.3)	12.8 (9.8,16.7)	14.2 (10.3,19.3)	15.1 (11.3,19.9)	8.2 (6.5,10.3)
Madhya Pradesh							
Current smoker	4.1 (2.5,6.8)	11.2 (8.3,15.0)	16.4 (13.2,20.3)	22.0 (18.2,26.5)	19.9 (14.9,26.2)	18.1 (13.9,23.1)	15.3 (13.2,17.7)
Current daily smoker	3.0 (1.7,5.1)	9.7 (7.1,13.2)	14.0 (10.9,17.8)	20.0 (16.3,24.3)	18.4 (13.6,24.4)	17.2 (13.1,22.2)	13.5 (11.6,15.8)
Mizoram							
Current smoker	24.4 (17.8,32.6)	37.5 (28.6,47.5)	42.4 (39.1,45.8)	43.4 (37.8,49.3)	41.8 (35.7,48.1)	42.7 (24.9,62.7)	38.6 (35.8,41.5)
Current daily smoker	19.2 (12.2,29.0)	35.1 (25.8,45.8)	39.7 (36.3,43.2)	41.2 (36.2,46.4)	40.7 (34.7,47.0)	41.3 (23.4,61.9)	35.9 (33.2,38.7)
Kerala							
Current smoker	0.4 (0.1,2.9)	6.4 (3.5,11.7)	10.0 (7.3,13.5)	16.0 (12.5,20.2)	18.8 (14.0,24.8)	16.0 (12.3,20.6)	11.5 (9.8,13.5)
Current daily smoker	0.4 (0.1,2.9)	5.7 (2.9,10.9)	7.5 (5.2,10.9)	15.5 (12.0,19.7)	18.2 (13.4,24.2)	14.5 (11.1,18.7)	10.5 (8.9,12.3)
Tamil Nadu							
Current smoker	1.9 (0.6,5.7)	6.6 (3.6,11.7)	15.0 (11.3,19.6)	16.4 (12.9,20.7)	18.5 (14.6,23.0)	12.3 (8.5,17.4)	12.6 (10.9,14.5)
Current daily smoker	1.9 (0.6,5.7)	5.3 (2.8,9.8)	14.4 (10.8,18.8)	15.4 (12.1,19.3)	17.1 (13.4,21.6)	11.8 (8.1,16.8)	11.8 (10.2,13.6)
Uttarakhand							
Current smoker	4.0 (2.1,7.7)	8.1 (5.4,12.1)	13.6 (10.8,17.1)	23.8 (19.9,28.3)	26.6 (20.4,33.8)	17.0 (13.2,21.7)	15.2 (13.6,17.0)
Current daily smoker	3.2 (1.5,7.0)	8.1 (5.4,12.1)	13.6 (10.8,17.1)	23.3 (19.3,27.9)	25.9 (20.0,32.9)	16.7 (13.0,21.2)	14.9 (13.3,16.6)

Table 3.1.1e Percentage smoking status of respondents (P and 95% confidence interval) by age, residence (Rural) and phase-I states of India, 2007-08

State/Smoker	Age group						
	15 - 19	20 - 24	25 - 34	35 - 44	45 - 54	55 - 64	15 - 64
Andhra Pradesh							
Current smoker	4.1 (1.8,8.9)	8.5 (5.1,13.7)	15.6 (12.2,19.8)	27.5 (23.0,32.4)	33.6 (29.0,38.5)	35.0 (29.5,40.8)	19.9 (17.5,22.6)
Current daily smoker	4.1 (1.8,8.9)	7.8 (4.5,13.2)	15.2 (11.7,19.5)	26.5 (21.9,31.7)	33.3 (28.8,38.1)	34.5 (28.9,40.5)	19.4 (16.9,22.2)
Maharashtra							
Current smoker	1.6 (0.5,5.3)	5.1 (2.3,10.9)	10.3 (7.2,14.5)	12.6 (9.2,17.1)	19.2 (14.0,25.7)	15.7 (11.2,21.6)	10.4 (8.0,13.5)
Current daily smoker	0.9 (0.2,3.8)	4.4 (2.0,9.5)	9.8 (6.7,14.0)	11.5 (8.4,15.6)	18.0 (13.2,23.9)	14.9 (10.6,20.7)	9.6 (7.4,12.4)

Madhya Pradesh							
Current smoker	8.0 (5.0,12.5)	22.0 (16.8,28.2)	23.7 (20.1,27.7)	31.7 (26.8,37.0)	35.6 (28.5,43.4)	30.3 (25.8,35.1)	24.7 (22.0,27.7)
Current daily smoker	6.6 (4.0,10.8)	20.6 (15.5,26.8)	21.8 (18.1,26.0)	29.3 (24.5,34.7)	35.3 (28.1,43.2)	28.8 (24.4,33.6)	23.1 (20.2,26.3)
Mizoram							
Current smoker	25.8 (20.1,32.5)	45.5 (39.2,52.1)	53.0 (47.0,58.8)	56.8 (50.0,63.3)	61.1 (55.1,66.8)	67.3 (55.8,76.9)	50.0 (45.6,54.4)
Current daily smoker	21.1 (16.1,27.2)	44.3 (37.9,50.9)	50.7 (44.9,56.5)	55.4 (48.8,61.7)	59.1 (53.0,65.0)	66.6 (54.3,77.0)	47.8 (43.6,52.1)
Kerala							
Current smoker	1.3 (0.3,5.7)	5.5 (3.0,9.9)	14.2 (10.7,18.6)	19.5 (15.5,24.3)	18.2 (14.1,23.2)	23.5 (19.7,27.8)	13.8 (12.1,15.7)
Current daily smoker	1.3 (0.3,5.7)	3.8 (1.7,8.1)	12.3 (9.1,16.5)	18.2 (14.7,22.5)	17.6 (13.6,22.5)	22.6 (18.9,26.8)	12.6 (11.0,14.5)
Tamil Nadu							
Current smoker	3.5 (1.5,8.0)	7.4 (4.5,11.9)	15.1 (11.9,18.8)	20.2 (15.5,25.9)	22.6 (18.2,27.6)	14.7 (11.1,19.1)	14.6 (12.4,17.0)
Current daily smoker	2.9 (1.1,7.6)	6.8 (4.2,10.8)	12.8 (10.0,16.3)	18.8 (14.2,24.4)	20.5 (16.0,25.7)	14.1 (10.6,18.4)	13.2 (11.0,15.6)
Uttarakhand							
Current smoker	3.5 (1.9,6.5)	6.9 (4.1,11.4)	20.6 (16.7,25.0)	31.6 (26.4,37.3)	41.3 (34.4,48.5)	38.5 (32.2,45.2)	22.1 (19.3,25.2)
Current daily smoker	2.7 (1.4,5.2)	6.7 (4.0,11.1)	20.1 (16.3,24.5)	31.3 (26.2,37.0)	40.6 (33.5,48.2)	38.2 (32.0,44.9)	21.7 (18.9,24.8)

Table 3.1.1f Percentage smoking status of respondents (P and 95% confidence interval) by age, residence (Combined) and phase-I states of India, 2007-08

State/Smoker	Age group						
	15 - 19	20 - 24	25 - 34	35 - 44	45 - 54	55 - 64	15 - 64
Andhra Pradesh							
Current smoker	3.5 (1.8,6.9)	7.8 (5.3,11.4)	14.9 (12.3,18.0)	24.1 (20.8,27.9)	30.8 (27.2,34.6)	31.2 (26.8,36.0)	17.9 (16.0,19.8)
Current daily smoker	3.4 (1.6,6.7)	7.2 (4.7,10.9)	14.5 (11.9,17.6)	23.2 (19.8,27.1)	30.4 (26.9,34.2)	30.8 (26.3,35.6)	17.4 (15.5,19.4)
Maharashtra							
Current smoker	0.9 (0.3,3.0)	3.6 (2.0,6.6)	9.5 (7.5,12.1)	12.8 (10.4,15.6)	17.2 (13.7,21.3)	15.5 (12.3,19.4)	9.5 (8.0,11.4)
Current daily smoker	0.5 (0.1,2.1)	3.3 (1.8,5.9)	8.9 (6.9,11.5)	12.1 (9.9,14.8)	16.3 (13.1,20.1)	15.0 (11.8,18.9)	9.0 (7.5,10.7)
Madhya Pradesh							
Current smoker	6.9 (4.7,10.0)	18.7 (14.9,23.3)	21.7 (18.9,24.6)	28.8 (25.2,32.7)	31.1 (25.8,37.0)	27.3 (23.8,31.1)	22.0 (20.0,24.2)
Current daily smoker	5.6 (3.6,8.4)	17.3 (13.5,21.9)	19.6 (16.8,22.7)	26.6 (23.0,30.5)	30.5 (25.1,36.4)	26.0 (22.5,29.8)	20.4 (18.2,22.7)
Mizoram							
Current smoker	25.1 (20.6,30.2)	41.2 (35.5,47.1)	47.3 (44.1,50.5)	49.8 (45.2,54.4)	51.6 (46.9,56.3)	55.8 (44.3,66.6)	44.0 (41.5,46.6)
Current daily smoker	20.1 (15.5,25.7)	39.3 (33.4,45.5)	44.8 (41.6,48.0)	48.0 (43.6,52.3)	50.1 (45.3,54.9)	54.8 (43.0,66.0)	41.6 (39.1,44.2)
Kerala							
Current smoker	1.1 (0.3,4.0)	5.7 (3.6,9.0)	13.0 (10.4,16.3)	18.6 (15.4,22.1)	18.4 (15.1,22.2)	21.5 (18.5,24.8)	13.2 (11.8,14.7)
Current daily smoker	1.1 (0.3,4.0)	4.3 (2.5,7.4)	11.0 (8.6,14.1)	17.5 (14.7,20.7)	17.8 (14.6,21.6)	20.4 (17.6,23.6)	12.1 (10.8,13.5)

Tamil Nadu							
Current smoker	2.8 (1.4,5.4)	7.0 (4.8,10.1)	15.0 (12.6,17.8)	18.5 (15.4,22.0)	20.8 (17.8,24.1)	13.7 (11.0,16.9)	13.7 (12.3,15.2)
Current daily smoker	2.5 (1.2,5.1)	6.1 (4.2,8.8)	13.5 (11.2,16.2)	17.2 (14.2,20.7)	19.0 (16.0,22.4)	13.1 (10.5,16.2)	12.5 (11.1,14.1)
Uttarakhand							
Current smoker	3.7 (2.3,5.9)	7.3 (5.0,10.4)	18.5 (15.7,21.8)	29.3 (25.5,33.4)	37.2 (32.0,42.8)	33.8 (28.9,39.0)	20.2 (18.1,22.4)
Current daily smoker	2.8 (1.7,4.8)	7.1 (4.9,10.2)	18.2 (15.4,21.4)	28.9 (25.1,33.1)	36.6 (31.2,42.3)	33.5 (28.6,38.7)	19.8 (17.7,22.0)

Table 3.1.2a Mean number of tobacco products smoked (per day) by daily smokers according to sex and place of residence (Urban), phase-I states of India, 2007-08

State/ Sex	Type of smoking							
	<i>Bidi</i>		Manufactured Cigarettes		Hand-rolled Cigarettes		Other	
	Mean	95% CI	Mean	95% CI	Mean	95% CI	Mean	95% CI
Andhra Pradesh								
Male	3.6	(2.4, 4.7)	5.3	(4.5, 6.2)	*		*	
Female	*		0.8	(0.0, 2.2)	*		*	
Total	3.4	(2.3, 4.6)	5.2	(4.4, 6)	*		*	
Madhya Pradesh								
Male	10.5	(9.0, 11.9)	1.7	(0.7, 2.7)	*		*	
Female	4.6	(2.9, 6.3)	*	*	*		*	
Total	10.4	(8.9, 11.8)	1.7	(0.7, 2.7)	*		*	
Maharashtra								
Male	2.2	(1.1, 3.4)	3.1	(2.2, 4.0)	0.3	(0.0, 0.5)	0.1	(0.0, 0.3)
Female	2.1	(0.9, 3.2)	2.8	(1.2, 4.4)	0.3	(0.1, 0.7)	*	
Total	2.2	(1.1, 3.3)	3.1	(2.2, 4.0)	0.3	(0.0, 0.5)	0.1	(0.0, 0.3)
Mizoram								
Male	*	*	11.1	(10.6,11.7)	13.1	(11.9,14.4)	10.6	(9.7,11.5)
Female	*	*	9.6	(7.9,11.4)	10.7	(8.9,12.5)	8.1	(6.8,9.4)
Total	*	*	11.0	(10.5,11.0)	12.7	(11.6,13.8)	10.0	(9.2,10.8)
Kerala								
Male	4.0	(2.4,5.7)	6.0	(5.1,7.0)	*		*	
Female	*	*	*	*	*		*	
Total	4.0	(2.4,5.6)	6.0	(5.1,6.9)	*		*	
Tamil Nadu								
Male	7.1	(5.7,8.5)	3.7	(3.0,4.4)	0.1	(0.0,0.3)	*	
Female	*		*		*		*	
Total	7.1	(5.7,8.5)	3.7	(3.0,4.4)	0.1	(0.0,0.3)	*	
Uttarakhand								
Male	14.2	(12.6, 15.8)	5.7	(4.8, 6.6)	*		*	
Female	7.4	(4.4, 10.4)	*		*		*	
Total	14.0	(12.5, 15.6)	5.7	(4.8, 6.6)	*		*	

*no observation

Table 3.1.2b Mean number of tobacco products smoked (per day) by daily smokers according to sex and place of residence (Rural), phase-I states of India, 2007-08

State/ Sex	Type of smoking							
	<i>Bidi</i>		Manufactured Cigarettes		Hand-rolled Cigarettes		Other	
	Mean	95% CI	Mean	95% CI	Mean	95% CI	Mean	95% CI
Andhra Pradesh								
Male	5.4	(4, 7)	3.1	(2.4, 4.0)	*		*	
Female	0.6	(0.0, 1.7)	0.0	(0, 0)	*		*	
Total	4.8	(3.4, 6.2)	2.8	(2, 3.4)	*		*	
Madhya Pradesh								
Male	12.8	(10.9,14.6)	0.1	(0.0, 0.1)	*		*	
Female	8.9	(3.6, 14.3)	*	*	*		*	
Total	12.7	(10.9,14.6)	0.1	(0.0, 0.1)	*		*	
Maharashtra								
Male	3.2	(2.4, 3.9)	1.1	(0.7, 1.4)	0.1	(0.0, 0.3)	0.3	(0.0, 0.6)
Female	3.1	(1.9, 4.3)	0.9	(0.4, 1.3)	0.2	(0.0, 0.4)	0.2	(0.1, 0.6)
Total	3.2	(2.4, 3.9)	1.0	(0.7, 1.4)	0.1	(0.0, 0.3)	0.3	(0.0, 0.6)
Mizoram								
Male	14.6	(12.9,16.3)	11.2	(10.5,11.9)	12.6	(12.0,13.1)	11.6	(11.0,12.1)
Female	12.3	(8.8,15.8)	9.3	(5.9,12.7)	9.1	(8.2,10.0)	8.5	(7.9,9.2)
Total	13.8	(12.1,15.5)	11.0	(10.3,11.8)	11.8	(11.3,12.3)	10.7	(10.2,11.1)
Kerala								
Male	4.6	(3.6,5.6)	5.8	(4.7,7.0)	*		*	
Female	*	*	*	*	*		*	
Total	4.6	(3.6,5.6)	5.8	(4.7,7.0)	*		*	
Tamil Nadu								
Male	10.0	(8.4,11.5)	2.4	(1.6,3.2)	0.1	(0.0,0.2)		
Female	*		*		*			
Total	10.0	(8.4,11.5)	2.4	(1.6,3.2)	0.1	(0.0,0.2)		
Uttarakhand								
Male	15.0	(13.8, 16.2)	5.0	(4.0, 6.0)	*		*	
Female	9.8	(7.9, 11.6)	*		*		*	
Total	14.2	(13.1, 15.4)	5.0	(4.0, 6.0)	*		*	

*no observation

Table 3.1.2c Mean number of tobacco products smoked (per day) by daily smokers according to sex and place of residence (Combined), phase-I states of India, 2007-08

State/ Sex	Type of smoking							
	<i>Bidi</i>		Manufactured Cigarettes		Hand-rolled Cigarettes		Other	
	Mean	95% CI	Mean	95% CI	Mean	95% CI	Mean	95% CI
Andhra Pradesh								
Male	5.0	(4, 6)	3.6	(3, 4)	*		*	
Female	0.5	(0.0, 1.5)	0.1	(0.0, 0.1)	*		*	
Total	4.5	(3.4, 5.7)	3.2	(2.7, 3.8)	*		*	
Madhya Pradesh								
Male	12.4	(10.8,13.8)	0.4	(0.2, 0.6)	*		*	
Female	8.4	(3.8, 12.9)	*	*	*		*	
Total	12.2	(10.8,13.8)	0.4	(0.2, 0.6)	*		*	
Maharashtra								
Male	2.8	(2.1, 3.4)	1.9	(1.5, 2.3)	0.2	(0.0, 0.3)	*	
Female	2.6	(1.8, 3.5)	1.7	(1.0, 2.5)	0.2	(0.1, 0.4)	*	
Total	2.8	(2.1, 3.4)	1.9	(1.4, 2.3)	0.2	(0.1, 0.3)	*	
Mizoram								
Male	14.6	(12.8,16.4)	11.2	(10.7,11.6)	12.7	(12.2,13.3)	11.2	(10.7,11.7)
Female	12.3	(8.8,15.8)	9.5	(7.9,11.1)	9.6	(8.7,10.4)	8.4	(7.8,9.0)
Total	13.9	(12.2,15.6)	11.0	(10.6,11.5)	12.1	(11.6,12.6)	10.4	(10.0,10.8)

Kerala							
Male	4.5	(3.6,5.3)	5.9	(5.0,6.8)	*		*
Female	*	*	*	*	*		*
Total	4.5	(3.6,5.3)	5.9	(5.0,6.8)	*		*
Tamil Nadu							
Male	8.7	(7.6,9,9)	2.9	(2.4,3.5)	0.1	(0.0,0.2)	*
Female	*	*	*	*	*		*
Total	8.7	(7.6,9,9)	2.9	(2.4,3.5)	0.1	(0.0,0.2)	*
Uttarakhand							
Male	14.9	(13.9, 15.9)	5.3	(4.7, 6.0)	*		*
Female	9.7	(7.9, 11.5)	*	*	*		*
Total	14.2	(13.3, 15.2)	5.3	(4.7, 6.0)	*		*

*no observation

smoking ranged between 29 years (in Madhya Pradesh and Maharashtra) and 34 years (in Mizoram and Uttarakhand).

For the urban respondents, the mean age of initiation of smoking among young respondents aged 15-34 years was 18 years in Mizoram. The mean age of initiation was 19 years in Andhra Pradesh, Uttarakhand, Madhya Pradesh and Tamil Nadu, it was 20 years in Kerala and 21 years in Maharashtra. Among respondents aged 35-64 years, the age of imitation of smoking ranged from a low 19 years in Mizoram to a high 24 years in Maharashtra and 22 years in Kerala. The mean age of cessation of smoking for all those who stopped smoking ranged between 29 years in Madhya Pradesh and 36 years in Uttarakhand (Table 3.1.3a).

For the rural respondents, the mean age of initiation of smoking among young respondents aged 15-34 years was 17 years in Mizoram. The mean age of initiation

was 19 years in Andhra Pradesh, Madhya Pradesh, Maharashtra and Uttarakhand, and 20 years in Kerala and Tamil Nadu. Among respondents aged 35-64 years, the age of initiation of smoking ranged from a low 18 years in Mizoram to a high 22 years in Kerala. The mean age of cessation of smoking for all those who stopped smoking ranged between 28 years in Madhya Pradesh and Maharashtra, and 34 years in Mizoram and Kerala (Table 3.1.3b).

The percentage of passive smokers at home or work place ranged from a low 6% in Maharashtra to high 53% in Mizoram. This percentage was higher among males as compared to females in all the states except Mizoram. This gap was wider among the urban respondents than the rural respondents. The exposure was little higher among rural respondents as compared to their urban counterparts in all the states except Mizoram (Table 3.1.3 a-c).

Table 3.1.3a Mean age of initiation, age at stopped smoking and percentage of respondents (non-smokers) exposed to tobacco smoke by sex and place of residence (Urban), phase-I states of India, 2007- 08

State/ Sex	Smokers						Non-smokers	
	Age of Initiation (15-34 years)		Age of Initiation (35-64 years)		Age at Stopped		Exposed to tobacco smoke at Home or Work	
	Mean	95% CI	Mean	95% CI	Mean	95% CI	P (%)	95% CI
Andhra Pradesh								
Male	19	(18.5, 20.5)	20	(19.0.5, 20.5)	32	(29, 35)	28	(23.7, 33.7)
Female	*		25	(20.5, 30.5)	37	(30, 45)	12	(9.4, 16.9)
Total	19	(18.5, 20.5)	20	(19.5, 20.5)	32	(29, 35)	19	(16.5, 23.2)
Madhya Pradesh								
Male	19	(18.5, 20.5)	20	(20.5,22.5)	29	(26.9, 32.1)	56	(48.3, 63.0)
Female	*	*	31	(25.5,38.5)	23	(22.4, 24.8)	30	(24.3, 37.1)
Total	19	(18.5, 20.5)	21	(20,22.5)	29	(26.8, 32.0)	42	(36.2, 48.0)
Maharashtra								
Male	21	(20, 22)	24	(22, 25)	31	(26, 35)	8	(3.0, 13.0)
Female	20	(17, 25)	25	(21, 30)	*	*	1	(0.0, 4.0)
Total	21	(20, 22)	24	(22, 25)	31	(26, 35)	5	(1.0, 8.0)

Mizoram								
Male	18	(17.5,18.5)	19	(18.5,20.5)	33	(28.0,39.1)	41	(32.2,51.6)
Female	19	(18.5,20.5)	20	(19.5,21.5)	33	(29.4,38.5)	50	(41.3,60.0)
Total	18	(17.5,18.5)	19	(18.5,20.5)	33	(29.7,37.7)	47	(39.3,56.2)
Kerala								
Male	20	(19.5,22.5)	22	(20.5,23.5)	35	(32.9, 37.2)	23	(17.0, 30.0)
Female	*		*		*		18	(14.3, 22.0)
Total	20	(19.5,21.5)	22	(20.5,23.5)	35	(33.0, 37.3)	20	(16.3, 24.4)
Tamil Nadu								
Male	19	(18.5,20.5)	20	(19.5,20.5)	30	(27.8,32.6)	16.5	(13.3,20.4)
Female	*		*		*		5.6	(4.0,7.8)
Total	19	(18.5,20.5)	20	(19.5,20.5)	30	(27.8,32.6)	10.4	(8.4,12.7)
Uttarakhand								
Male	19	(18.5, 20.5)	20	(19.5, 22.5)	37	(33.7, 40.4)	34.3	(29.3, 39.2)
Female	*	*	22	(16.5, 40.5)	*	*	29.2	(25.3, 33.1)
Total	19	(18.5, 20.5)	20	(19.5, 22.5)	36	(32.9, 39.6)	31.6	(28.1, 35.1)

Table 3.1.3b Mean age of initiation, age at stopped smoking and percentage of respondents (non-smokers) exposed to tobacco smoke by sex and place of residence (Rural), phase-I states of India, 2007- 08

State/ Sex	Smokers						Non-smokers	
	Age of Initiation (15-34 years)		Age of Initiation (35-64 years)		Age at Stopped		Exposed to tobacco smoke at Home or Work	
	Mean	95% CI	Mean	95% CI	Mean	95% CI	P (%)	95% CI
Andhra Pradesh								
Male	19	(17.5, 20.5)	20	(19.0, 20.5)	32	(28, 37)	20	(15.0, 26.1)
Female	14	10.5, 25.5)	16	(14.5, 17.5)	32	(22, 41)	19	(14.6, 24.9)
Total	19	(17.5, 20.5)	20	(18.5, 20.5)	32	(28, 37)	20	(15.3, 24.9)
Madhya Pradesh								
Male	18	(17.5, 20.5)	20	(19.0,20.5)	29	(26.0, 31.9)	58	(50.2, 65.8)
Female	*	*	20	(12.5,30.5)	28	(12.8, 44.1)	49	(41.1, 56.8)
Total	19	(18.5, 20.5)	20	(19.5,20.5)	28	(26.2, 31.7)	53	(45.4, 59.5)
Maharashtra								
Male	19	(17, 20)	21	(20, 24)	28	(22, 33)	11	(6.0, 16.0)
Female	20	(15, 20)	22	(20, 25)	*	*	4	(1.0, 7.0)
Total	19	(17, 20)	21	(20, 25)	28	(22, 33)	7	(4.0, 10.0)
Mizoram								
Male	17	(16.5,17.5)	18	(17.5,18.5)	34	(29.7,40.2)	51	(42.9,60.5)
Female	19	(18.5,20.5)	20	(19.5,21.5)	34	(25.8,44.0)	64	(56.0,72.7)
Total	17	(16.5,18.5)	18	(17.5,19.5)	34	(30.4,39.4)	60	(52.9,68.5)
Kerala								
Male	20	(19.5,22.5)	22	(20.5,23.5)	34	(32.0, 37.2)	25	(20.0, 31.7)
Female	*		*		*		23	(19.1, 28.1)
Total	20	(19.5,21.5)	22	(20.5,23.5)	34	(32.0, 37.2)	24	(20.3, 28.7)
Tamil Nadu								
Male	20	(19.5,20.5)	20	(19.5,20.5)	32	(28.1,35.2)	17.6	(13.3,22.9)
Female	*		*		*		6.2	(4.8,8.1)
Total	20	(19.5,20.5)	20	(19.5,20.5)	32	(28.1,35.2)	11.0	(8.8,13.7)
Uttarakhand								
Male	20	(18.5, 20.5)	20	(19.5, 20.5)	33	(29.1, 38.6)	49.2	(42.7, 55.7)
Female	19	(13.5, 22.5)	28	(24.5, 30.5)	*	*	46.0	(40.3, 51.8)
Total	19	(18.5, 20.5)	20	(19.5, 22.5)	33	(29.9, 37.2)	47.2	(42.0, 52.5)

Table 3.1.3c Mean age of initiation, age at stopped smoking and percentage of respondents (non-smokers) exposed to tobacco smoke by sex and place of residence (Combined), phase-I states of India, 2007- 08

State/ Sex	Smoker						Non-smoker	
	Age of Initiation (15-34 years)		Age of Initiation (35-64 years)		Age at Stopped		Exposed to tobacco smoke at Home or Work	
	Mean	95% CI	Mean	95% CI	Mean	95% CI	P (%)	95% CI
Andhra Pradesh								
Male	19	(18.5, 20.5)	20	(19.5, 20.5)	32	(29, 35)	23	(19.1, 27.3)
Female	14	(10.5, 25.5)	16	(15.5, 18.5)	32	(24, 41)	17	(13.9, 21.4)
Total	19	(18.5, 20.5)	20	(19.5, 20.5)	32	(29, 35)	20	(16.5, 23.4)
Madhya Pradesh								
Male	19	(18.5, 20.5)	20	(19.5,22.5)	29	(27.1, 31.2)	57	(51.7,62.9)
Female	*	*	25	(16.5,32.5)	27	(15.2, 39.7)	44	(37.9,49.7)
Total	19	(18.5, 20.5)	20	(19.5,21.5)	29	(27.1, 31.0)	49	(44.1,54.4)
Maharashtra								
Male	20	(19, 22)	22	(21, 24)	29	(26, 33)	9	(6.0, 13.0)
Female	20	(19, 22)	25	(21, 27)	*	*	3	(1.0, 5.0)
Total	20	(19, 21)	22	(21, 24)	29	(26, 33)	6	(4.0, 8.0)
Mizoram								
Male	17	(16.5,18.5)	18	(17.5,19.5)	34	(30.5,38.0)	45	(39.0,52.3)
Female	19	(18.5,20.5)	20	(19.5,20.5)	34	(29.9,38.9)	56	(50.6,62.9)
Total	17	(16.5,18.5)	18	(17.5,19.5)	34	(31.3,37.2)	53	(47.7,58.9)
Kerala								
Male	20	(19.5,21.5)	22	(20.5,23.5)	34	(32.8, 36.6)	25	(20.7, 29.7)
Female	*	*	*	*	*	*	22	(18.8, 25.5)
Total	20	(19.5,21.5)	22	(20.5,23.3)	34	(32.8, 36.7)	23	(20.2, 26.6)
Tamil Nadu								
Male	20	(19.5,20.5)	20	(19,20.5)	31	(28.8,33.0)	17.1	(14.3,20.3)
Female	*	*	*	*	*	*	6.0	(4.8,7.3)
Total	20	(19.5,20.5)	20	(19,20.5)	31	(28.8,33.0)	10.7	(9.2,12.4)
Uttarakhand								
Male	19	(18.5, 20.5)	20	(19, 20.5)	34	(31.4, 37.1)	44.1	(39.6, 48.7)
Female	19	(15.5, 22.5)	27	(23.5, 30.5)	35	(26.5, 45.0)	41.5	(37.3, 45.8)
Total	19	(18.5, 20.5)	20	(19.5, 21.5)	34	(31.6, 37.1)	42.6	(38.9, 46.3)

*no observation

Table 3.1.4 a-f provides percentage of smokeless tobacco users by sex, age and place of residence in all the seven states.

The percentage of current smokeless tobacco user was low at 5% in Kerala, 9-12% in Andhra Pradesh, Tamil Nadu and Uttarakhand, 32-39% in Maharashtra and Madhya Pradesh while it was at high 51% in Mizoram. In all the states more males than females were current daily users of smokeless tobacco, except for Mizoram where more females (53%) were consuming smokeless tobacco than their male counterparts (44%) (Table 3.1.4c).

Among the urban respondents, the percentage of current smokeless tobacco user was low at 4% in Kerala, 7-10% in Andhra Pradesh, Tamil Nadu and Uttarakhand, 29% in Maharashtra and Madhya Pradesh while it was at high 44% in Mizoram (Table 3.1.4a).

Among the rural respondents, the percentage of current smokeless tobacco user was low at 6% in Kerala, 9-14% in Andhra Pradesh, Tamil Nadu and Uttarakhand, 41-43% in Maharashtra and Madhya Pradesh while it was at high 58% in Mizoram (Table 3.1.4b).

The prevalence and pattern of smokeless tobacco use was found increasing with age (Table 3.1.4d-f).

Table 3.1.4a Percentage of smokeless tobacco users by sex and place of residence(Urban), phase-I states of India, 2007- 08

State/ Sex	Smokeless tobacco user							
	Current user		Current daily user		Past daily user		Never used	
	P (%)	95% CI	P (%)	95% CI	P (%)	95% CI	P (%)	95% CI
Andhra Pradesh								
Male	15.2	(11.7, 19.4)	14.3	(10.9, 18.4)	2.2	(1.3, 3.2)	82.5	(78.6, 86.6)
Female	3.0	(1.8, 5.0)	3.0	(1.8, 5.0)	0.2	(0.0, 0.5)	96.7	(95.1, 98.3)
Total	9.2	(7.1, 11.9)	8.8	(6.7, 11.4)	1.3	(0.8, 1.7)	89.5	(86.9, 92.0)
Madhya Pradesh								
Male	43.7	(38.4,49.1)	42.9	(37.4,48.5)	2.9	(1.9,4.5)	53.4	(48.9,59.4)
Female	12.4	(9.4,16.3)	12.3	(9.3,16.2)	0.7	(0.4,1.4)	86.9	(82.9,90.2)
Total	29.0	(25.1,33.3)	28.6	(24.6,32.9)	1.9	(1.3,2.7)	69.1	(65.3,73.5)
Maharashtra								
Male	43.7	(38.4,49.1)	42.9	(37.4,48.5)	2.9	(1.9,4.5)	53.4	(48.9,59.4)
Female	12.4	(9.4,16.3)	12.3	(9.3,16.2)	0.7	(0.4,1.4)	86.9	(82.9,90.2)
Total	29.0	(25.1,33.3)	28.6	(24.6,32.9)	1.9	(1.3,2.7)	69.1	(65.3,73.5)
Mizoram								
Male	41.1	(33.7,49.0)	37.9	(31.0,45.3)	2.9	(1.8,4.5)	56.0	(51.8,66.2)
Female	48.0	(40.2,55.9)	45.0	(38.0,52.3)	1.7	(0.9,3.2)	50.3	(46.2,60.4)
Total	44.4	(37.9,51.1)	41.3	(35.6,47.3)	2.3	(1.4,3.7)	53.3	(50.4,62.1)
Kerala								
Male	5.2	(3.7,7.4)	4.0	(2.7,6.1)	2.4	(1.5,3.7)	92.4	(91.2,95.2)
Female	2.0	(1.2,3.2)	1.8	(1.1,2.9)	0.1	(0.0,0.2)	97.9	(97.1,98.9)
Total	3.5	(2.6,4.7)	2.9	(2.1,3.9)	1.2	(0.7,1.8)	95.3	(94.7,96.8)
Tamil Nadu								
Male	9.3	(7.1,12.1)	8.3	(6.2,10.9)	2.5	(1.4,3.7)	88.2	(85.1,91.2)
Female	5.5	(3.4,8.9)	5.3	(3.2,8.6)	0.4	(0.0,0.7)	94.1	(91.4,96.8)
Total	7.4	(5.4,10.0)	6.8	(4.9,9.4)	1.5	(0.8,2.1)	91.1	(88.6,93.6)
Uttarakhand								
Male	16.2	(13.1, 19.4)	15.9	(12.8, 19.1)	1.8	(1.1, 2.9)	82.0	(78.6, 85.5)
Female	2.5	(1.5, 3.4)	2.3	(1.4, 3.2)	*	*	97.3	(96.2, 98.3)
Total	10.0	(8.1, 11.9)	9.8	(7.9, 11.7)	1.1	(0.7, 1.7)	88.9	(86.9, 91.0)

Table 3.1.4b Percentage of smokeless tobacco users by sex and place of residence (Rural), phase-I states of India, 2007- 08

State/ Sex	Smokeless tobacco user							
	Current user		Current daily user		Past daily user		Never used	
	P (%)	95% CI	P (%)	95% CI	P (%)	95% CI	P (%)	95% CI
Andhra Pradesh								
Male	13.0	(9.2, 18.0)	12.2	(8.4, 17.3)	1.6	(0.5, 2.7)	85.4	(80.7, 90.1)
Female	5.1	(2.9, 8.9)	5.1	(2.9, 8.8)	0.2	(0.0, 0.5)	94.6	(91.7, 97.5)
Total	9.1	(7.0, 11.7)	8.6	(6.5, 11.3)	0.9	(0.4, 1.0)	90.0	(87.5, 92.4)
Madhya Pradesh								
Male	58.0	(52.5,63.3)	56.1	(50.3,61.7)	2.4	(1.6,3.7)	39.6	(36.3,47.0)
Female	26.6	(21.7,32.2)	26.3	(21.4,31.9)	0.5	(0.2,1.2)	72.9	(67.6,78.2)
Total	43.0	(38.6,47.4)	41.8	(37.3,46.4)	1.5	(1.0,2.2)	55.5	(52.3,61.0)
Maharashtra								
Male	48.8	(43, 53)	48.7	(43, 53)	0.5	(0.1, 0.9)	50.7	(45.9, 55.4)
Female	32.3	(26, 38)	31.8	(25, 37)	0.3	(0.0, 0.5)	67.4	(61.3, 73.6)
Total	40.7	(36, 45)	40.3	(35, 44)	0.4	(0.1, 0.6)	58.9	(54.5, 63.4)

Mizoram								
Male	52.2	(45.8,58.6)	49.4	(43.2,55.7)	3.1	(2.2,4.4)	44.7	(32.8,49.0)
Female	63.7	(58.5,68.6)	61.2	(55.9,66.3)	4.3	(2.8,6.5)	32.0	(24.1,36.5)
Total	57.7	(53.1,62.2)	55.0	(50.5,59.5)	3.6	(2.7,4.9)	38.7	(29.7,41.9)
Kerala								
Male	8.4	(5.8,12.1)	6.1	(4.1,9.1)	3.7	(2.4,5.7)	87.9	(86.8,92.8)
Female	3.9	(2.2,6.8)	3.7	(2.0,6.6)	0.4	(0.2,0.8)	94.7	(93.1,97.6)
Total	6.1	(4.2,8.8)	4.7	(3.1,7.5)	2.0	(1.3,3.0)	91.9	90.6,95.1)
Tamil Nadu								
Male	17.2	(13.9,21.2)	15.9	(12.8,19.5)	1.5	(0.9,2.1)	81.3	(77.7,84.8)
Female	10.8	(8.5,13.7)	10.4	(8.1,13.2)	0.8	(0.3,1.3)	88.4	(85.6,91.2)
Total	14.0	(11.6,16.8)	13.1	(10.8,15.7)	1.1	(0.8,1.5)	84.9	(82.2,87.4)
Uttarakhand								
Male	23.2	(19.5, 27.3)	23.0	(19.3, 27.1)	1.7	(1.0, 2.9)	75.2	(71.2, 79.0)
Female	2.2	(1.3, 3.5)	1.9	(1.1, 3.3)	0.1	(0.0, 0.4)	97.7	(96.7, 98.9)
Total	12.4	(10.2, 14.9)	12.1	(10.0, 14.7)	0.9	(0.5, 1.4)	86.7	(84.5, 89.2)

Table 3.1.4c Percentage of smokeless tobacco users by sex and place of residence (Combined), phase-I states of India, 2007- 08

State/ Sex	Smokeless tobacco user							
	Current user		Current daily user		Past daily user		Never used	
	P (%)	95% CI	P (%)	95% CI	P (%)	95% CI	P (%)	95% CI
Andhra Pradesh								
Male	13.6	(10.7, 17.2)	12.8	(9.9, 16.4)	1.8	(0.9, 2.6)	84.6	(81.1, 88.0)
Female	4.5	(2.9, 7.1)	4.5	(2.8, 7.1)	0.5	(0.0, 0.5)	95.2	(93.1, 97.3)
Total	9.1	(7.5, 11.1)	8.7	(7.0, 10.6)	1.0	(0.6, 1.4)	89.8	(88.0,91.7)
Madhya Pradesh								
Male	53.8	(49.7,57.9)	52.2	(47.9,56.6)	2.6	(1.9,3.5)	43.6	(41.2,49.3)
Female	22.6	(18.9,26.8)	22.4	(18.7,26.5)	0.5	(0.3,1.0)	76.9	(72.9,80.8)
Total	39.0	(35.7,42.4)	38.0	(34.6,41.6)	1.6	(1.2,2.2)	59.4	(57.0,63.7)
Maharashtra								
Male	40.7	(37, 44)	40.5	(36, 44)	0.5	(0.2, 0.7)	58.8	(55.3, 62.4)
Female	23.6	(19, 27)	23.3	(19, 27)	0.3	(0.0, 0.5)	76.1	(72.3, 80.0)
Total	32.5	(29, 35)	32.3	(29, 35)	0.4	(0.2, 0.6)	67.1	(64.0, 70.1)
Mizoram								
Male	46.5	(41.4,51.6)	43.5	(38.6,48.4)	3.0	(2.2,4.0)	50.5	(44.5,55.9)
Female	55.4	(50.6,60.2)	52.7	(48.1,57.2)	2.3	(2.0,4.2)	42.3	(37.4,47.3)
Total	50.8	(46.6,54.9)	47.9	(44.1,51.7)	3.0	(2.3,3.9)	46.2	(41.9,50.9)
Kerala								
Male	7.0	(5.6,12.2)	5.3	(4.0,7.7)	3.0	(2.3,4.8)	90.0	(88.6,93.0)
Female	3.4	(2.1,5.4)	3.2	(1.9,5.2)	0.3	(0.1,0.6)	96.3	(94.5,97.8)
Total	5.4	(4.0,7.4)	4.3	(3.0,6.2)	1.8	(1.2,2.5)	92.8	(92.0,95.3)
Tamil Nadu								
Male	13.6	(11.6,16.0)	12.4	(10.5,14.6)	2.0	(1.3,2.6)	84.4	(82.0,86.7)
Female	8.4	(6.8,10.5)	8.1	(6.5,10.1)	0.6	(0.3,0.9)	91.0	(89.0,92.9)
Total	11.0	(9.4,12.9)	10.2	(8.7,12.0)	1.3	(0.9,1.6)	87.7	(85.9,89.4)
Uttarakhand								
Male	21.0	(18.3, 24.1)	20.8	(18.1, 23.8)	1.8	(1.2, 2.5)	77.3	(74.7, 80.3)
Female	2.2	(1.6, 3.2)	2.0	(1.4, 3.0)	0.1	(0.0, 0.3)	97.7	(97.0, 98.6)
Total	11.7	(10.1, 13.5)	11.5	(9.9, 13.3)	0.9	(0.6, 1.3)	87.4	(85.9, 89.2)

Table 3.1.4d Percentage of smokeless tobacco users (P and 95% Confidence Interval) by age and residence (Urban), phase-I states of India, 2007-08

State/Smokeless tobacco user	Age group						
	15 - 19	20 - 24	25 - 34	35 - 44	45 - 54	55 - 64	15 - 64
Andhra Pradesh							
Current user	1.7 (0.6,5.0)	8.1 (5.4,12.1)	10.7 (8.1,14.1)	12.2 (8.7,16.8)	9.9 (6.2,15.4)	11.3 (7.4,16.8)	9.2 (7.1,11.9)
Current daily user	1.7 (0.6,5.0)	7.7 (5.0,11.7)	10.0 (7.5,13.2)	11.5 (8.2,15.9)	9.4 (5.8,14.9)	11.3 (7.4,16.8)	8.8 (6.7,11.4)
Maharashtra							
Current user	3.2 (1.5,6.4)	19.6 (10.8,33.1)	24.2 (19.5,29.7)	28.0 (22.2,34.6)	31.1 (25.2,37.6)	33.2 (27.5,39.4)	22.7x (18.7,27.3)
Current daily user	3.2 (10.8,33.1)	19.6 (19.3,29.6)	24.1 (22.0,34.1)	27.6 (25.0,37.3)	30.8 (27.5,39.4)	33.2 (18.6,27.1)	22.6 (1.5,6.4)
Madhya Pradesh							
Current user	16.1 (11.6,21.9)	23.8 (18.9,29.6)	32.9 (27.1,39.3)	33.6 (28.7,38.9)	33.4 (27.6,39.8)	35.1 (29.2,41.6)	29.0 (25.1,33.3)
Current daily user	15.8 (11.3,21.7)	23.6 (18.7,29.4)	32.1 (26.2,38.6)	33.1 (28.3,38.4)	32.8 (26.9,39.1)	35.1 (29.2,41.6)	28.6 (24.6,32.6)
Mizoram							
Current user	18.3 (11.6,27.5)	42.5 (32.8,52.8)	49.5 (42.5,56.6)	52.9 (44.2,61.4)	52.7 (43.7,61.5)	56.5 (46.0,66.4)	44.4 (37.9,51.1)
Current daily user	13.9 (9.2,20.3)	38.6 (29.2,48.9)	47.9 (41.2,54.7)	50.0 (41.3,58.7)	49.6 (40.9,58.2)	52.2 (39.8,64.4)	41.3 (35.6,47.3)
Kerala							
Current user	1.3 (0.2,9.1)	2.5 (0.8,7.6)	2.5 (1.1,5.4)	3.2 (1.8,5.8)	5.1 (3.2,8.1)	8.4 (6.4,11.1)	3.5 (2.6,4.7)
Current daily user	1.3 (0.2,9.1)	1.3 (0.3,4.9)	1.8 (0.7,4.8)	2.4 (1.3,4.6)	4.3 (2.6,7.0)	8.2 (6.2,10.8)	2.9 (2.1,3.9)
Tamil Nadu							
Current user	0.7 (0.1,5.4)	3.7 (1.7,8.1)	7.4 (5.0,10.9)	9.2 (5.6,14.7)	11.4 (7.1,17.8)	12.1 (8.7,16.4)	7.4 (5.4,10.0)
Current daily user	0.0 (0.0,0.0)	3.3 (1.5,7.0)	6.6 (4.3,9.9)	8.8 (5.3,14.3)	10.8 (6.6,17.0)	11.3 (8.0,15.6)	6.8 (4.9,9.4)
Uttarakhand							
Current user	3.4 (1.9,6.0)	8.7 (5.7,13.0)	12.3 (9.3,16.0)	12.3 (9.0,16.5)	12.1 (8.9,16.2)	10.7 (7.0,16.1)	10.0 (8.3,12.1)
Current daily user	2.9 (1.6,5.4)	8.1 (5.2,12.4)	12.1 (9.2,15.9)	12.3 (9.0,16.5)	12.1 (8.9,16.2)	10.2 (6.8,15.0)	9.8 (8.1,11.8)

Table 3.1.4e Percentage of smokeless tobacco users (P and 95% Confidence Interval) by age and residence (Rural), phase-I states of India, 2007-08

State/Smokeless tobacco user	Age group						
	15 - 19	20 - 24	25 - 34	35 - 44	45 - 54	55 - 64	15 - 64
Andhra Pradesh							
Current user	2.0 (0.6,6.4)	6.0 (3.3,10.7)	9.9 (6.7,14.4)	10.6 (7.4,15.1)	11.2 (7.6,16.3)	15.0 (10.3,21.4)	9.1 (7.0,11.7)
Current daily user	0.9 (0.2,3.9)	6.0 (3.3,10.7)	9.7 (6.5,14.3)	9.8 (6.5,14.4)	10.9 (7.2,16.1)	14.6 (9.8,21.3)	8.6 (6.5,11.3)
Maharashtra							
Current user	10.1 (5.7,17.4)	26.1 (19.8,33.6)	41.5 (35.7,47.5)	52.4 (46.0,58.7)	56.2 (47.6,64.3)	61.3 (54.6,67.7)	40.7 (36.3,45.2)
Current daily user	9.8 (5.5,16.8)	25.8 (19.7,33.1)	41.3 (35.5,47.4)	52.2 (45.8,58.6)	55.8 (47.4,63.9)	60.3 (53.3,66.8)	40.3 (35.9,44.9)

Integrated Disease Surveillance Project (IDSP)

Madhya Pradesh							
Current user	25.9 (20.8,31.8)	42.3 (35.7,49.3)	43.3 (37.4,49.3)	47.7 (41.5,53.9)	49.1 (41.4,56.9)	52.8 (46.2,59.4)	43.0 (38.6,47.4)
Current daily user	24.8 (19.6,30.8)	41.9 (35.4,48.8)	41.8 (35.9,47.9)	45.9 (39.6,52.4)	48.4 (40.5,56.4)	52.0 (45.3,58.6)	41.8 (37.3,46.4)
Mizoram							
Current user	36.9 (28.5,46.2)	56.0 (48.7,63.0)	65.5 (60.2,70.5)	62.7 (55.5,69.4)	64.5 (57.2,71.1)	57.1 (48.1,65.6)	57.7 (53.1,62.2)
Current daily user	32.7 (24.8,41.6)	53.9 (46.4,61.3)	62.6 (57.3,67.6)	61.3 (54.0,68.2)	62.1 (55.1,68.5)	53.3 (44.3,62.0)	55.0 (50.5,59.5)
Kerala							
Current user	2.7 (1.0,7.0)	4.1 (1.6,10.1)	5.7 (2.8,11.1)	4.4 (2.7,7.2)	7.6 (4.5,12.7)	14.4 (11.5,17.8)	6.0 (4.1,8.6)
Current daily user	2.1 (0.7,6.5)	2.8 (0.8,9.1)	3.7 (1.5,8.8)	3.5 (1.9,6.3)	7.0 (3.9,12.0)	12.8 (10.2,16.0)	4.8 (3.1,7.3)
Tamil Nadu							
Current user	2.2 (0.9,5.6)	6.9 (4.5,10.6)	8.3 (5.9,11.7)	17.9 (13.0,24.1)	22.7 (18.2,27.8)	30.7 (25.3,36.8)	14.0 (11.6,16.8)
Current daily user	1.6 (0.5,5.0)	6.3 (4.0,10.0)	7.4 (5.0,10.6)	16.8 (12.1,22.9)	21.7 (17.2,27.0)	29.5 (24.0,35.7)	13.1 (10.8,15.7)
Uttarakhand							
Current user	5.3 (3.1,8.9)	10.2 (6.9,14.8)	17.4 (13.9,21.6)	15.8 (12.0,20.3)	9.9 (6.9,14.1)	13.6 (9.4,19.4)	12.4 (10.2,14.9)
Current daily user	5.3 (3.1,8.9)	9.9 (6.6,14.6)	17.2 (13.7,21.4)	15.8 (12.0,20.3)	9.5 (6.6,13.6)	12.9 (8.8,18.6)	12.1 (10.0,14.7)

Table 3.1.4f Percentage of smokeless tobacco users (P and 95% Confidence Interval) by age and residence (Combined), phase-I states of India, 2007-08

State/Smokeless tobacco user	Age group						
	15 - 19	20 - 24	25 - 34	35 - 44	45 - 54	55 - 64	15 - 64
Andhra Pradesh							
Current user	1.9 (0.7,4.7)	6.7 (4.5,9.8)	10.1 (7.7,13.3)	11.1 (8.5,14.3)	10.8 (7.9,14.6)	14.1 (10.3,19.0)	9.1 (7.5,11.1)
Current daily user	1.2 (0.5,3.0)	6.6 (4.4,9.7)	9.8 (7.4,13.0)	10.3 (7.7,13.6)	10.5 (7.6,14.4)	13.8 (9.9,18.9)	8.7 (7.0,10.6)
Maharashtra							
Current user	7.0 (4.3,11.3)	23.0 (17.4,29.8)	33.3 (29.6,37.2)	41.4 (36.9,46.0)	45.0 (39.5,50.6)	50.9 (46.0,55.7)	32.5 (29.6,35.7)
Current daily user	6.9 (4.2,10.9)	22.9 (17.3,29.6)	33.1 (29.4,37.0)	41.1 (36.6,45.7)	44.7 (39.3,50.2)	50.2 (45.3,55.1)	32.3 (29.3,35.4)
Madhya Pradesh							
Current user	23.0 (19.2,27.4)	36.7 (31.8,42.0)	40.3 (35.9,45.0)	43.5 (39.0,48.2)	44.6 (38.8,50.6)	48.5 (43.3,53.7)	39.0 (35.7,42.4)
Current daily user	22.1 (18.2,26.6)	36.4 (31.5,41.6)	39.1 (34.5,43.8)	42.1 (37.5,46.9)	43.9 (38.0,50.1)	47.9 (42.6,53.2)	38.0 (34.6,41.6)
Mizoram							
Current user	27.3 (21.4,34.0)	48.6 (42.3,55.0)	56.9 (51.8,61.9)	57.6 (51.9,63.0)	58.7 (52.7,64.4)	56.8 (50.1,63.3)	50.8 (46.6,54.9)
Current daily user	22.9 (18.0,28.7)	45.6 (39.4,51.9)	54.7 (49.9,59.4)	55.4 (49.8,61.0)	55.9 (50.2,61.6)	52.8 (45.3,60.1)	47.9 (44.1,51.7)
Kerala							
Current user	2.3 (1.0,5.5)	3.7 (1.7,8.0)	4.8 (2.6,8.7)	4.1 (2.7,6.1)	6.9 (4.5,10.5)	12.8 (10.6,15.3)	5.3 (3.9,7.2)
Current daily user	1.9 (0.7,5.1)	2.4 (0.8,6.8)	3.2 (1.5,6.7)	3.2 (2.0,5.2)	6.2 (3.9,9.8)	11.6 (9.6,14.0)	4.3 (3.0,6.1)

Tamil Nadu									
Current user	1.6	5.5	7.9	14.0	17.7	23.0	11.0		
	(0.7,3.7)	(3.7,8.0)	(6.1,10.2)	(10.8,17.9)	(14.5,21.5)	(19.3,27.2)	(9.4,12.9)		
Current daily user	0.9	4.9	7.0	13.2	16.9	22.0	10.2		
	(0.3,2.8)	(3.3,7.3)	(5.3,9.2)	(10.1,17.1)	(13.6,20.7)	(18.3,26.1)	(8.7,12.0)		
Uttarakhand									
Current user	4.8	9.8	15.9	14.7	10.5	13.0	11.7		
	(3.1,7.4)	(7.2,13.1)	(13.3,18.9)	(11.9,18.0)	(8.1,13.6)	(9.5,17.5)	(10.1,13.5)		
Current daily user	4.7	9.4	15.7	14.7	10.2	12.3	11.5		
	(3.0,7.3)	(6.8,12.8)	(13.1,18.8)	(11.9,18.0)	(7.9,13.2)	(9.0,16.7)	(9.9,13.3)		

Table 3.1.5 a-c presents the mean number of times chewing tobacco, Pan with tobacco, snuff by mouth and nose per day. It was found 19 per day in Mizoram, 10 per day in Uttarakhand and less than 5 per day in rest of the five states. There was not much urban-rural differential in frequency of chewing tobacco. Males were chewing tobacco more frequently than females in Maharashtra, Madhya Pradesh, Uttarakhand and Tamil Nadu.

Among the urban respondents, the mean number

of times chewing tobacco, Pan with tobacco, Snuff by mouth and nose per day was found to be 20 in Mizoram, 10 in Uttarakhand and in rest of the five states it was less than 6 per day (Table 3.1.5a).

Among the rural respondents, the mean number of times chewing tobacco, Pan with tobacco, Snuff by mouth and nose per day was 17 in Mizoram, 10 in Uttarakhand and in rest of the five states it was less than 6 per day (Table 3.1.5b).

Table 3.1.5a Mean frequency of smokeless tobacco use (per day) by daily smokeless tobacco users according to sex and place of residence (Urban), phase-I states of India, 2007- 08

State/ Sex	Type of smokeless tobacco									
	Chewing tobacco		Pan with tobacco		Snuff by mouth*		Snuff by nose*		Others	
	Mean	95% CI	Mean	95% CI	Mean	95% CI	Mean	95% CI	Mean	95% CI
Andhra Pradesh										
Male	0.5	(0.2, 0.7)	1.6	(1.0, 2.1)	2.1	(1.5, 2.8)	0.6	(0.0, 1.2)	0.4	(0.0, 0.8)
Female	0.7	(0.0, 1.3)	1.6	(0.9, 2.3)	1.6	(1.0, 2.4)	0.6	(0.3, 1.6)	0.1	(0.0, 0.2)
Total	0.5	(0.2, 0.7)	1.6	(1.1, 2.0)	2.0	(1.4, 2.7)	0.6	(0.0, 1.1)	0.4	(0.0, 0.7)
Madhya Pradesh										
Male	4.3	(3.8, 4.8)	0.6	(0.2, 0.9)	0.1	(0.0, 0.1)	*		1.7	(0.9, 2.5)
Female	2.7	(2.1, 3.3)	0.6	(0.3, 0.9)	0.6	(0.3, 0.8)	*		0.6	(0.2, 0.9)
Total	4.0	(3.5, 4.5)	0.6	(0.3, 0.8)	0.2	(0.1, 0.3)	*		1.4	(0.8, 2.1)
Maharashtra										
Male	4.8	(4.1, 5.5)	0.6	(0.3, 0.8)	0.1	(0.0, 0.2)	*		0.7	(0.3, 1.0)
Female	3.1	(2.3, 3.9)	0.4	(0.2, 0.6)	0.3	(0.1, 0.5)	*		1.5	(0.9, 2.1)
Total	4.4	(3.7, 5.0)	0.5	(0.3, 0.7)	0.2	(0.1, 0.3)	*		0.9	(0.6, 1.2)
Mizoram										
Male	9.8	(8.7,10.8)	11.3	(9.6,13.0)	*		*		*	
Female	9.5	(7.8,11.3)	8.3	(6.8,9.7)	*		*		*	
Total	9.6	(8.2,11.0)	10.2	(8.6,11.7)	*		*		*	
Kerala										
Male	1.0	(0.4,1.5)	1.9	(1.2,2.5)	*		*		*	
Female	*	*	6.7	(4.4,8.9)	*		*		*	
Total	0.6	(0.2,1.0)	3.4	(2.2,4.6)	*		*		*	
Tamil Nadu										
Male	2.5	(1.6,3.4)	1.7	(1.0,2.5)	0.3	(0.0,0.6)	0.2	(0.0,0.3)	0.5	(0.1,1.0)
Female	0.5	(0.0,1.1)	4.1	(2.6,5.7)	0.5	(0.0,1.3)	0.7	(0.0,1.3)	1.0	(0.0,3.2)
Total	1.8	(1.0,2.5)	2.6	(1.6,3.7)	0.4	(0.0,0.7)	0.4	(0.1,0.6)	0.3	(0.0,0.6)

Uttarakhand										
Male	6.0	(5.3, 6.8)	3.1	(1.9, 4.3)	*		*		*	
Female	4.9	(3.4, 6.4)	5.3	(4.5, 6.1)	*		*		*	
Total	5.9	(5.3, 6.6)	3.9	(2.9, 4.9)		*	*		*	

Table 3.1.5b Mean frequency of smokeless tobacco use (per day) by daily smokeless tobacco users according to sex and place of residence (Rural), phase-I states of India, 2007- 08

State/ Sex	Type of smokeless tobacco									
	Chewing tobacco		Pan with tobacco		Snuff by mouth*		Snuff by nose*		Others	
	Mean	95% CI	Mean	95% CI	Mean	95% CI	Mean	95% CI	Mean	95% CI
Andhra Pradesh										
Male	0.9	(0.5, 1.3)	0.6	(0.3, 1.0)	2.0	(1.3, 2.6)	0.6	(0.7, 1.9)	0.3	(0.0, 0.5)
Female	1.0	(0.6, 1.4)	1.4	(0.5, 2.2)	1.0	(0.4, 1.3)	0.7	(0.4, 1.8)	0.0	(0.0, 0.7)
Total	0.9	(0.6, 1.2)	0.9	(0.5, 1.2)	1.7	(1.1, 2.2)	0.2	(1.4, 0.6)	0.2	(0.0, 0.4)
Madhya Pradesh										
Male	5.1	(4.7, 5.5)	0.4	(0.2, 0.7)	0.1	(0.0, 0.2)	*		0.4	(0.2, 0.5)
Female	3.6	(3.1, 4.1)	0.2	(0.1, 0.3)	0.6	(0.4, 0.8)	*		0.1	(0.0, 0.2)
Total	4.6	(4.2, 5.0)	0.4	(0.2, 0.6)	0.2	(0.1, 0.4)	*		0.3	(0.1, 0.4)
Maharashtra										
Male	4.8	(4.4, 5.3)	0.6	(0.4, 0.8)	0.2	(0.1, 0.3)	*		0.2	(0.1, 0.3)
Female	1.6	(1.2, 2.0)	0.3	(0.0, 0.5)	0.3	(0.1, 0.5)	*		2.2	(1.6, 2.8)
Total	3.6	(3.2, 4.0)	0.5	(0.3, 0.6)	0.2	(0.1, 0.3)	*		1.0	(0.7, 1.3)
Mizoram										
Male	9.4	(8.5, 10.3)	7.6	(5.6, 9.5)	*		*		*	
Female	10.3	(9.0, 11.5)	7.2	(4.0, 10.4)	*		*		*	
Total	9.9	(9.0, 10.6)	7.4	(5.0, 9.8)	*		*		*	
Kerala										
Male	0.6	(0.2, 0.9)	2.4	(1.0, 3.7)	*		*		*	
Female	1.0	(0.0, 2.0)	5.3	(4.4, 6.2)	*		*		*	
Total	0.7	(0.2, 1.3)	3.5	(2.6, 4.4)	*		*		*	
Tamil Nadu										
Male	3.2	(2.6, 3.7)	2.1	(1.3, 2.9)	0.2	(0.0, 0.5)	0.4	(0.0, 0.8)	0.1	(0.0, 0.1)
Female	0.8	(0.5, 1.1)	3.9	(3.3, 4.4)	0.4	(0.0, 0.9)	0.3	(0.0, 0.6)	0.0	(0.0, 0.1)
Total	2.2	(1.8, 2.7)	2.8	(2.2, 3.5)	0.3	(0.0, 0.5)	0.4	(0.1, 0.6)	0.0	(0.0, 0.1)
Uttarakhand										
Male	5.7	(5.1, 6.2)	4.1	(1.3, 6.9)	*		*		*	
Female	4.5	(3.0, 6.1)	4.7	(3.8, 5.6)	*		*		*	
Total	5.6	(5.1, 6.2)	4.5	(3.5, 5.4)	*		*		*	

Table 3.1.5c Mean frequency of smokeless tobacco use (per day) by daily smokeless tobacco users according to sex and place of residence (Combined), phase-I states of India, 2007- 08

State/ Sex	Type of smokeless tobacco									
	Chewing tobacco		Pan with tobacco		Snuff by mouth*		Snuff by nose*		Others	
	Mean	95% CI	Mean	95% CI	Mean	95% CI	Mean	95% CI	Mean	95% CI
Andhra Pradesh										
Male	0.8	(0.5, 1.0)	1.0	(0.6, 1.3)	2.0	(1.6, 2.5)	0.0	(0.0, 0.2)	0.3	(0.1, 0.6)
Female	0.9	(0.6, 1.3)	1.4	(0.7, 2.1)	1.0	(0.7, 1.4)	0.6	(0.3, 1.5)	0.0	(0.0, 0.0)
Total	0.8	(0.6, 1.0)	1.0	(0.8, 1.4)	1.8	(1.4, 2.2)	0.2	(0.0, 0.5)	0.2	(0.0, 0.4)
Madhya Pradesh										
Male	4.9	(4.6, 5.2)	0.5	(0.3, 0.7)	0.1	(0.0, 0.2)	*		0.7	(0.4, 0.9)
Female	3.4	(3.0, 3.9)	0.3	(0.2, 0.4)	0.6	(0.4, 0.7)	*		0.2	(0.1, 0.3)
Total	4.5	(4.2, 4.8)	0.4	(0.2, 0.6)	0.2	(0.1, 0.3)	*		0.5	(0.3, 0.7)

Maharashtra										
Male	4.8	(4.4, 5.2)	0.6	(0.4, 0.7)	0.2	(0.1, 0.2)	*		0.3	(0.2, 0.5)
Female	1.9	(1.6, 2.3)	0.3	(0.1, 0.5)	0.3	(0.1, 0.4)	*		2.1	(1.6, 2.5)
Total	3.8	(3.5, 4.2)	0.5	(0.3, 0.6)	0.2	(0.1, 0.3)	*		0.9	(0.7, 1.2)
Mizoram										
Male	9.5	(8.8,10.3)	9.8	(8.5,11.1)	*		*		*	
Female	10.0	(9.0,11.0)	7.6	(6.1,9.5)	*		*		*	
Total	9.8	(9.0,10.6)	9.0	(7.6,10.4)	*		*		*	
Kerala										
Male	0.6	(0.3,1.0)	2.2	(1.2,3.3)	*		*		*	
Female	0.8	(0.0,1.8)	5.5	(4.7,6.4)	*		*		*	
Total	0.7	(0.3,1.1)	3.5	(2.7,4.2)	*		*		*	
Tamil Nadu										
Male	3.0	(2.5,3.4)	2.0	(1.4,2.6)	0.2	(0.1,0.3)	0.3	(0.1,0.6)	0.2	(0.1,0.3)
Female	0.7	(0.4,1.0)	3.9	(3.3,4.5)	0.4	(0.0,0.8)	0.4	(0.1,0.7)	0.0	(0.0,0.1)
Total	2.1	(1.7,2.5)	2.7	(2.2,3.3)	0.3	(0.1,0.5)	0.4	(0.2,0.6)	0.1	(0.0,0.2)
Uttarakhand										
Male	5.7	(5.3, 6.2)	3.5	(2.2, 4.8)	*		*		*	
Female	4.7	(3.6, 5.8)	4.8	(4.2, 5.5)	*		*		*	
Total	5.7	(5.3, 6.1)	4.2	(3.6, 4.9)	*		*		*	

Table 3.1.6 a-c presents the mean age of initiation, age at stopped smokeless tobacco use.

The mean age of initiation of smokeless tobacco use among young respondents aged 15-34 years was 18 years in Mizoram and for rest of the states it was 20 years. Among respondents aged 35-64 years, the age of imitation of smokeless tobacco use ranged from a low 19 years in Mizoram to a high 30 years in Kerala. The mean age of cessation of smokeless tobacco use for all those who stopped smokeless tobacco use ranged between 24 years in Mizoram and 35 years in Maharashtra.

Among the urban respondents, the mean age of initiation of smokeless tobacco use among young respondents aged 15-34 years was 18 years in Mizoram, It was 22 years in Kerala, and in rest of the states it was 20 years. Among respondents aged 35-64 years,

the age of initiation of smokeless tobacco use ranged from a low 20 years in Mizoram to a high 34 years in Kerala. The mean age of cessation for all those who stopped smokeless tobacco use ranged between 25 years in Mizoram and 33 years in Maharashtra, Kerala and Uttarakhand (Table 3.1.6a).

Among the rural respondents, the mean age of initiation of smokeless tobacco use among young respondents aged 15-34 years was 17 years in Mizoram. It was 21 years in Andhra Pradesh and in rest of the states it was 20 years. Among respondents aged 35-64 years, the age of imitation of smokeless tobacco use ranged from a low 19 years in Mizoram to a high 30 years in Kerala. The mean age of cessation for all those who stopped smokeless tobacco use ranged between 24 years in Mizoram and 36 years in Maharashtra (Table 3.1.6b).

Table 3.1.6a Mean age of initiation, age at stopped smokeless tobacco use by daily smokeless tobacco user according to sex and place of residence (Urban), phase-I states of India, 2007- 08

State/ Sex	Smokeless tobacco users					
	Age of Initiation (15-34 years)		Age of Initiation (35-64 years)		Age at Stopped	
	Mean	95% CI	Mean	95% CI	Mean	95% CI
Andhra Pradesh						
Male	20	(18.5, 21.5)	24	(22.5, 25.5)	28	(23.8, 32.1)
Female	20	(12.5, 25.5)	25	(20.5, 30.5)	26	(20.8, 32.0)
Total	20	(19.5, 21.5)	24	(22.5, 25.5)	28	(24.0, 32.0)
Madhya Pradesh						
Male	20	(19.5, 21.5)	25	(22.5,25.5)	31	(27.5, 35.7)
Female	15	(14.5, 18.5)	30	(25.5,30.5)	32	(27.4, 37.1)
Total	20	(19.5, 21.5)	25	(23.0,26.5)	31	(28.5, 34.9)

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Maharashtra						
Male	19	(18, 20)	22	(21, 24)	32	(23.2, 40.9)
Female	20	(18, 21)	25	(21, 26)	34	(27.7, 43.1)
Total	20	(19, 21)	22	(21, 24)	33	(28.9, 37.5)
Mizoram						
Male	18	(17.5,18.5)	20	(19.5,20.5)	22	(13.1,31.1)
Female	18	(17.5,19.5)	20	(19.5,20.5)	31	(19.6,42.1)
Total	18	(17.5,18.5)	20	(19.5,20.5)	25	(16.7,33.2)
Kerala						
Male	19	(15.5,24.5)	29	(20.5,40.5)	33	(27.7, 38.6)
Female	*	*	35	(25.5,40.5)	46	(39.9, 52.1)
Total	22	(15.5,25.5)	34	(25.5,38.5)	33	(28.1, 38.8)
Tamil Nadu						
Male	22	(19.5,24.5)	25	(20.5,30.5)	25	(20.6,29.6)
Female	17	(16.5,20.0)	30	(23.5,35.5)	44	(42.4,46.0)
Total	20	(19.5,23.5)	26	(23.5,31.5)	28	(23.4,32.3)
Uttarakhand						
Male	20	(19.5, 20.5)	26	(24.5, 30.5)	32.7	(29.2, 36.2)
Female	*	*	30	(24.5, 32.5)	*	*
Total	20	(19.5, 20.5)	29	(25.5, 30.5)	32.9	(29.6, 36.2)

Table 3.1.6b Mean age of initiation, age at stopped smokeless tobacco use by daily smokeless tobacco user according to sex and place of residence (Rural), phase-I states of India, 2007- 08

State/ Sex	Smokeless tobacco users					
	Age of Initiation (15-34 years)		Age of Initiation (35-64 years)		Age at Stopped	
	Mean	95% CI	Mean	95% CI	Mean	95% CI
Andhra Pradesh						
Male	20	(18.5, 22.5)	30	(25.5, 33.5)	25	(21.0, 30.30)
Female	23	(10.5, 28.5)	20	(19.5, 25.5)	37	(24.3, 52.0)
Total	21	(20.5, 22.5)	25	(20.5, 28.5)	27	(22.5, 31.2)
Madhya Pradesh						
Male	20	(19.5, 19.5)	20	(19.0,20.5)	27	(23.9, 31.5)
Female	13	(11.5, 20.5)	21	(20.5,25.5)	28	(19.1, 37.3)
Total	20	(18.5, 22.5)	20	(17.0,22.5)	27	(24.3, 31.2)
Maharashtra						
Male	20	(18, 20)	22	(21, 22)	33	(26.8, 39.5)
Female	20	(19, 20)	25	(24, 25)	43	(31.3, 54.4)
Total	20	(19, 20)	23	(22, 24)	36	(30.8, 41.6)
Mizoram						
Male	16	(15.5,17.5)	19	(18.5,20.5)	21	(15.1,26.7)
Female	17	(16.5,17.5)	19	(18.5,20.5)	27	(17.1,36.9)
Total	17	(16.5,17.5)	19	(18.5,20.5)	24	(18.0,30.3)
Kerala						
Male	18	(16.5,21.5)	30	(23.5,36.5)	33	(28.3, 37.8)
Female	*	*	30	(25.5,40.5)	49	(41.6, 56.3)
Total	20	(16.5,22.5)	30	(25.5,35.5)	34	(29.9, 39.2)
Tamil Nadu						
Male	20	(19.5,21.5)	25	(22.5,27.5)	31	(26.5,36.5)
Female	20	(19.5,21.5)	30	(27.5,32.5)	41	(34.4,48.3)
Total	20	(19.5,21.5)	28	(25.5,30.5)	35	(30.3,39.0)
Uttarakhand						
Male	20	(18.5, 20.5)	25	(22.5, 28.5)	31.9	(26.4, 37.4)
Female	19	(15.5, 25.5)	30	(25.5, 35.5)	*	*
Total	20	(18.5, 20.5)	25	(22.5, 30.5)	31.7	(26.7, 36.8)

Table 3.1.6c Mean age of initiation, age at stopped smokeless tobacco use by daily smokeless tobacco user according to sex and place of residence (Combined), phase-I states of India, 2007- 08

State/ Sex	Smokeless tobacco users					
	Age of Initiation (15-34 years)		Age of Initiation (35-64 years)		Age at Stopped	
	Mean	95% CI	Mean	95% CI	Mean	95% CI
Andhra Pradesh						
Male	20	(19.5, 21.5)	25	(24.5, 27.5)	26	(23.2, 29.4)
Female	23	(19.5,27.5)	20	(19.5, 25.5)	34	(26.0, 42.5)
Total	20	(19.5, 21.5)	25	(22.5, 25.5)	27	(24.1, 30.1)
Madhya Pradesh						
Male	20	(18.5, 21.5)	21	(20.5,21.5)	29	(26.2, 31.8)
Female	15	(14.5, 18.5)	25	(23.5,25.5)	29	(24.0, 35.6)
Total	20	(18.5, 22.5)	21	(20.5,22.5)	29	(26.6, 31.6)
Maharashtra						
Male	20	(19.5, 20.5)	22	(21, 22)	33	(27.8, 37.6)
Female	20	(19.5, 20.5)	25	(23.5, 25.5)	39	(33.1, 45.7)
Total	20	(19.5, 20.5)	23	(22, 24)	35	(31.3, 38.5)
Mizoram						
Male	17	(16.5,18.5)	19	(18.5,20.5)	22	(16.3,26.7)
Female	18	(17.5,18.5)	19	(18.5,20.5)	28	(20.5,35.7)
Total	18	(17.5,18.5)	19	(18.5,20.5)	24	(19.7,29.3)
Kerala						
Male	19	(16.5,22.5)	29	(23.5,35.5)	33	(29.2, 37.0)
Female	*	*	30	(28.5,35.5)	48	(42.0, 55.6)
Total	20	(17.5,22.5)	30	(28.5,35.5)	34	(30.6, 38.2)
Tamil Nadu						
Male	20	(19.5,21.5)	25	(23.5,27.5)	28	(24.8,31.5)
Female	20	(18.5,23.5)	30	(27.5,32.5)	42	(37.2,47.2)
Total	20	(19.5,21.5)	27	(25.5,30.5)	31	(28.2,34.7)
Uttarakhand						
Male	20	(19.5, 20.5)	25	(24.5, 28.5)	32.1	(28.4, 35.9)
Female	20	(15.5, 27.5)	30	(25.5, 32.5)	*	*
Total	20	(19.5, 20.5)	26	(25.5, 30.5)	32.2	(28.8, 35.6)

Table 3.1.7 a-c presents the percentage of respondents who are smokers only, using only smokeless tobacco, using both forms of tobacco, and using any form of tobacco. It shows that percentage of respondents either smoking or use smokeless tobacco ranged from a low 16% in Kerala to a high of 68% in

Mizoram. The percentage of the respondents using both forms of tobacco, i.e., smoking and using smokeless tobacco, ranged from a low of 1% in Kerala to a high of 21% in Mizoram. The proportion of respondents using both forms of tobacco and any form of tobacco was more among rural respondents than urban.

Table 3.1.7a Percentage of tobacco users by sex and place of residence (Urban), phase-I states of India, 2007- 08

State/ Sex	Tobacco Use							
	Smokeless tobacco users only		Smokers only		Both(Smoking and smokeless)		Either (Smoking or smokeless)	
	P (%)	95% CI	P(%)	95% CI	P (%)	95% CI	P (%)	95% CI
Andhra Pradesh								
Male	10.5	(7.9, 13.8)	19.2	(16.2, 22.7)	3.8	(2.3, 6.2)	33.5	(29.1, 38.2)
Female	3.0	(1.8, 5.0)	0.8	(0.5, 1.3)	0.0	(0.0, 0.2)	3.8	(2.5, 5.7)
Total	6.8	(5.1, 9.0)	10.2	(8.7, 12.0)	2.0	(1.2, 3.2)	19.0	(16.5, 21.8)

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Madhya Pradesh								
Male	29.2	(25.5,33.1)	11.5	(9.4,14.1)	13.7	(10.4,17.8)	54.4	(49.2,59.5)
Female	12.3	(9.2,16.1)	0.3	(0.1,0.7)	0.1	(0.0,0.3)	12.6	(9.5,16.5)
Total	21.3	(18.3,24.5)	6.2	(5.1,7.6)	7.3	(5.5,9.6)	34.8	(30.8,39.0)
Maharashtra								
Male	26.5	(21.0, 31.9)	8.4	(5.8, 10.9)	4.8	(3.1, 6.4)	39.6	(34.1, 45.0)
Female	11.7	(7.8, 15.5)	1.7	(0.7, 2.6)	0.7	(0.3, 1.1)	14.0	(10.2, 17.8)
Total	19.7	(15.4, 23.9)	5.3	(3.7, 7.0)	2.9	(2.0, 3.8)	27.9	(23.8, 32.0)
Mizoram								
Male	10.1	(7.4,13.7)	31.3	(25.5,37.7)	27.8	(21.7,34.7)	69.1	(64.8,73.2)
Female	39.0	(33.2,45.0)	5.1	(3.5,7.3)	6.1	(3.9,9.4)	50.1	(43.6,56.6)
Total	24.0	(20.1,28.5)	18.6	(14.9,23.0)	17.3	(13.9,21.4)	60.0	(55.3,64.5)
Kerala								
Male	3.0	(2.0, 4.6)	21.6	(18.7, 24.8)	1.4	(0.8, 2.5)	24.3	(21.1, 27.8)
Female	2.0	(1.2, 3.2)	0.1	(0.0, 0.2)	*	*	1.8	(1.1, 2.9)
Total	2.5	(1.8, 3.3)	10.5	(8.9, 12.3)	0.7	(0.4, 1.2)	12.7	(10.9, 14.6)
Tamil Nadu								
Male	6.5	(4.7,9.0)	21.6	(18.6,24.8)	1.8	(1.0,3.2,)	29.8	(26.2,33.7)
Female	5.3	(3.2,8.6)	*		*		5.3	(3.2,8.6)
Total	5.9	(4.1,8.3)	10.9	(9.3,12.6)	0.9	(0.5,1.6)	17.6	(14.8,20.9)
Uttarakhand								
Male	11.1	(8.9, 13.7)	21.8	(19.0, 24.9)	4.9	(3.7, 6.4)	37.7	(33.5, 42.1)
Female	2.3	(1.6, 3.3)	0.6	(0.3, 1.1)	*	*	2.9	(2.0, 4.1)
Total	7.1	(5.8, 8.7)	12.2	(10.7, 13.9)	2.7	(2.0, 3.6)	22.0	(19.5, 24.8)

Table 3.1.7b Percentage of tobacco users by sex and place of residence (Rural), phase-I states of India, 2007- 08

State/ Sex	Tobacco Use							
	Smokeless tobacco users only		Smokers only		Both(Smoking and smokeless)		Either (Smoking or smokeless)	
	P (%)	95% CI	P(%)	95% CI	P (%)	95% CI	P (%)	95% CI
Andhra Pradesh								
Male	7.5	(4.9, 11.3)	29.2	(24.2, 34.8)	4.7	(3.2, 6.8)	41.4	(37.2, 45.7)
Female	4.8	(2.7, 8.4)	4.6	(2.7, 7.8)	0.2	(0.1, 0.7)	9.7	(7.0, 13.4)
Total	6.2	(4.4, 8.5)	17.0	(14.6, 19.7)	2.5	(1.7, 3.5)	25.6	(23.2, 28.1)
Madhya Pradesh								
Male	30.1	(26.1,34.3)	17.7	(14.2,21.8)	26.0	(21.3,31.3)	73.7	(69.7,77.5)
Female	26.1	(21.2,31.7)	0.6	(0.3,1.2)	0.2	(0.1,0.7)	26.9	(22.1,32.4)
Total	28.2	(24.5,32.2)	9.5	(7.6,11.8)	13.6	(11.1,16.6)	51.3	(47.5,55.1)
Maharashtra								
Male	37.7	(33.5, 42.0)	5.9	(3.9, 7.9)	11.0	(7.3, 14.6)	54.6	(49.5, 59.6)
Female	30.3	(24.7, 35.9)	0.7	(0.2, 1.2)	1.5	(0.4, 3.0)	32.5	(26.4, 38.6)
Total	34.1	(30.4, 37.7)	3.3	(2.2, 4.4)	6.3	(4.0, 8.6)	43.7	(39.0, 48.3)
Mizoram								
Male	13.3	(10.8,16.3)	33.9	(27.3,41.2)	36.1	(30.7,42.0)	83.3	(79.4,86.6)
Female	47.2	(43.0,51.5)	9.1	(6.7,12.3)	14.0	(10.6,18.2)	70.3	(64.6,75.4)
Total	29.3	(26.5,32.3)	22.2	(18.0,26.9)	25.7	(22.0,29.7)	77.2	(72.9,80.9)
Kerala								
Male	5.2	(3.7, 7.2)	25.3	(22.6, 28.1)	2.4	(1.0, 5.7)	30.3	(26.6, 34.2)
Female	3.9	(2.2, 6.8)	0.2	(0.0, 0.9)	*	*	3.7	(2.0, 6.6)
Total	4.5	(3.3, 6.1)	12.3	(10.9, 13.9)	1.1	(0.5, 2.8)	16.5	(14.1, 19.3)
Tamil Nadu								
Male	13.6	(10.7,17.1)	24.3	(20.3,28.8)	2.2	(1.4,3.6)	40.2	(36.7,43.8)
Female	10.4	(8.1,13.2)	*		*		10.4	(8.1,13.2)
Total	12.0	(9.8,14.5)	12.0	(9.9,14.6)	1.1	(0.7,1.8)	25.1	(22.6,27.9)

Uttarakhand								
Male	13.9	(11.4, 16.9)	29.1	(25.2, 33.2)	9.0	(6.6, 12.1)	52.0	(47.6, 56.4)
Female	1.6	(0.9, 2.9)	5.9	(4.2, 8.1)	*	*	7.8	(5.8, 10.4)
Total	7.6	(6.2, 9.4)	17.1	(14.8, 19.7)	4.5	(3.3, 6.2)	29.3	(26.3, 32.5)

Table 3.1.7c Percentage of tobacco users by sex and place of residence (Combined), phase-I states of India, 2007- 08

State/ Sex	Tobacco Use							
	Smokeless tobacco users only		Smokers only		Both (Smoking and smokeless)		Either (Smoking or smokeless)	
	P (%)	95% CI	P (%)	95% CI	P (%)	95% CI	P (%)	95% CI
Andhra Pradesh								
Male	8.4	(6.3, 11.0)	26.3	(22.7, 30.3)	4.4	(3.2, 6.0)	39.1	(35.8, 42.5)
Female	4.3	(2.7, 6.8)	3.5	(2.1, 5.8)	0.2	(0.1, 0.5)	8.0	(6.0, 10.7)
Total	6.4	(5.0, 8.1)	15.0	(13.3, 17.0)	2.3	(1.7, 3.1)	23.7	(21.8, 25.7)
Madhya Pradesh								
Male	29.8	(26.8, 33.0)	15.9	(13.3, 18.9)	22.4	(18.9, 26.3)	68.1	(64.8, 71.2)
Female	22.2	(18.5, 26.3)	0.5	(0.3, 1.0)	0.2	(0.1, 0.5)	22.9	(19.3, 27.0)
Total	26.2	(23.4, 29.2)	8.6	(7.2, 10.2)	11.8	(10.0, 14.0)	46.6	(43.6, 49.6)
Maharashtra								
Male	32.4	(29.1, 35.8)	7.0	(5.4, 8.6)	8.0	(6.0, 10.1)	47.5	(43.9, 51.2)
Female	22.2	(18.7, 25.7)	1.1	(0.6, 1.6)	1.1	(0.5, 1.7)	24.4	(20.6, 28.2)
Total	27.6	(24.9, 30.2)	4.2	(3.3, 5.2)	4.7	(3.4, 6.0)	36.5	(33.4, 39.6)
Mizoram								
Male	11.7	(9.8, 13.8)	32.5	(28.2, 37.2)	31.8	(27.5, 35.4)	76.0	(73.0, 78.8)
Female	42.9	(39.2, 46.6)	7.0	(5.5, 8.8)	9.8	(7.7, 12.4)	59.7	(55.2, 64.0)
Total	26.6	(24.1, 29.2)	20.3	(17.6, 23.4)	21.3	(18.7, 24.2)	68.2	(64.9, 71.3)
Kerala								
Male	4.6	(3.5, 6.1)	24.3	(22.2, 26.5)	2.1	(1.0, 4.3)	28.7	(25.9, 31.6)
Female	3.4	(2.1, 5.4)	0.2	(0.0, 0.6)	*	*	3.2	(1.9, 5.2)
Total	4.0	(3.1, 5.1)	11.8	(10.7, 13.0)	1.0	(0.5, 2.1)	15.5	(13.6, 17.6)
Tamil Nadu								
Male	10.4	(8.6, 12.5)	23.1	(20.5, 25.8)	2.0	(1.4, 2.9)	35.5	(32.9, 38.1)
Female	8.1	(6.5, 10.1)	*		*		8.1	(6.5, 10.1)
Total	9.2	(7.8, 10.9)	11.5	(10.1, 13.1)	1.0	(0.7, 1.5)	21.8	(19.9, 23.8)
Uttarakhand								
Male	13.1	(11.2, 15.2)	26.8	(24.1, 29.8)	7.8	(6.0, 9.9)	47.7	(44.3, 51.0)
Female	1.8	(1.2, 2.7)	4.5	(3.3, 6.2)	*	*	6.6	(5.1, 8.4)
Total	7.5	(6.4, 8.8)	15.8	(14.1, 17.6)	4.0	(3.1, 5.2)	27.2	(25.0, 29.6)

3.2 ALCOHOL CONSUMPTION

Table 3.2.1a-f presents the percentage of respondents who consumed alcohol by sex, age and place of residence.

The proportion of respondents consumed alcohol in past 12 months ranged between 11% in Mizoram to 20% in Andhra Pradesh. Only less than 5% respondents were past drinker in all the seven states. Percentage of lifetime abstainer to alcohol was highest in Maharashtra (85%) and lowest in Madhya Pradesh (77%). Lifetime

abstainers were more among urban respondents except for Kerala and Andhra Pradesh. In all the states larger proportion of women than men were lifetime abstainers of the alcohol.

The proportion of respondents consuming alcohol in the last 12 months increase with age for the age group 15-54, after 54 years of age it starts declining (Table 3.2.1f).

Among the urban respondents, the proportion of respondents consumed alcohol in past 12 months ranged

between 10% in Mizoram to 22% in Andhra Pradesh. Only less than 5% respondents were past drinker in all the seven states. Percentage of lifetime abstainer to alcohol was highest in Maharashtra (87%) and lowest in Andhra Pradesh (74%) (Table 3.2.1a).

Among the rural respondents, the proportion of respondents consumed alcohol in past 12 months ranged between 12% in Mizoram to 21% in Madhya Pradesh. Only less than 6% respondents were past drinker in all the seven states. Percentage of lifetime abstainer to alcohol was highest in Maharashtra (83%) and lowest in Madhya Pradesh (75%) (Table 3.2.1b).

Of the current drinkers, 29% of them in Andhra Pradesh to 42% in Maharashtra consumed alcohol on less than one occasion in a month. Further, between 8% of them in Madhya Pradesh to 18% respondents in Andhra

Pradesh consumed alcohol 5-7 days per week in the past one year. The average numbers of drinks on a drinking day ranged from a low of 2 in Madhya Pradesh to a high of 8 in Uttarakhand (Table 3.2.2).

The respondents who were current drinker were also asked about their behaviour in terms of the number of days and number of drinks per day they took in the past 7 days preceding the survey. The survey finds that between 11% respondents in Madhya Pradesh to 39% respondents in Mizoram consumed alcohol at least 4 days a week. The percentage of respondents having 20 or more drinks in the last 7 days ranged from a low 3% in Maharashtra to a high 26% in Uttarakhand. The average standard drink consumed per day was calculated using the data collected for alcohol consumption by current drinkers in the week preceding the survey which also

Table 3.2.1a Percentage of respondents consumed alcohol by sex and place of residence (Urban), phase-I states of India, 2007- 08

State/ Sex	Alcohol Consumption							
	Consumed alcohol (Last 30 days)		Consumed alcohol (Last 12 months)		Past drinker		Life time abstainer	
	P (%)	95% CI	P (%)	95% CI	P (%)	95% CI	P (%)	95% CI
Andhra Pradesh								
Male	28.7	(24.2, 33.6)	36.2	(34.3, 45.5)	8.9	(6.3, 12.5)	54.9	(49.2, 60.5)
Female	1.7	(0.9, 3.3)	3.5	(2.2, 5.8)	0.5	(0.2, 1.3)	96.0	(93.4, 97.6)
Total	15.5	(12.9, 18.6)	22.1	(18.6, 25.9)	3.8	(2.7, 5.4)	74.1	(70.9, 86.0)
Madhya Pradesh								
Male	18.4	(14.5,22.9)	26.3	(22.1,31.0)	6.8	(4.6,10.0)	66.9	(63.5,73.4)
Female	0.2	(0.1,0.7)	0.5	(0.2,1.4)	0.3	(0.1,0.7)	99.2	(98.1,99.7)
Total	9.9	(7.8,12.4)	14.2	(11.9,16.8)	3.3	(2.3,4.7)	82.5	(80.1,85.6)
Maharashtra								
Male	14.3	(10.0, 18.0)	20.2	(15.0, 24.0)	0.8	(0.0, 1.0)	79.0	(74.0, 83.0)
Female	2.1	(1.0, 3.0)	3.0	(1.0, 4.0)	0.0	(0.0, 0.1)	97.0	(95.0, 98.0)
Total	8.7	(6.0, 11.0)	12.3	(9.0, 15.0)	0.4	(0.0, 0.7)	87.3	(84.0, 89.0)
Mizoram								
Male	10.1	(7.1,14.2)	19.1	(15.2,23.7)	7.0	(4.3,11.2)	73.9	(67.5,80.0)
Female	*		0.8	(0.4,1.6)	1.1	(0.5,2.2)	98.1	(96.1,98.5)
Total	5.5	(4.0,7.7)	10.3	(8.2,12.9)	4.1	(2.6,6.6)	85.6	(81.5,88.7)
Kerala								
Male	28.7	(23.5,34.7)	40.4	(34.2,47.1)	6.4	(4.8, 8.6)	53.2	(46.9,59.7)
Female	*	*	*	*	2.4	(1.1, 5.5)	97.6	(94.4,98.8)
Total	14.0	(11.2,17.3)	19.6	(16.3,23.4)	4.4	(3.0, 6.2)	76.0	(71.8,80.0)
Tamil Nadu								
Male	18.8	(15.8,22.3)	25.6	(22.0,29.6)	6.1	(4.4,8.3)	68.3	(65.9,73.6)
Female	*		0.1	(0.0,0.4)	*		99.9	(99.5,100.0)
Total	9.5	(7.9,11.3)	12.9	(11.0,15.1)	2.6	(1.9,3.6)	84.5	(82.5,86.8)
Uttarakhand								
Male	18.9	(15.0,23.5)	27.8	(23.5,32.5)	4.4	(3.0,6.5)	67.8	(64.4,74.2)
Female	*	*	*	*	*	*	99.9	(99.5,100.0)
Total	10.4	(8.3,13.0)	15.3	(12.9,17.9)	2.1	(1.4,3.0)	82.6	(80.4,85.8)

*Percentage not shown; based on fewer than 10 unweighted cases.

Table 3.2.1b Percentage of respondents consumed alcohol by sex and place of residence (Rural), phase-I states of India, 2007- 08

State/ Sex	Alcohol Consumption							
	Consumed alcohol (Last 30 days)		Consumed alcohol (Last 12 months)		Past drinker		Life time abstainer	
	P (%)	95% CI	P (%)	95% CI	P (%)	95% CI	P (%)	95% CI
Andhra Pradesh								
Male	25.6	(12.3, 30.4)	36.1	(31.1, 41.4)	4.9	(3.5, 6.6)	59.0	(55.5, 65.9)
Female	1.9	(0.8, 4.8)	2.2	(1.0, 5.1)	0.3	(0.1, 0.9)	97.5	(92.3, 98.3)
Total	13.8	(11.3, 16.8)	19.2	(16.3, 22.5)	2.1	(1.6, 2.8)	78.7	(75.8, 82.0)
Madhya Pradesh								
Male	26.6	(20.9,33.2)	35.2	(29.0,41.9)	8.3	(5.8,11.8)	56.5	(52.8,65.8)
Female	4.5	(1.8,10.7)	5.8	(2.6,12.4)	1.2	(0.5,3.1)	93.0	(86.4,96.6)
Total	16.0	(12.1,20.8)	21.1	(16.8,26.1)	4.2	(3.0,6.1)	74.7	(70.5,80.0)
Maharashtra								
Male	17.0	(11.0, 22.0)	27.0	(21.0, 32.0)	2.0	(0.0, 3.0)	71.0	(66.0, 76.0)
Female	3.1	(1.0, 4.0)	3.8	(1.0, 5.0)	0.1	(0.0, 0.2)	96.1	(94.0, 98.0)
Total	10.2	(6.0, 13.0)	15.6	(12.0, 19.0)	0.9	(0.0, 1.0)	83.5	(80.0, 87.0)
Mizoram								
Male	11.1	(8.2,15.0)	22.1	(17.1,28.1)	11.0	(7.6,15.6)	66.9	(59.8,74.6)
Female	*		*		1.0	(0.5,2.3)	98.8	(95.7,98.9)
Total	6.1	(4.6,8.0)	11.9	(9.3,15.1)	6.3	(4.4,8.9)	81.8	(77.5,85.6)
Kerala								
Male	21.7	(20.5,23.5)	34.3	(29.3,41.1)	7.0	(5.0, 9.8)	58.7	(52.0,63.8)
Female	*	*	*	*	0.9	(0.3, 2.5)	99.1	(97.3,99.6)
Total	10.4	(8.3,13.3)	16.6	(14.1,20.3)	3.9	(2.8, 5.4)	79.5	(75.5,82.4)
Tamil Nadu								
Male	23.1	(20.1,26.4)	32.7	(29.7,35.8)	7.0	(4.6,10.5)	60.3	(58.6,66.5)
Female	*		*		*		100.0	(99.7,100.0)
Total	11.5	(9.8,13.4)	16.2	(14.4,18.2)	2.8	(1.8,4.2)	81.0	(78.9,83.7)
Uttarakhand								
Male	25.5	(21.5,29.9)	33.3	(28.8,38.1)	5.0	(3.4,7.4)	63.5	(59.5,69.3)
Female	*	*	*	*	*	*	99.7	(99.4,99.9)
Total	12.5	(10.4,14.9)	16.3	(14.1,18.8)	2.0	(1.4,2.9)	81.7	(80.0,85.1)

*Percentage not shown; based on fewer than 10 unweighted cases.

Table 3.2.1c Percentage of respondents consumed alcohol by sex and place of residence (Combined), phase-I states of India, 2007- 08

State/ Sex	Alcohol Consumption							
	Consumed alcohol (Last 30 days)		Consumed alcohol (Last 12 months)		Past drinker		Life time abstainer	
	P (%)	95% CI	P (%)	95% CI	P (%)	95% CI	P (%)	95% CI
Andhra Pradesh								
Male	26.5	(23.2, 30.1)	37.1	(33.3, 41.1)	6.0	(4.7, 7.6)	59.1	(55.1, 63.0)
Female	1.9	(0.9, 3.7)	2.6	(1.5, 4.4)	0.3	(0.2, 0.7)	97.1	(95.1, 98.3)
Total	14.3	(12.3, 16.5)	20.0	(17.7, 22.5)	2.6	(2.1, 3.2)	77.4	(75.4, 80.3)
Madhya Pradesh								
Male	24.2	(20.0,28.9)	32.6	(28.1,37.5)	7.8	(5.9,10.3)	59.6	(57.3,66.8)
Female	3.3	(1.4,7.7)	4.3	(2.0,9.0)	0.9	(0.4,2.2)	94.8	(90.1,97.3)
Total	14.2	(11.4,17.7)	19.1	(16.0,22.7)	3.9	(3.0,5.2)	77.0	(74.1,80.9)
Maharashtra								
Male	15.7	(12.0, 19.0)	23.8	(20.0, 27.0)	1.4	(0.0, 2.0)	74.8	(71.0, 78.0)
Female	2.7	(1.0, 3.0)	3.4	(2.0, 4.0)	0.1	(0.0, 0.1)	96.5	(95.0, 97.0)
Total	9.5	(7.0, 11.0)	14.1	(10.0, 16.0)	0.7	(0.0, 1.0)	85.2	(82.0, 87.0)
Mizoram								
Male	10.6	(8.4,13.2)	20.6	(17.3,24.2)	8.9	(6.6,11.9)	70.5	(66.0,75.6)
Female	0.6	(0.3,1.0)	0.6	(0.4,1.1)	1.1	(0.6,1.8)	98.3	(96.6,98.4)
Total	5.8	(4.7,7.2)	11.0	(9.3,13.0)	5.2	(3.9,6.8)	83.8	(80.9,86.3)

Kerala								
Male	23.6	(20.1,27.6)	35.9	(31.5,40.7)	6.9	(5.3, 8.9)	57.2	(52.0,61.3)
Female	*	*	*	*	1.3	(0.7, 2.5)	98.7	(97.3,99.2)
Total	11.4	(9.6,13.6)	17.4	(15.4,20.2)	4.0	(3.1, 5.1)	78.6	(75.5,80.9)
Tamil Nadu								
Male	21.2	(19.0,23.5)	29.5	(27.1,31.9)	6.6	(5.0,8.5)	63.9	(63.1,68.6)
Female	*	*	0.1	(0.0,0.2)	*	*	99.9	(99.7,100.0)
Total	10.6	(9.4,11.9)	14.7	(13.4,16.2)	2.7	(2.1,3.5)	82.6	(81.2,84.5)
Uttarakhand								
Male	23.5	(20.4,26.8)	31.6	(28.3,35.2)	4.8	(3.6,6.4)	63.6	(61.7,69.0)
Female	*	*	*	*	*	*	99.8	(99.5,99.9)
Total	11.9	(10.3,13.7)	16.0	(14.3,17.9)	2.0	(1.5,2.6)	82.0	(80.5,84.3)

*Percentage not shown; based on fewer than 10 unweighted cases.

ranged from one in Maharashtra to a maximum of three standard drinks in Uttarakhand (Table 3.2.2).

The respondents who were current drinker, were also asked about their behaviour in terms of the number of days and number of drinks per day they took in the past 7 days preceding the survey. The survey finds that between a low 11% respondents in Madhya Pradesh and high 39% of such respondents in Mizoram consumed alcohol at least 4 days a week.

The percentage of respondents consumed 20 or more drinks in the last 7 days ranged from a low 3% in Maharashtra to a high 26% in Uttarakhand. The average standard drinks consumed per day was calculated using the data collected for alcohol consumption by current drinkers in the week preceding the survey which also ranged from a low one standard drink in Maharashtra to a high three standard drinks in Uttarakhand (Table 3.2.2).

Table 3.2.1d Percentage of respondents consumed alcohol (P and 95% confidence interval) by age and residence (Urban), phase-I states of India, 2007-08

State/Alcohol user	Age group						
	15 - 19	20 - 24	25 - 34	35 - 44	45 - 54	55 - 64	15 - 64
Andhra Pradesh							
Consumed alcohol Last 30 days	2.5 (1.0,5.9)	11.6 (8.0,16.6)	19.6 (15.3,24.7)	20.8 (16.7,25.6)	19.2 (14.9,24.3)	13.6 (9.7,18.8)	15.5 (12.9,18.6)
Consumed alcohol Last 12 months	6.0 (3.6,9.9)	19.6 (14.7,25.8)	26.0 (21.0,31.6)	29.4 (24.6,34.6)	25.3 (20.3,31.1)	17.4 (12.5,23.8)	22.1 (18.6,25.9)
Maharashtra							
Consumed alcohol Last 30 days	1.1 (0.4,3.6)	4.0 (2.1,7.5)	10.1 (7.3,13.9)	13.3 (9.1,19.0)	13.2 (9.5,17.9)	9.2 (5.4,15.2)	8.8 (6.6,11.5)
Consumed alcohol Last 12 months	1.2 (0.4,3.6)	6.0 (3.5,9.9)	15.5 (12.1,19.6)	17.5 (12.9,23.3)	17.8 (13.5,23.1)	13.4 (8.7,20.1)	12.4 (10.0,15.3)
Madhya Pradesh							
Consumed alcohol Last 30 days	4.2 (2.6,6.6)	7.3 (4.5,11.6)	9.9 (7.0,14.0)	12.9 (9.6,17.1)	15.7 (11.1,21.7)	9.4 (6.1,14.3)	9.9 (7.8,12.4)
Consumed alcohol Last 12 months	6.6 (4.5,9.5)	10.3 (7.2,14.5)	16.4 (12.7,20.8)	18.0 (14.5,22.2)	19.6 (14.4,26.1)	12.5 (8.7,17.7)	14.2 (11.9,16.8)
Mizoram							
Consumed alcohol Last 30 days	0.0	2.9 (1.5,5.7)	9.5 (5.8,15.1)	8.7 (6.0,12.4)	5.1 (2.7,9.4)	2.4 (0.7,8.1)	5.5 (4.0,7.7)
Consumed alcohol Last 12 months	2.0 (0.8,4.9)	8.8 (5.2,14.4)	15.8 (12.0,20.6)	14.8 (10.3,20.9)	8.4 (5.1,13.4)	2.9 (1.4,5.7)	10.3 (8.2,12.9)
Kerala							
Consumed alcohol Last 30 days	3.1 (0.8,11.3)	7.2 (4.2,12.2)	14.8 (10.5,20.4)	21.1 (17.0,25.9)	17.8 (12.7,24.4)	14.5 (11.1,18.6)	14.0 (11.2,17.3)
Consumed alcohol Last 12 months	4.9 (1.8,12.5)	13.7 (9.3,19.9)	22.6 (17.9,28.2)	26.7 (21.6,32.6)	23.0 (17.5,29.6)	19.8 (15.9,24.3)	19.6 (16.3,23.5)

Tamil Nadu							
Consumed alcohol	0.0	4.4	14.4	13.2	11.1	6.2	9.5
Last 30 days		(2.4,7.9)	(11.5,17.8)	(10.0,17.3)	(7.9,15.4)	(4.0,9.6)	(7.9,11.3)
Last 12 months	0.6	7.4	19.4	17.5	13.4	9.6	12.9
	(0.1,4.5)	(4.3,12.6)	(16.2,22.9)	(14.0,21.6)	(9.9,18.0)	(6.6,13.7)	(11.0,15.1)
Uttarakhand							
Consumed alcohol	2.6	6.2	13.9	13.5	12.7	12.2	10.4
Last 30 days	(1.2,5.5)	(4.0,9.4)	(10.6,18.0)	(9.8,18.4)	(8.0,19.7)	(8.9,16.4)	(8.2,13.0)
Last 12 months	4.6	10.2	19.0	20.3	19.0	17.3	15.3
	(2.5,8.3)	(7.2,14.2)	(15.4,23.2)	(16.1,25.4)	(13.2,26.4)	(13.9,21.3)	(12.9,18.0)

Table 3.2.1e Percentage of respondents consumed alcohol (P and 95% confidence interval) by age and place of residence (Rural) phase-I states of India, 2007-08

State/Alcohol user	Age group						
	15 - 19	20 - 24	25 - 34	35 - 44	45 - 54	55 - 64	15 - 64
Andhra Pradesh							
Consumed alcohol	1.7	8.3	14.4	19.9	19.8	15.7	13.8
Last 30 days	(0.6,4.7)	(4.7,14.2)	(10.4,19.7)	(15.5,25.2)	(15.7,24.6)	(12.1,20.1)	(11.3,16.8)
Last 12 months	6.2	12.9	18.7	27.2	27.2	19.8	19.2
	(3.1,11.7)	(8.2,19.6)	(14.4,23.8)	(22.4,32.6)	(22.2,32.8)	(15.9,24.4)	(16.3,22.5)
Maharashtra							
Consumed alcohol	3.4	4.3	10.0	14.6	15.9	13.2	10.2
Last 30 days	(1.3,8.5)	(2.0,9.1)	(6.9,14.3)	(10.2,20.5)	(11.1,22.3)	(8.6,19.8)	(7.3,14.1)
Last 12 months	4.0	5.8	16.6	22.8	24.2	18.9	15.6
	(1.6,9.6)	(3.0,11.1)	(12.6,21.5)	(18.3,28.1)	(18.8,30.7)	(13.8,25.4)	(12.5,19.4)
Madhya Pradesh							
Consumed alcohol	4.0	12.4	16.1	21.2	23.9	19.7	16.0
Last 30 days	(1.7,9.1)	(8.8,17.1)	(12.0,21.2)	(15.7,27.9)	(16.5,33.3)	(13.1,28.5)	(12.1,20.8)
Last 12 months	7.3	18.3	21.3	26.8	29.9	23.7	21.1
	(3.9,13.2)	(13.6,24.2)	(16.9,26.6)	(21.0,33.5)	(22.0,39.2)	(16.3,33.2)	(16.8,26.1)
Mizoram							
Consumed alcohol	1.9	7.2	8.9	7.9	3.9	2.6	6.1
Last 30 days	(0.7,4.9)	(4.4,11.4)	(6.3,12.4)	(5.4,11.2)	(2.0,7.7)	(1.1,6.2)	(4.6,8.0)
Last 12 months	7.0	13.7	16.5	13.5	8.2	5.3	11.9
	(3.5,13.7)	(9.5,19.3)	(12.9,20.8)	(9.4,19.0)	(5.2,12.6)	(2.6,10.5)	(9.3,15.1)
Kerala							
Consumed alcohol	0.0	5.2	11.9	16.5	12.6	13.0	10.4
Last 30 days		(2.3,11.1)	(8.1,17.2)	(12.5,21.5)	(9.0,17.4)	(9.7,17.2)	(8.2,13.1)
Last 12 months	5.9	9.0	18.6	23.4	18.6	19.9	16.6
	(3.0,11.3)	(5.1,15.6)	(13.7,24.8)	(18.6,29.1)	(14.1,24.2)	(16.1,24.5)	(13.7,19.9)
Tamil Nadu							
Consumed alcohol	3.7	9.0	11.7	15.5	15.7	9.8	11.5
Last 30 days	(1.8,7.7)	(5.3,15.0)	(8.5,15.8)	(12.7,18.7)	(11.9,20.5)	(7.4,12.8)	(9.8,13.4)
Last 12 months	5.4	13.6	16.4	21.1	23.1	13.2	16.2
	(3.0,9.6)	(9.5,18.9)	(12.7,20.9)	(17.5,25.2)	(18.9,28.0)	(10.2,16.9)	(14.4,18.2)
Uttarakhand							
Consumed alcohol	0.3	5.1	13.1	18.5	22.3	19.4	12.5
Last 30 days	(0.0,2.3)	(2.7,9.4)	(10.1,16.8)	(14.4,23.4)	(17.8,27.5)	(14.9,24.9)	(10.4,14.9)
Last 12 months	1.6	7.0	20.0	22.9	25.0	24.1	16.3
	(0.7,3.9)	(4.1,11.7)	(16.2,24.5)	(18.6,27.8)	(20.4,30.3)	(19.1,30.0)	(14.1,18.8)

Table 3.2.1f Percentage of respondents consumed alcohol (P and 95% confidence interval) by age and place of residence (Combine), phase-I states of India, 2007-08

State/Alcohol user	Age group						
	15 - 19	20 - 24	25 - 34	35 - 44	45 - 54	55 - 64	15 - 64
Andhra Pradesh							
Consumed alcohol	1.9	9.3	15.9	20.2	19.6	15.2	14.3
Last 30 days	(0.9,3.9)	(6.5,13.3)	(12.7,19.7)	(16.7,24.1)	(16.4,23.3)	(12.3,18.7)	(12.3,16.5)
Last 12 months	6.1	15.0	20.8	27.8	26.7	19.3	20.0
	(3.7,9.9)	(11.3,19.7)	(17.4,24.6)	(24.1,31.8)	(22.8,31.0)	(16.0,23.0)	(17.7,22.5)
Maharashtra							
Consumed alcohol	2.4	4.1	10.0	14.0	14.7	11.7	9.6
Last 30 days	(1.1,5.2)	(2.5,6.8)	(7.9,12.7)	(10.9,17.9)	(11.5,18.6)	(8.4,16.1)	(7.6,11.9)
Last 12 months	2.7	5.9	16.1	20.4	21.4	16.9	14.2
	(1.3,5.9)	(3.9,8.9)	(13.4,19.1)	(17.1,24.2)	(17.7,25.5)	(13.2,21.4)	(12.1,16.5)
Madhya Pradesh							
Consumed alcohol	4.0	10.9	14.4	18.7	21.6	17.2	14.2
Last 30 days	(2.2,7.3)	(8.2,14.3)	(11.3,18.1)	(14.7,23.5)	(16.0,28.4)	(12.1,23.8)	(11.4,17.7)
Last 12 months	7.1	15.9	19.9	24.2	26.9	21.0	19.1
	(4.5,11.0)	(12.4,20.2)	(16.6,23.8)	(20.0,29.0)	(21.0,33.8)	(15.3,28.1)	(16.0,22.7)
Mizoram							
Consumed alcohol	0.9	4.9	9.2	8.3	4.5	2.5	5.8
Last 30 days	(0.3,2.4)	(3.3,7.2)	(6.8,12.4)	(6.4,10.6)	(2.9,7.0)	(1.2,5.1)	(4.7,7.2)
Last 12 months	4.4	11.0	16.1	14.2	8.3	4.2	11.1
	(2.5,7.9)	(8.1,14.8)	(13.4,19.3)	(11.0,18.1)	(6.0,11.4)	(2.4,7.0)	(9.3,13.0)
Kerala							
Consumed alcohol	0.8	5.7	12.7	17.8	14.0	13.4	11.4
Last 30 days	(0.2,3.0)	(3.2,9.8)	(9.6,16.6)	(14.6,21.5)	(11.0,17.8)	(10.8,16.5)	(9.6,13.5)
Last 12 months	5.6	10.2	19.7	24.3	19.8	19.9	17.4
	(3.2,9.7)	(6.8,15.0)	(15.8,24.3)	(20.5,28.6)	(16.1,24.1)	(16.9,23.3)	(15.1,19.9)
Tamil Nadu							
Consumed alcohol	2.1	6.9	12.9	14.5	13.7	8.3	10.6
Last 30 days	(1.0,4.4)	(4.5,10.3)	(10.7,15.5)	(12.3,16.9)	(11.0,16.8)	(6.6,10.5)	(9.4,11.9)
Last 12 months	3.3	10.7	17.8	19.5	18.9	11.7	14.7
	(1.9,5.8)	(8.0,14.3)	(15.3,20.6)	(16.9,22.3)	(15.9,22.3)	(9.5,14.3)	(13.4,16.2)
Uttarakhand							
Consumed alcohol	0.9	5.4	13.4	17.0	19.7	17.8	11.9
Last 30 days	(0.4,2.0)	(3.5,8.3)	(11.0,16.1)	(13.9,20.6)	(16.1,23.8)	(14.2,22.0)	(10.3,13.7)
Last 12 months	2.4	7.9	19.7	22.1	23.3	22.6	16.0
	(1.4,4.1)	(5.6,11.2)	(16.8,23.0)	(18.8,25.8)	(19.6,27.6)	(18.6,27.2)	(14.3,17.9)

Table 3.2.2 Percentage of drinkers (past 12 months) according to the frequency of drinking, mean number of standard drinks per day and pattern of drinking in the last seven days by place of residence, phases-I states of India, 2007- 08

Alcohol Consumption	States						
	AP	MH	MP	MZ	KE	TN	UTK
	Urban						
Frequency of drinking							
5-7 days per week	11.4	9.6	12.9	9.3	7.1	13.9	17.2
1-4 days per week	19.6	16.3	16.4	25.5	33.5	7.1	15.3
1-3 days per month	36.0	33.6	33.8	40.8	31.2	23.8	31.0
Less than once per month	33.1	40.4	36.9	24.4	28.4	55.2	36.6
Mean number of drinks on a drinking day	2.7	2.0	2.0	2.7	2.8	4.7	8.7
Drinks during last 7 days							
Alcohol consumed on 4 + days (%)	16.0	22.0	13.0	43.0	15.7	12.6	23.0
**Binge drinking on any day (%)	19.3	1.7	8.6	8.5	8.1	47.1	51.7
20+ drinks in 7 days (%)	8.7	2.5	6.0	9.3	3.0	10.7	30.3
Average standard drinks per day	1.2	0.7	1.0	1.4	0.9	1.6	3.4

Alcohol Consumption	States						
	AP	MH	MP	MZ	KE	TN	UTK
Rural							
Frequency of drinking							
5-7 days per week	21.1	8.7	6.7	7.3	9.6	12.8	11.9
1-4 days per week	23.9	17.2	31.2	22.9	23.6	7.2	14.6
1-3 days per month	27.8	30.5	30.7	33.5	31.7	20.9	37.5
Less than once per month	27.1	43.4	31.4	36.2	35.1	59.1	35.9
Mean number of drinks on a drinking day	3.3	2.1	1.9	1.8	2.8	4.7	8.1
Drinks during last 7 days							
Alcohol consumed on 4 + days (%)	34.8	30.3	10.6	35.9	21.9	16.1	16.0
**Binge drinking on any day (%)	24.9	10.1	13.6	9.4	11.6	46.4	52.3
20+ drinks in 7 days (%)	18.2	3.8	4.6	4.1	9.6	14.0	24.9
Average standard drinks per day	1.8	0.8	1.1	0.9	1.2	1.7	3.1
Combined							
Frequency of drinking							
5-7 days per week	18.1	9.5	8.0	8.3	8.8	13.2	13.3
1-4 days per week	22.5	16.8	28.1	24.2	26.5	7.1	14.8
1-3 days per month	30.4	31.7	31.3	37.1	31.6	22.0	35.8
Less than once per month	29.0	42.2	32.5	30.4	33.1	57.6	36.1
Mean number of drinks on a drinking day	3.1	2.0	2.0	2.3	2.8	4.7	8.2
Drinks during last 7 days							
Alcohol consumed on 4 + days (%)	29.0	26.9	11.1	39.4	19.9	14.7	17.7
**Binge drinking on any day (%)	23.2	6.6	12.6	8.9	10.5	46.7	51.6
20+ drinks in 7 days (%)	15.2	3.2	4.9	6.7	7.5	12.6	26.2
Average standard drinks per day	1.6	0.8	1.0	1.2	1.1	1.7	3.2

Table 3.2.3 a-c presents the mean age of initiation of alcohol among urban, rural and combined sample respondents by sex and place of residence. The mean age of initiation of alcohol among the younger age group (15-34 years) was 20 years in Andhra Pradesh and Madhya Pradesh, 22 years in Kerala and 21 years in rest of the states. Among the older age group (35-64 years), the mean age of initiation was 25 years in Andhra Pradesh, Madhya Pradesh, Maharashtra and Tamil Nadu, 35 years in Mizoram, 30 years in Kerala and 26 years in Uttarakhand (Table 3.2.3c).

Among the urban respondents, the mean age of initiation of alcohol among the younger age groups, ranged from 20 years in Andhra Pradesh,

Madhya Pradesh and Uttarakhand to 23 years in Mizoram. Among the older age group, the mean age of initiation ranged from 25 years in Andhra Pradesh, Madhya Pradesh, Maharashtra and Tamil Nadu to 35 years in Mizoram (Table 3.2.3a).

Among the rural respondents, the mean age of initiation of alcohol among the younger age groups (15-34 years) was between 20 years in Andhra Pradesh, Madhya Pradesh, Mizoram and Tamil Nadu to 22 years in Kerala and Uttarakhand. Among the older age group, the mean age of initiation was between 21 years in Andhra Pradesh to 36 years in Mizoram (Table 3.2.3b).

Table 3.2.3a Mean age of initiation of alcohol use by sex and place of residence (Urban), phase-I state of India, 2007-08

State/ Sex	Alcohol user			
	Age of Initiation (15-34 years)		Age of Initiation (35-64 years)	
	Mean	95% CI	Mean	95% CI
Andhra Pradesh				
Male	20	(19.5, 21.5)	25	(24.5, 25.5)
Female	15	(14.5, 18.5)	20	(18.5, 28.5)
Total	20	(18.5, 20.5)	25	(24.5, 25.5)
Madhya Pradesh				
Male	20	(19.5, 21.5)	25	(24.0, 25.5)
Female	*	*	30	(15.5, 37.5)
Total	20	(19.5, 21.5)	25	(24.5, 26.5)
Maharashtra				
Male	22	(20, 23)	25	(24.5, 25.5)
Female	21	(19, 22)	24	(21, 29)
Total	21	(20, 22)	25	(24.5, 25.5)
Mizoram				
Male	24	(21.5, 25.5)	30	(25.5, 36.5)
Female	23	(17.5, 28.5)	40	(35.5, 44.5)
Total	23	(22.5, 25.5)	35	(28.5, 37.5)
Kerala				
Male	22	(21.5, 23.5)	27	(25.5, 30.5)
Female	*	*	47	(41.5, 55.5)
Total	22	(21.5, 23.5)	29	(26.5, 30.5)
Tamil Nadu				
Male	22	(21.5, 24.5)	27	(25.5, 30.5)
Female	*	*	*	*
Total	22	(21.5, 24.5)	25	(24.5, 30.5)
Uttarakhand				
Male	20	(19.5, 22.5)	28	(25.5, 30.5)
Female	*	*	*	*
Total	20	(19.5, 22.5)	28	(25.5, 30.5)

*Figure not shown; based on fewer than 10 unweighted cases.

Table 3.2.3b Mean age of initiation of alcohol use by sex and place of residence (Rural), phase-I states of India 2007-08

State/ Sex	Alcohol user			
	Age of Initiation (15-34 years)		Age of Initiation (35-64 years)	
	Mean	95% CI	Mean	95% CI
Andhra Pradesh				
Male	20	(19.5, 20.5)	23	(21.5, 25.5)
Female	13	(12.5, 20.5)	18	(15.5, 20.5)
Total	20	(18.5, 20.5)	21	(20.5, 23.5)
Madhya Pradesh				
Male	20	(18.5, 22.5)	21	(20.5, 25.5)
Female	18	(16.5, 22.5)	25	(20.5, 30.5)
Total	20	(17.5, 23.5)	22	(21.5, 25.5)
Maharashtra				
Male	21	(20, 23)	25	(24.5, 25.5)
Female	20	(18, 27)	22	(20, 25)
Total	21	(20, 23)	25	(24.5, 25.5)

Mizoram				
Male	20	(19.5, 21.5)	36	(35.5, 37.5)
Female	*	*	42	(25.5, 52.5)
Total	20	(19.5, 21.5)	36	(35.5, 37.5)
Kerala				
Male	22	(20.5,23.5)	33	(30.5,35.5)
Female	*	*	*	*
Total	22	(20.5,24.5)	35	(30.5,36.5)
Tamil Nadu				
Male	20	(19.5, 21.5)	25	(25.5,27.5)
Female	*	*	*	*
Total	20	(19.5, 21.5)	25	(25.5,27.5)
Uttarakhand				
Male	22	(21.5, 22.5)	25	(25.5, 28.5)
Female	*	*	*	*
Total	22	(21.5, 22.5)	25	(25.5, 28.5)

*Figure not shown; based on fewer than 10 unweighted cases.

Table 3.2.3c Mean age of initiation of alcohol use by sex and place of residence (Combined), phase-I state of India, 2007-08

State/ Sex	Alcohol user			
	Age of Initiation (15-34 years)		Age of Initiation (35-64 years)	
	Mean	95% CI	Mean	95% CI
Andhra Pradesh				
Male	20	(19.5, 20.5)	25	(24.5, 25.5)
Female	15	(14.5, 18.5)	20	(18.5, 20.5)
Total	20	(19.0, 20.5)	25	(23.5, 25.5)
Madhya Pradesh				
Male	20	(17.0, 21.5)	25	(22.5,25.5)
Female	18	(16.5, 22.5)	26	(21.5,30.5)
Total	20	(17.0, 22.5)	25	(23.5,25.5)
Maharashtra				
Male	21	(20, 23)	25	(24, 25)
Female	21	(20, 23)	23	(21, 25)
Total	21	(20, 22)	25	(24, 25)
Mizoram				
Male	21	(20.5, 23.5)	35	(30.5, 36.5)
Female	23	(17.5, 28.5)	42	(40.5, 45.5)
Total	21	(20.5, 23.5)	35	(34.5, 37.5)
Kerala				
Male	22	(21.5,23.5)	30	(28.5,30.5)
Female	26	(20.5,29.5)	50	(43.5,56.5)
Total	22	(21.5,23.5)	30	(28.5,32.5)
Tamil Nadu				
Male	21	(20.5, 22.5)	25	(25.5,27.5)
Female	*	(20.5, 22.5)	25	(24.5,27.5)
Uttarakhand				
Male	21	(20.5, 22.5)	26	(24.5, 28.5)
Female	*	*	*	*
Total	21	(20.5, 22.5)	26	(25.5, 28.5)

*Figure not shown; based on fewer than 10 unweighted cases.

Table 3.2.4 Percentage of current daily smokers, daily smokeless tobacco user and current drinker across age, education and occupation by phase-I states of India, 2007-08

Characteristics	Andhra Pradesh	Madhya Pradesh	Maharashtra	Mizoram	Kerala	Tamil Nadu	Uttarakhand
	Smoker						
Age group							
15-24	9.6	17.9	6.6	25.9	6.4	10.4	8.3
25-34	21.5	25.3	25.9	27.8	23.4	26.9	21.8
35-44	27.8	26.4	28.2	22.5	29.8	28.7	28.4
45-54	24.9	18.9	24.2	14.9	23.3	23.3	25.6
55-64	16.2	11.5	15.1	8.9	17.1	10.7	15.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Education							
Illiterate	57.7	40.5	26.0	10.1	9.6	31.8	33.8
Primary	12.2	20.5	15.5	19.7	17.0	15.5	17.3
Middle	12.0	20.7	16.5	27.6	24.2	24.0	17.8
Secondary	11.5	9.7	24.0	19.9	37.0	18.7	16.6
Higher Secondary	3.0	4.4	9.5	11.0	6.1	6.0	7.6
College & above	3.6	4.2	8.5	11.7	6.0	4.0	7.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Occupation							
Executive/Business	9.1	9.8	2.4	7.1	14.6	8.1	6.7
Agriculture	42.3	41.8	9.8	32.5	0.0	49.8	29.0
Domestic work	4.3	0.3	29.8	8.6	3.4	0.1	10.3
Services /Sales	4.6	2.8	10.3	10.3	68.5	3.5	13.7
Manual worker	32.8	40.6	18.0	24.5	13.5	32.9	27.8
Other	6.9	4.7	21.8	17.0	6.4	5.6	12.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	1105	1175	696	1932	485	602	900
	Smokeless tobacco user						
Age group							
15-24	14.6	24.5	14.3	26.0	14.4	8.9	20.3
25-34	29.1	27.1	26.7	29.4	19.4	17.0	32.4
35-44	24.6	22.4	26.6	22.6	16.6	26.8	24.9
45-54	17.2	14.6	18.5	14.5	22.2	25.3	12.3
55-64	14.5	11.4	13.9	7.5	27.4	22.0	10.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Education							
Illiterate	58.2	46.9	30.3	10.7	31.0	59.2	25.6
Primary	7.6	14.3	15.9	17.8	14.8	12.3	12.2
Middle	11.4	19.6	18.0	29.1	19.1	15.1	21.6
Secondary	13.2	9.2	21.8	24.4	22.6	10.7	21.1
Higher Secondary	7.1	5.3	8.6	9.4	7.0	1.4	10.8
College & above	2.5	4.7	5.4	8.6	5.5	1.3	8.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Occupation							
Executive/Business	8.7	9.4	0.6	8.2	6.8	2.8	9.2
Agriculture	37.2	28.7	7.6	25.0	13.5	58.7	20.0
Domestic work	9.3	7.4	32.6	24.7	1.6	1.2	8.3
Services /Sales	5.3	2.9	21.6	9.2	56.7	1.1	13.1
Manual worker	32.6	42.9	13.8	16.8	21.4	20.0	33.1
Other	6.9	8.7	16.4	16.1	14.4	16.2	16.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	619	2087	2186	2324	231	617	513

Age group	Current alcohol user						
15-24	12.9	16.8	10.5	18.5	8.1	13.1	8.7
25-34	28.6	26.6	27.3	41.0	27.9	30.5	26.6
35-44	29.3	26.6	30.6	27.9	32.7	28.5	27.7
45-54	19.5	19.2	20.5	9.7	19.3	19.9	22.9
55-64	9.7	10.8	11.1	2.9	12.0	8.0	14.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Education							
Illiterate	50.2	46.8	30.8	14.6	6.5	28.5	18.1
Primary	10.0	16.6	14.4	9.7	11.0	15.0	14.9
Middle	14.2	18.5	13.2	26.5	18.8	24.6	19.0
Secondary	13.9	8.1	24.1	25.1	44.8	20.2	23.5
Higher Secondary	5.5	5.2	8.9	13.0	10.5	4.9	11.7
College & above	6.2	4.8	8.6	11.1	8.4	6.8	12.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Occupation							
Executive/Business	11.9	14.0	1.3	8.7	6.8	9.8	11.3
Agriculture	39.3	32.6	9.2	27.4	13.5	46.5	28.6
Domestic work	3.2	0.7	34.8	4.1	1.6	0.1	0.6
Services /Sales	6.7	3.7	7.9	11.5	56.7	3.5	21.0
Manual worker	33.3	45.9	21.6	38.1	21.4	36.9	27.0
Other	5.6	3.1	18.5	10.2	14.4	3.2	11.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	1220	750	946	272	231	622	498

Table 3.2.4 presents the percentage of current daily smokers and smokeless tobacco users and current drinkers by age, education and occupation. The percentage of daily smokers was highest (26-30%) in the age group 35-44 years in all the states except Mizoram where it was highest (28%) in the age group 25-34 years. In most states, daily smokers were high among illiterates except in Kerala and Mizoram where the highest proportion of daily smokers were among the respondents who were educated up to middle and secondary. But people of Kerala appeared to be sensitive towards the harmfulness of smokeless tobacco use where as this was not the case in Mizoram. Agriculturist and manual workers had the maximum share amongst the smokers, smokeless tobacco users and current drinkers in all the states except in Kerala where service class and manual workers had the largest chunk in the group.

3.3 FRUITS AND VEGETABLES CONSUMPTION

During survey questions asked about the number of days on a typical week fruits and vegetables were consumed by the respondents and the number of

servings of fruits and vegetables consumed on one of those days. Table 3.3.1 provides mean number of days of such consumptions.

In a week, mean number of days people consumed vegetables about 4-7 days and fruits for about 2-3 days in all the seven states. Urban respondents were better in this regard than their rural counterparts in all the states. There was no much difference between males and females with respect to consumption of fruits and vegetables.

The percentage of respondents consumed less than five servings of fruits and vegetables per day ranged from 76% in Maharashtra to 99% in Tamil Nadu. In Madhya Pradesh and Mizoram, larger proportion of rural respondents were consuming less than 5 serving of fruits and vegetables per day. In rest of the states, there was no much difference between the proportion of urban and rural respondents. The mean number of serving of fruits and vegetables ranged between 1.4 in Tamil Nadu to 2.6 in Mizoram, which was much lesser than the recommended number of 5 servings per day.

Table 3.3.1 Mean number of days in a week fruits and vegetables consumed, percentage of respondents consumed less than five servings per day and mean number of servings of fruits and vegetables in one particular day by residence, phase-I states of India, 2007-08

State/ Residence	Mean number of days in a week		Consumed less than five servings of fruits & vegetables per day (%)	Mean number of servings in one particular day		
	Consumed fruits	Consumed vegetables		Fruits	Vegetables	Fruits & vegetables (both)
Andhra Pradesh						
Urban	2.5	5.0	84.0	0.8	1.4	2.3
Rural	1.6	4.9	89.6	0.6	1.3	1.9
Combined	1.9	4.9	88.0	0.6	1.3	2.0
Madhya Pradesh						
Urban	2.4	5.3	70.5	0.7	1.9	2.7
Rural	1.3	4.3	88.0	0.4	1.4	1.9
Combined	1.6	4.6	83.0	0.5	1.5	2.2
Maharashtra						
Urban	2.5	3.7	76.0	0.7	1.1	1.8
Rural	2.0	3.7	75.5	0.5	1.1	1.6
Combined	2.2	3.7	75.7	0.6	1.1	1.7
Mizoram						
Urban	2.4	6.8	78.8	0.6	2.3	2.9
Rural	2.1	6.8	90.7	0.5	1.9	2.3
Combined	2.3	6.8	84.5	0.5	2.1	2.6
Kerala						
Urban	3.1	5.4	87.4	0.7	1.3	2.1
Rural	2.9	5.5	87.3	0.7	1.2	2.0
Combined	2.9	5.5	87.3	0.8	1.2	2.0
Tamil Nadu						
Urban	2.5	5.0	99.0	0.6	0.8	1.5
Rural	1.5	4.6	98.8	0.4	0.8	1.4
Combined	2.0	4.7	98.9	0.5	0.9	1.4
Uttarakhand						
Urban	3.3	5.9	87.7	0.7	1.7	2.5
Rural	2.2	5.1	89.1	0.6	1.5	2.2
Combined	2.5	5.4	88.7	0.7	1.5	2.3

Food and Oil Consumption

The percentage of respondents according to the intake of specific food items at least once a week is provided in Table 3.3.2 a-c. The specific food items include cheese/butter, fried local foods, red meat, eggs, chicken, aerated soda, sweetened drinks, pizza/burger/French fries, cakes/pastries or other bakery items, chips/*namkeen* etc. More than 40% population of Kerala, Andhra Pradesh, Tamil Nadu and Mizoram consumed eggs

at least once in a week, a large proportion of respondents also consumed fried local foods, red meat, chicken and fish at least once in a week in all the states. A large proportion of respondents were consuming fried local food and sweetened drinks daily in Mizoram. In Kerala high proportion of respondents were consuming fried local food and fish daily and in Uttarakhand large proportion of respondents were consuming cheese/butter daily. The pattern was similar for both urban as well as rural.

Table 3.3.2a Percentage of respondents according to the frequency of specific food items consumed by place of residence (Urban), phase-I states of India, 2007-08

Specific Food Items	Andhra Pradesh		Madhya Pradesh		Maharashtra		Mizoram		Kerala		Tamil Nadu		Uttarakhand	
	Daily	At least once in a week	Daily	At least once in a week	Daily	At least once in a week	Daily	At least once in a week	Daily	At least once in a week	Daily	At least once in a week	Daily	At least once in a week
Cheese/ Butter	4.9	7.0	10.4	14.0	9.1	20.7	1.4	5.6	0.6	5.8	3.4	6.3	40.5	15.7
Fried local foods	4.7	20.2	6.5	30.7	1.6	30.3	15.7	9.9	13.0	28.1	9.3	28.2	3.4	17.7
Red Meat	0.9	41.0	0.9	18.3	0.5	20.8	1.6	66.3	1.2	24.9	0.3	32.7	1.1	22.0
Eggs	3.8	69.8	1.5	21.8	1.4	29.4	5.5	54.3	6.6	45.0	4.3	52.9	4.3	29.8
Chicken	0.3	58.0	0.3	17.4	0.1	17.5	0.1	16.7	0.5	28.1	0.4	31.0	0.4	12.9
Fish	0.2	22.9	0.3	12.7	1.0	21.7	0.3	13.5	58.2	29.0	2.4	26.6	0.3	8.1
Aerated Soda	0.8	9.6	0.2	8.3	0.5	10.9	1.2	4.7	2.7	7.4	0.9	6.8	1.0	9.5
Sweetened drinks	1.7	11.6	0.6	1.8	0.3	12.0	58.1	4.3	3.7	15.9	0.4	5.0	2.8	13.9
Pizza/ burgers/ French fries etc.	0.2	3.2	0.2	2.4	0.2	7.2	1.4	4.3	0.3	1.5	0.1	1.1	0.3	3.1
Cakes, Pastries or other bakery items	0.9	7.2	6.6	12.8	3.3	27.5	21.4	30.3	3.6	16.8	1.7	13.4	0.2	4.3
Chips, Namkeen etc.	2.4	24.2	6.2	29.3	4.3	22.6	1.1	9.7	7.3	25.8	2.0	20.6	19.4	41.9

Table 3.3.2b Percentage of respondents according to the frequency of specific food items consumed by place of residence (Rural), phase-I states of India, 2007-08

Specific Food Items	Andhra Pradesh		Madhya Pradesh		Maharashtra		Mizoram		Kerala		Tamil Nadu		Uttarakhand	
	Daily	At least once in a week	Daily	At least once in a week	Daily	At least once in a week	Daily	At least once in a week	Daily	At least once in a week	Daily	At least once in a week	Daily	At least once in a week
Cheese/ Butter	2.1	5.3	8.5	9.0	1.2	12.3	0.3	1.0	1.0	4.8	1.6	2.6	21.0	17.5
Fried local foods	2.0	12.5	1.3	16.1	0.1	11.7	11.3	7.7	15.3	27.7	8.0	21.6	1.3	12.0
Red Meat	0.1	31.2	0.1	10.7	0.1	22.4	0.5	29.2	1.6	24.9	0.2	18.1	0.6	16.9
Eggs	1.3	70.2	0.3	15.3	0.3	33.2	1.8	35.5	6.0	41.3	3.5	39.5	1.8	22.8
Chicken	0.5	47.3	0.1	13.6	0.1	16.7	0.1	7.9	1.2	28.1	0.4	16.0	0.4	9.5
Fish	2.4	30.2	0.2	8.8	1.8	22.9	0.2	16.8	58.5	30.4	0.9	20.5	0.6	6.8
Aerated Soda	0.7	7.5	0.1	9.9	0.0	5.7	0.2	0.9	2.5	7.7	0.8	6.4	0.7	3.7
Sweetened drinks	0.2	3.5	0.1	0.2	4.3	27.6	78.9	6.2	4.4	15.4	0.3	3.2	1.4	8.7
Pizza/ burgers/ French fries etc.	0.7	0.9	0.2	1.1	0.0	1.0	0.3	1.5	0.4	1.8	0.3	0.5	0.1	0.4
Cakes, Pastries or other bakery items	0.3	1.7	0.7	3.1	0.3	16.8	4.2	13.3	5.3	16.4	0.6	7.1	0.1	0.7
Chips, Namkeen etc.	2.2	15.4	2.0	16.4	0.2	8.2	0.7	4.4	5.5	23.7	0.9	14.9	5.8	32.7

Table 3.3.2c Percentage of respondents according to the frequency of specific food items consumed by place of residence (Combined), phase-I states of India, 2007-08

Specific Food Items	Andhra Pradesh		Madhya Pradesh		Maharashtra		Mizoram		Kerala		Tamil Nadu		Uttarakhand	
	Daily	At least once in a week	Daily	At least once in a week	Daily	At least once in a week	Daily	At least once in a week	Daily	At least once in a week	Daily	At least once in a week	Daily	At least once in a week
Cheese/ Butter	2.9	5.8	9.1	10.5	4.8	16.1	0.9	3.4	0.9	5.1	2.4	4.3	26.5	17.0
Fried local foods	2.8	14.7	2.8	20.3	0.8	20.1	13.6	8.9	14.7	27.8	8.6	24.6	1.9	13.6
Red Meat	0.3	34.0	0.4	12.9	0.3	21.7	1.0	48.5	1.5	24.9	0.2	24.7	0.7	18.3
Eggs	2.0	70.1	0.6	17.1	0.8	31.5	3.7	45.3	6.2	42.3	3.9	45.6	2.5	24.8
Chicken	0.5	50.4	0.2	14.7	0.1	17.0	0.1	12.5	1.0	28.1	0.4	22.8	0.4	10.4
Fish	1.8	28.1	0.2	9.9	1.4	22.3	0.2	15.1	58.4	30.0	1.6	23.2	0.5	7.2
Aerated Soda	0.7	8.1	0.1	9.4	0.3	8.0	0.7	2.9	2.6	7.6	0.9	6.6	0.8	5.3
Sweetened drinks	0.6	5.8	0.2	0.7	0.1	7.8	68.0	5.2	4.2	15.5	0.4	4.0	1.8	10.2
Pizza/ burgers/ French fries etc.	0.0	1.4	0.1	0.9	0.1	3.8	0.8	3.0	0.3	1.8	0.0	0.6	0.1	1.1
Cakes, Pastries or other bakery items	0.4	3.3	2.4	5.9	1.7	21.6	13.2	22.2	4.9	16.5	1.1	10.0	0.1	1.7
Chips, Namkeen etc.	2.3	23.4	3.2	20.1	2.1	14.7	0.9	7.2	6.0	24.2	1.4	17.5	9.6	35.3

Table 3.3.3 Percentage of households according to type of oil consumption by place of residence, phase-I states of India, 2007-08

	Type of oil									Percent
	Mustard	Coconut	Groundnut	Sunflower	Soyabean	Palm	Vanaspati	Pure ghee	Others	
Andhra Pradesh										
Urban	0.0	0.1	34.6	32.6	0.1	29.8	0.2	0.0	2.6	100.0
Rural	0.0	0.0	27.3	12.9	0.4	56.1	0.3	0.0	3.0	100.0
Combined	0.0	0.0	29.4	18.5	0.3	48.6	0.3	0.0	2.9	100.0
Madhya Pradesh										
Urban	24.7	0.0	7.3	1.5	65.7	0.0	0.0	0.0	0.8	100.0
Rural	40.2	0.1	2.5	0.0	56.9	0.0	0.0	0.0	0.3	100.0
Combined	36.4	0.1	3.8	0.4	58.9	0.0	0.0	0.0	0.4	100.0
Maharashtra										
Urban	1.9	1.1	30.5	19.0	35.8	9.1	0.1	0.0	2.5	100.0
Rural	0.4	0.0	18.0	12.4	42.9	23.0	0.1	0.0	3.2	100.0
Combined	1.0	0.4	22.9	15.0	40.1	17.5	0.1	0.0	3.0	100.0
Mizoram										
Urban	39.3	1.1	2.7	1.9	54.2	0.5	0.2	0.0	0.1	100.0
Rural	69.5	0.6	0.6	1.1	27.6	0.1	0.0	0.1	0.4	100.0
Combined	53.3	0.9	1.7	1.5	41.9	0.3	0.1	0.1	0.2	100.0
Kerala										
Urban	0.5	85.4	0.1	3.7	0.0	10.0	0.1	0.0	0.2	100.0
Rural	0.1	87.8	0.4	1.7	0.0	9.9	0.0	0.0	0.1	100.0
Combined	0.2	87.2	0.3	2.3	0.0	9.9	0.0	0.0	0.1	100.0
Tamil Nadu										
Urban	0.0	2.3	25.0	46.8	0.0	12.6	0.1	0.0	13.2	100.0
Rural	0.0	3.8	54.6	16.3	0.0	10.6	0.0	0.0	14.7	100.0
Combined	0.0	3.1	41.3	30.1	0.0	11.5	0.0	0.0	14.0	100.0
Uttarakhand										
Urban	56.7	0.6	0.5	10.4	29.9	0.4	1.1	0.4	0.0	100.0
Rural	89.1	0.7	0.0	1.0	7.9	0.0	1.3	0.0	0.0	100.0
Combined	80.8	0.7	0.1	3.4	13.5	0.1	1.3	0.1	0.0	100.0

Table 3.3.3 presents the type of edible oil used for cooking by the sample households. It shows that the use of mustard oil and soyabean oil was common in Mizoram, Uttarakhand and Madhya Pradesh. The use of groundnut oil, sunflower oil and palm oil was common in Andhra Pradesh and Tamil Nadu. In Maharashtra, groundnut oil, sunflower oil, soyabean oil was used commonly for cooking where as coconut oil was commonly used for cooking in Kerala.

3.4 PHYSICAL ACTIVITY

It is well known that lack of physical activity leads to obesity, hyperlipidemia, diabetes mellitus, hypertension and coronary heart disease. An account of physical activities of respondents in terms of mean time spent (in minutes) in doing physical activity at work, while traveling for work and recreation is provided in Table 3.4.1. The mean time spent on total physical activity ranged from a low 924 MET minutes per day in Maharashtra to a high 2106 MET minutes per day

in Madhya Pradesh (Table 3.4.1a). The mean time spent in work related physical activity by the respondents ranged from a low 128 minutes per day in Maharashtra to a high 293 minutes per day in Madhya Pradesh (table 3.4.1b).

The mean time spent in travel related activity (cycling/walking) ranged from 31 minutes per day in Andhra Pradesh to a maximum of 69 minutes per day in Uttarakhand (Table 3.4.1c). The survey also reports that the mean time spent in recreational activities was a low 4 minutes per day in Andhra Pradesh to a high 67 minutes per day in Madhya Pradesh (Table 3.4.1d).

According to WHO Global Physical Activity Questionnaire Analysis Guidelines⁶, the total physical activity of the respondents is classified under three categories low, medium and high on the basis of duration for which they perform physical activities of varying intensity. The percentage of respondents according to three categories of physical activity is presented in Table 3.4.2.

Table 3.4.1a Mean time spent (in MET minutes) on total physical activity per day by sex and residence, 2007- 08

Total Physical Activity	Residence						Combined		
	Urban			Rural					
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Andhra Pradesh									
Mean	1202.2	857.5	1034.0	1471.9	1085.7	1279.5	1394.0	1021.7	1209.6
95% CI									
Lower	1109.0	814.0	973.6	1361.6	1001.7	1188.3	1312.4	962.6	1143.3
Upper	1295.4	901.0	1094.3	1582.2	1169.8	1370.7	1475.5	1080.7	1275.8
Number	1257	1493	2750	1462	2006	3468	2719	3499	6218
Madhya Pradesh									
Mean	1463.5	1136.4	1310.3	2698.5	2131.9	2427.0	2338.7	1850.6	2106.3
95% CI									
Lower	1268.9	1026.9	1171.6	2528.4	1944.8	2273.0	2202.4	1713.4	1988.0
Upper	1658.2	1245.9	1449.0	2868.6	2319.1	2581.1	2474.9	1987.8	2224.5
Number	1398	1582	2980	1459	1414	2873	2857	2996	5853
Maharashtra									
Mean	837.7	38.8	792.4	1184.3	877.1	1033.1	1021.7	817.0	924.1
95% CI									
Lower	707.5	647.5	691.5	1056.6	774.4	929.8	932.4	747.6	852.0
Upper	967.8	830.2	893.3	1312.1	979.9	1136.3	1110.9	886.4	996.3
Number	1556	1393	2949	1528	1614	3142	3084	3007	6091
Mizoram									
Mean	1085.3	793.1	944.5	1627.8	1061.9	1360.0	1347.0	920.4	1143.2
95% CI									
Lower	869.4	677.3	798.6	1443.7	908.8	1201.2	1206.5	824.5	1035.5
Upper	1301.3	908.9	1090.3	1811.8	1215.0	1518.8	1487.5	1016.4	1250.9
Number	1063	1111	2174	1234	1087	2321	2297	2198	4495
Kerala									
Mean	1056.7	765.9	906.5	1329.7	845.1	1078.3	1257.0	824.2	1032.8
95% CI									
Lower	914.9	660.2	812.9	1159.1	735.7	961.4	1127.9	740.1	943.4
Upper	1198.4	871.6	1000.1	1500.3	954.5	1195.2	1386.2	908.3	1122.1
Number	924	1565	2489	798	1572	2370	1722	3137	4859
Tamil Nadu									
Mean	1304.1	1119.9	1212.7	1526.0	1250.4	1387.0	1425.1	1192.1	1308.5
95% CI									
Lower	1187.5	1050.3	1130.5	1421.7	1175.8	1306.4	1347.9	1141.3	1250.8
Upper	1420.8	1189.5	1294.9	1630.2	1325.0	1467.7	1502.4	1242.9	1366.1
Number	1068	1449	2517	1009	1579	2588	2077	3028	5105
Uttarakhand									
Mean	748.9	797.2	770.8	1559.6	1478.2	1517.8	1312.3	1304.6	1308.5
95% CI									
Lower	666.3	725.2	702.9	1412.1	1309.6	1372.8	1210.6	1174.5	1201.3
Upper	831.6	869.2	838.6	1707	1646.8	1662.8	1413.9	1434.8	1415.7
Number	1113	1580	2693	1034	1706	2740	2147	3286	5433

Proportion of respondents reporting low physical activity was lowest in Madhya Pradesh (63%) and highest in Maharashtra (81%). Percentage reporting low physical activity was higher among urban respondents than rural

respondents. The percentage of respondents with low physical activity was lower among males than females in all the states (Table 3.4.2).

Table 3.4.1b Mean time spent (in minutes) on work related activity per day by sex and residence, 2007- 08

Physical Activity (Work)	Residence						Combined		
	Urban			Rural					
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Andhra Pradesh									
Mean	222.2	188.0	205.5	246.0	229.6	237.8	239.1	217.9	228.6
95% CI									
Lower	203.7	178.7	193.3	227.8	213.3	221.8	225.4	206.4	216.8
Upper	240.8	197.3	217.7	264.1	245.9	253.9	252.8	229.5	240.4
Number	1257	1493	2750	1462	2006	3468	2719	3499	6218
Madhya Pradesh									
Mean	191.1	218.9	204.1	331.7	325.7	328.9	290.8	295.5	293.0
95% CI									
Lower	156.9	199.4	180.3	306.9	303.4	308.1	270.2	278.5	279.4
Upper	225.4	238.4	228.0	356.6	348.1	349.6	311.3	312.5	309.7
Number	1398	1582	2980	1459	1414	2873	2857	2996	5853
Maharashtra									
Mean	109.4	131.0	119.3	143.0	127.9	135.6	127.2	129.3	128.2
95% CI									
Lower	89.0	109.1	100.8	124.4	112.7	120.0	113.8	116.6	116.3
Upper	129.8	152.8	137.8	161.5	143.2	151.1	140.7	141.9	140.1
Number	1556	1393	2949	1528	1614	3142	3084	3007	6091
Mizoram									
Mean	133.3	138.9	136.0	207.0	176.7	192.7	168.9	156.8	163.1
95% CI									
Lower	105.1	113.6	112.6	181.1	151.0	168.6	150.6	138.8	146.6
Upper	161.5	164.2	159.5	233.0	202.5	216.8	187.1	174.8	179.7
Number	1063	1111	2174	1234	1087	2321	2297	2198	4495
Kerala									
Mean	128.1	158.2	143.7	160.1	173.9	167.3	151.6	169.8	161.0
95% CI									
Lower	105.3	133.2	124.6	139.7	149.4	150.1	135.7	150.8	147.4
Upper	150.9	183.2	162.7	180.4	198.4	184.5	167.4	188.8	174.6
Number	924	1565	2489	798	1572	2370	1722	3137	4859
Tamil Nadu									
Mean	209.1	233.4	221.1	222.7	247.0	234.9	216.5	240.9	228.7
95% CI									
Lower	193.0	219.1	208.6	207.0	233.3	221.9	205.3	231.1	219.6
Upper	225.2	247.6	233.7	238.4	260.8	248.0	227.6	250.7	237.8
Number	1068	1449	2517	1009	1579	2588	2077	3028	5105
Uttarakhand									
Mean	85.1	147.2	113.2	176.4	220.6	199.2	148.6	201.9	175.1
95% CI									
Lower	72.5	136.1	102.4	159.0	202.0	182.2	136.3	187.5	162.4
Upper	97.6	158.3	123.9	193.9	239.3	216.1	160.8	216.4	187.8
Number	1113	1580	2693	1034	1706	2740	2147	3286	5433

Table 3.4.1c Mean time spent (in minutes) on travel related activity per day by sex and residence, 2007- 08

Physical Activity (Travel)	Residence						Combined		
	Urban			Rural					
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Andhra Pradesh Mean	33.3	18.8	26.3	39.4	26.4	32.9	37.7	24.3	31.0
95% CI									
Lower	30.2	16.5	23.9	34.7	22.2	28.7	34.2	21.3	28.0
Upper	36.4	21.2	28.6	44.2	30.5	37.2	41.1	27.2	34.1
Number	1257	1493	2750	1462	2006	3468	2719	3499	6218
Madhya Pradesh Mean	65.0	37.0	51.9	85.9	59.9	73.4	79.8	53.4	67.2
95% CI									
Lower	56.7	31.0	45.3	75.3	52.1	64.9	72.0	47.7	60.9
Upper	73.4	43.0	58.4	96.5	67.6	81.9	87.6	59.1	73.5
Number	1398	1582	2980	1459	1414	2873	2857	2996	5853
Maharashtra Mean	49.2	34.7	42.6	59.6	45.9	52.9	54.7	41.1	48.2
95% CI									
Lower	41.6	28.7	36.1	54.1	41.6	48.3	50.2	37.5	44.4
Upper	56.7	40.8	49.0	65.0	50.3	57.4	59.2	44.6	52.0
Number	1556	1393	2949	1528	1614	3142	3084	3007	6091
Mizoram Mean	36.7	30.1	33.5	41.3	32.1	36.9	38.9	31.1	35.1
95% CI									
Lower	25.6	22.7	25.2	32.6	24.8	29.4	31.8	25.8	29.4
Upper	47.7	37.5	41.8	50.0	39.5	44.5	46.0	36.3	40.9
Number	1063	1111	2174	1234	1087	2321	2297	2198	4495
Kerala Mean	41.7	20.4	30.7	46.6	18.2	31.9	45.3	18.7	31.5
95% CI									
Lower	36.3	16.2	26.5	39.9	14.9	27.2	40.2	16.1	28.0
Upper	47.2	24.5	34.9	53.3	21.4	36.5	50.4	21.4	35.1
Number	924	1565	2489	798	1572	2370	1722	3137	4859
Tamil Nadu Mean	61.6	38.6	50.2	65.0	45.4	55.1	63.4	42.4	52.9
95% CI									
Lower	54.5	34.5	45.2	59.1	41.2	50.7	59.0	39.4	49.6
Upper	68.6	42.8	55.2	70.9	49.6	59.5	67.9	45.3	56.2
Number	1068	1449	2517	1009	1579	2588	2077	3028	5105
Uttarakhand Mean	58.6	38.8	49.7	80.3	72.1	76.1	73.7	63.6	68.7
95% CI									
Lower	52.8	33.5	44.7	73.2	63.0	68.6	68.6	56.6	63.1
Upper	64.4	44.2	54.7	87.4	81.2	83.6	78.8	70.6	74.3
Number	1113	1580	2693	1034	1706	2740	2147	3286	5433

Table 3.4.1d Mean time spent (in minutes) on recreational activity per day by sex and residence, 2007- 08

Physical Activity (Recreational)	Residence						Combined		
	Urban			Rural					
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Andhra Pradesh									
Mean	9.3	1.8	5.6	5.6	0.3	3.0	6.7	0.7	3.7
95% CI									
Lower	7.3	1.1	4.5	3.2	0.1	1.8	4.9	0.5	2.8
Upper	11.3	2.4	6.8	8.1	0.6	4.2	8.5	1.0	4.6
Number	1257	1493	2750	1462	2006	3468	2719	3499	6218
Madhya Pradesh									
Mean	65.0	37.0	51.9	85.9	59.9	73.4	79.8	53.4	67.2
95% CI									
Lower	56.7	31.0	45.3	75.3	52.1	64.9	72.0	47.7	60.9
Upper	73.4	43.0	58.4	96.5	67.6	81.9	87.6	59.1	73.5
Number	1398	1582	2980	1459	1414	2873	2857	2996	5853
Maharashtra									
Mean	11.8	4.0	8.3	10.9	2.5	6.8	11.4	3.2	7.5
95% CI									
Lower	9.1	2.4	6.3	7.3	0.9	4.3	9.1	2.0	5.8
Upper	14.6	5.7	10.3	14.6	4.0	9.3	13.7	4.3	9.1
Number	1556	1393	2949	1528	1614	3142	3084	3007	6091
Mizoram									
Mean	24.4	6.7	15.8	15.2	2.8	9.3	19.9	4.8	12.7
95% CI									
Lower	20.7	3.3	12.8	9.9	1.4	6.2	16.7	2.9	10.5
Upper	28.0	10.1	18.8	20.4	4.1	12.4	23.1	6.7	14.9
Number	1063	1111	2174	1234	1087	2321	2297	2198	4495
Kerala									
Mean	21.0	7.1	13.8	26.0	6.6	15.9	24.7	6.7	15.4
95% CI									
Lower	15.7	-0.5	8.0	18.1	-1.0	8.5	18.8	0.8	9.7
Upper	26.4	14.7	19.6	33.8	14.1	23.3	30.5	12.6	21.0
Number	924	1565	2489	798	1572	2370	1722	3137	4859
Tamil Nadu									
Mean	8.1	1.1	4.6	8.9	0.8	4.8	8.5	0.9	4.7
95% CI									
Lower	6.2	0.6	3.6	6.1	0.3	3.3	6.8	0.6	3.8
Upper	10.1	1.6	5.7	11.7	1.3	6.3	10.3	1.3	5.7
Number	1068	1449	2517	1009	1579	2588	2077	3028	5105
Uttarakhand									
Mean	19.8	11.3	16.0	21.1	7.1	13.9	20.7	8.2	14.5
95% CI									
Lower	15.5	6.3	12.0	15.9	3.7	10.4	16.9	5.4	11.7
Upper	24.2	16.3	19.9	26.3	10.6	17.5	24.5	11.0	17.3
Number	1113	1580	2693	1034	1706	2740	2147	3286	5433

Table 3.4.2 Percentage of respondents classified in three categories of total physical activity per day across sex and type of residence (P & 95% CI) by phase-I states of India, 2007-08

State/ Residence	Physical Activity											
	Low			Medium			High					
	Male	Female	Total	Male	Female	Total	Male	Female	Total			
Andhra Pradesh	64.3	91.3	77.5	32.7	8.3	20.8	2.9	0.4	1.7			
	(59.4,,69.0)	(88.9,93.2)	(74.4,80.3)	(28.5,37.2)	(6.4,10.6)	(18.3,23.6)	(1.6,5.3)	(0.2,1.1)	(0.9,3.1)			
	52.5	75.2	63.8	38.3	23.4	30.9	9.2	1.4	5.3			
Rural	(46.5,58.4)	(70.4,79.4)	(59.0,68.3)	(33.4,43.4)	(19.5,28.0)	(27.1,35.0)	(6.9,12.2)	(0.7,2.9)	(3.9,7.2)			
	55.9	79.7	67.7	36.7	19.2	28.0	7.4	1.1	4.3			
	(51.4,60.3)	(76.3,82.7)	(64.2,71.0)	(33.0,40.5)	(16.3,22.4)	(25.2,31.0)	(5.7,9.6)	(0.6,2.2)	(3.3,5.6)			
Madhya Pradesh	59.8	77.9	68.3	21.9	16.9	19.5	18.3	5.2	12.1			
	(52.3,67.0)	(72.6,82.5)	(62.6,73.5)	(17.3,27.2)	(12.8,22.0)	(153.9,23.8)	(14.1,23.3)	(3.1,8.5)	(9.2,15.8)			
	22.7	41.7	31.8	18.8	22.5	20.5	58.5	35.8	47.6			
Rural	(18.5,27.6)	(35.6,48.2)	(27.1,36.9)	(15.8,22.2)	(18.2,27.3)	(17.8,23.6)	(52.4,64.3)	(29.1,43.1)	(42.0,53.3)			
	33.5	52.0	42.3	19.7	20.9	20.3	46.8	27.1	37.4			
	(29.7,37.6)	(47.2,56.6)	(38.6,46.2)	(17.1,22.5)	(17.6,24.6)	(18.0,22.7)	(42.3,51.3)	(22.4,32.5)	(33.4,41.7)			
Maharashtra	82.2	90.7	86.1	15.6	8.7	12.5	2.2	0.6	1.5			
	(75.8,87.1)	(86.6,93.7)	(81.4,89.7)	(11.2,21.4)	(5.8,12.8)	(9.1,16.8)	(1.2,4.1)	(0.3,1.4)	(0.8,2.7)			
	69.4	85.3	77.2	25.3	12.9	19.2)	5.3	1.8	3.6			
Rural	(63.1,75.0)	(79.8,89.6)	(72.1,81.7)	(21.1,30.1)	(9.1,17.9)	(15.7,23.3)	(3.0,9.1)	(0.8,3.9)	(2.0,6.1)			
	75.4	87.7	81.2	20.8	11.0	16.1	3.8	1.3	2.6			
	(71.1,79.2)	(84.2,90.5)	(77.9,84.2)	(17.7,24.3)	(8.5,14.2)	(13.7,19.0)	(2.5,5.9)	(0.7,2.4)	(1.7,4.0)			
Mizoram	71.0	87.7	79.1	21.8	9.6	15.9	7.1	2.7	5.0			
	(61.1,79.3)	(83.9,90.7)	(73.0,84.1)	(14.7,31.0)	(7.1,12.7)	(11.9,21.0)	(3.8,12.9)	(1.5,5.0)	(2.8,8.9)			
	50.0	76.4	62.5	35.2	17.7	26.9	14.8	6.0	10.6			
Rural	(42.1,57.8)	(69.5,82.1)	(55.6,68.8)	(28.8,42.3)	(13.1,23.3)	(21.8,32.7)	(9.6,22.2)	(3.5,9.9)	(7.0,15.9)			
	60.9	82.4	71.1	28.3	13.4	21.2	10.8	4.3	7.7			
	(54.9,66.5)	(78.6,85.5)	(66.9,75.1)	(23.5,33.6)	(10.8,16.5)	(18.1,24.7)	(7.6,15.3)	(2.8,6.3)	(5.5,10.7)			

State/ Residence	Physical Activity											
	Low			Medium			High					
	Male	Female	Total	Male	Female	Total	Male	Female	Total			
Kerala	Urban	70.5	87.8	79.4	21.1	11.3	16.0	8.4	0.9	4.5		
		(64.6,75.8)	(83.3,91.2)	(75.2,83.1)	(16.8,26.1)	(8.0,15.8)	(12.7,20.1)	(5.7,12.2)	(0.5,1.6)	(3.1,6.5)		
		62.6	85.6	74.5	22.5	12.9	17.5	14.9	1.5	8.0		
Kerala	Rural	57.4	81.5	78.0	18.6	9.8	20.6	10.8	0.8	11.0		
		(57.4,67.4)	(81.5,88.9)	(70.7,78.0)	(18.6,27.0)	(9.8,16.7)	(14.8,20.6)	(10.8,20.3)	(0.8,2.9)	(5.7,11.0)		
		64.7	86.2	75.8	22.1	12.5	17.1	13.2	1.4	7.1		
Kerala	Combined	60.6	83.0	78.5	19.1	10.0	19.6	10.0	0.8	9.3		
		(60.6,68.5)	(83.0,88.8)	(72.8,78.5)	(19.1,25.6)	(10.0,15.0)	(14.9,19.6)	(10.0,17.2)	(0.8,2.3)	(5.4,9.3)		
		63.4	78.3	70.8	30.8	20.8	25.8	5.9	0.9	3.4		
Tamil Nadu	Urban	57.7	72.9	75.2	26.8	16.3	26.1	3.7	0.4	5.3		
		(57.7,68.7)	(72.9,82.9)	(65.9,75.2)	(26.8,35.0)	(16.3,26.1)	(22.1,29.9)	(3.7,9.3)	(0.4,1.9)	(2.2,5.3)		
		52.2	70.9	61.6	40.0	27.0	33.4	7.8	2.1	4.9		
Tamil Nadu	Rural	46.7	66.1	66.2	35.2	22.8	31.6	5.7	0.9	4.8		
		(46.7,57.7)	(66.1,75.3)	(56.9,66.2)	(35.2,44.9)	(22.8,31.6)	(29.3,37.7)	(5.7,10.6)	(0.9,4.8)	(3.4,7.1)		
		57.3	74.2	65.8	35.8	24.2	30.0	6.9	1.6	4.3		
Tamil Nadu	Combined	53.4	70.7	68.9	32.6	21.1	27.6	5.3	0.8	5.6		
		(53.4,61.1)	(70.7,77.4)	(62.4,68.9)	(32.6,39.1)	(21.1,27.6)	(27.2,32.9)	(5.3,9.0)	(0.8,3.0)	(3.2,5.6)		
		87.9	96.1	91.6	10.8	3.8	7.6	1.3	0.1	0.8		
Uttarakhand	Urban	84.4	92.7	93.4	8.3	2.0	7.2	0.6	0.0	0.5		
		(84.4,90.7)	(92.7,97.9)	(89.3,93.4)	(8.3,14.0)	(2.0,7.2)	(5.9,9.8)	(0.6,3.0)	(0.0,0.5)	(0.4,1.7)		
		54.4	60.6	57.6	33.2	29.9	31.5	12.4	9.5	10.9		
Uttarakhand	Rural	48.3	52.5	63.8	28.9	24.6	35.7	8.9	7.8	15.1		
		(48.3,60.3)	(52.5,68.2)	(51.1,63.8)	(28.9,37.8)	(24.6,35.7)	(27.5,35.8)	(8.9,17.0)	(7.8,15.1)	(7.8,15.1)		
		64.6	69.7	67.1	26.4	23.2	24.8	9.0	7.1	8.1		
Uttarakhand	Combined	60.3	63.2	71.6	23.3	19.2	27.8	6.6	4.7	10.7		
		(60.3,68.3)	(63.2,75.4)	(62.3,71.6)	(23.3,29.7)	(19.2,27.8)	(21.9,28.0)	(6.6,12.2)	(4.7,10.7)	(5.8,11.1)		

Note : WHO STEPs guideline used to calculate the cut off value of low, medium and high for total physical activity.

Table 3.4.3 Percentage of respondents (with 95% Confidence Interval) according to three categories of total physical activity across age group and sex by phase-I states of India, 2007-08

State/ Age Group	Physical Activity																	
	Low			Medium			High											
	Male	Female	Total	Male	Female	Total	Male	Female	Total									
Andhra Pradesh	62.0	84.0	72.7	30.8	15.5	23.2	7.3	0.5	4.0	(56.0,67.6)	(79.1,87.9)	(68.3,76.7)	(25.7,36.3)	(11.7,20.3)	(19.7,27.4)	(4.7,11.1)	(0.2,1.7)	(2.6,6.0)
	52.5	73.8	63.3	41.1	24.4	32.4	6.5	2.2	4.3	(46.3,58.6)	(68.1,78.7)	(58.9,67.5)	(35.5,46.9)	(19.4,29.3)	(28.5,36.5)	(4.1,10.0)	(1.1,4.3)	(2.9,6.4)
	48.1	76.0	61.6	41.6	22.5	32.3	10.3	1.5	6.1	(41.8,54.4)	(70.2,81.0)	(56.2,66.8)	(36.4,47.0)	(17.6,28.2)	(27.9,37.1)	(7.5,14.1)	(0.5,4.2)	(4.2,8.6)
	50.6	77.2	63.4	42.6	22.7	33.0	6.8	0.1	3.6	(44.7,56.5)	(71.4,82.1)	(59.3,67.3)	(37.1,48.2)	(17.8,28.5)	(29.7,36.5)	(4.0,11.3)	(0.0,0.9)	(2.1,6.1)
	72.6	93.8	83.8	23.0	5.7	13.8	4.4	0.5	2.3	(66.0,78.4)	(91.5,95.5)	(80.4,86.8)	(17.6,29.3)	(4.0,7.9)	(11.1,17.1)	(11.1,17.1)	(0.2,1.7)	(1.4,3.8)
Madhya Pradesh	43.7	61.8	52.0	20.1	19.3	19.8	36.1	18.9	28.2	(38.0,49.6)	(55.1,68.0)	(47.3,56.8)	(16.3,24.7)	(14.8,24.9)	(16.5,23.5)	(30.1,42.6)	(13.2,26.1)	(23.4,33.5)
	25.4	47.6	36.4	17.8	22.3	20.0	56.7	30.2	43.6	(21.3,30.1)	(41.7,53.5)	(32.1,40.9)	(14.8,21.4)	(18.3,26.9)	(17.3,23.1)	(51.4,61.9)	(24.3,36.8)	(38.7,48.6)
	25.8	42.2	33.5	21.3	22.3	21.8	52.9	35.5	44.8	(21.4,30.7)	(35.7,48.9)	(29.1,38.1)	(17.6,25.5)	(17.8,27.5)	(18.8,25.0)	(47.1,58.6)	(28.7,43.0)	(39.7,49.9)
	30.1	45.6	37.3	18.6	21.5	19.9	51.3	32.9	42.8	(24.3,36.7)	(38.6,52.8)	(31.9,43.0)	(13.4,25.1)	(16.1,28.2)	(16.0,24.6)	(43.4,59.1)	(26.2,40.4)	(36.8,48.9)
	42.7	61.3	52.3	21.1	18.3	19.6	36.2	20.4	28.1	(36.2,49.5)	(55.6,66.7)	(47.0,57.5)	(16.7,26.2)	(14.5,22.8)	(16.4,23.3)	(30.3,42.7)	(15.5,26.4)	(23.6,33.1)
Maharashtra	80.9	92.2	86.1	16.7	7.3	12.4	2.4	0.5	1.5	(76.3,84.8)	(88.6,94.7)	(82.6,88.9)	(13.2,21.0)	(4.9,10.6)	(10.0,15.3)	(1.1,5.1)	(0.1,2.6)	(0.7,3.3)
	73.0	84.7	78.7	21.0	13.5	17.3	6.1	1.9	4.0	(67.2,78.0)	(79.8,88.5)	(74.5,82.4)	(17.1,25.5)	(10.0,18.0)	(14.4,20.6)	(3.7,9.7)	(0.9,3.6)	(2.5,6.3)
	69.6	83.5	76.2	26.1	14.3	20.5	4.3	2.3	3.4	(63.2,75.3)	(77.4,88.1)	(70.8,80.8)	(21.0,31.9)	(10.0,20.0)	(16.4,25.3)	(2.6,7.2)	(1.2,4.4)	(2.1,5.3)
	72.4	86.0	78.8	23.6	13.2	18.8	4.0	0.8	2.5	(66.2,77.8)	(81.5,89.6)	(74.3,82.6)	(18.9,29.0)	(9.8,17.5)	(15.3,22.7)	(2.1,7.5)	(0.3,2.1)	(1.3,4.7)
	81.0	93.4	87.6)	17.8	6.1	11.5	1.2	0.5	0.8	(76.3,85.0)	(90.4,95.6)	(84.6,90.2)	(14.1,22.1)	(4.1,8.8)	(9.2,14.4)	(0.6,2.6)	(0.2,1.5)	(0.4,1.7)
Mizoram	7.7	88.4	76.3	27.6	8.9	18.4	64.8	2.8	5.3	(4.8,12.1)	(84.2,91.5)	(71.3,80.7)	(20.8,35.5)	(6.2,12.6)	(14.5,23.1)	(56.9,71.9)	(1.5,5.1)	(3.4,8.2)
	11.8	80.7	69.0	29.8	15.9	23.2	58.4	3.4	7.9	(7.8,17.66)	(75.6,84.9)	(64.0,73.5)	(24.7,35.3)	(12.1,20.5)	(19.5,27.3)	(51.7,64.8)	(1.9,6.2)	(5.3,11.6)

State/ Age Group	Physical Activity											
	Low			Medium			High					
	Male	Female	Total	Male	Female	Total	Male	Female	Total			
35 - 44	14.8 (9.9,21.7)	78.2 (71.8,83.5)	66.3 (60.8,71.4)	29.5 (23.1,36.8)	15.6 (11.6,20.5)	22.9 (19.3,27.0)	55.7 (48.2,63.0)	6.2 (3.9,10.0)	10.8 (7.2,15.9)			
45 - 54	14.5 (8.9,22.7)	77.5 (70.7,83.2)	69.0 (62.9,74.5)	24.0 (18.8,30.1)	17.2 (12.3,23.5)	20.8 (16.9,25.4)	61.5 (53.4,69.0)	5.3 (2.8,9.8)	10.2 (6.6,15.4)			
55 - 64	4.7 (2.3,9.4)	76.7 (66.6,84.5)	70.3 (60.8,78.2)	30.8 (18.6,46.5)	15.4 (9.2,24.6)	23.5 (15.7,33.8)	64.5 (49.8,76.8)	7.9 (4.1,14.6)	6.2 (3.5,10.8)			
Kerala												
15 - 24	78.4 (72.2,83.6)	95.9 (93.2,97.6)	87.3 (83.6,90.3)	15.5 (11.0,21.3)	4.0 (2.3,6.7)	9.6 (7.2,12.8)	6.1 (3.3,11.1)	0.1 (0.0,0.8)	3.1 (1.6,5.6)			
25 - 34	60.4 (54.4,66.0)	85.5 (80.9,89.1)	73.7 (69.6,77.5)	23.7 (18.5,29.8)	13.4 (9.9,18.0)	18.2 (14.9,22.1)	15.9 (11.3,22.0)	1.1 (0.4,2.9)	8.0 (5.6,11.5)			
35 - 44	50.5 (42.6,58.5)	76.4 (71.0,81.1)	64.0 (58.3,69.3)	31.5 (24.1,40.0)	21.2 (16.5,26.7)	26.1 (21.3,31.7)	18.0 (12.7,24.8)	2.4 (1.0,5.7)	9.9 (7.1,13.5)			
45 - 54	59.3 (51.1,67.0)	82.5 (76.6,87.1)	70.9 (65.7,75.7)	21.6 (16.0,28.6)	14.6 (11.1,19.0)	18.1 (14.4,22.5)	19.1 (14.1,25.2)	2.9 (1.2,6.9)	11.0 (8.3,14.3)			
55 - 64	73.8 (67.9,79.1)	87.0 (81.7,90.9)	80.8 (76.5,84.4)	18.9 (14.7,24.0)	12.0 (8.2,17.2)	15.3 (11.9,19.4)	7.2 (4.5,11.3)	1.0 (0.4,2.5)	3.9 (2.5,6.3)			
Tamil Nadu												
15 - 24	66.6 (61.2,71.7)	81.2 (77.0,84.7)	73.9 (70.1,77.4)	27.3 (22.7,32.5)	18.2 (14.6,22.4)	22.8 (19.5,26.4)	6.0 (3.8,9.4)	0.7 (0.2,0.2)	3.3 (2.2,5.0)			
25 - 34	49.4 (43.8,55.0)	70.9 (66.1,75.3)	60.4 (55.8,64.9)	43.2 (38.0,48.6)	27.7 (23.3,32.5)	35.2 (31.1,39.6)	7.4 (5.1,10.7)	1.4 (0.6,3.3)	4.3 (3.1,6.1)			
35 - 44	50.3 (44.1,56.5)	66.9 (61.2,72.2)	58.6 (53.6,63.4)	39.6 (34.3,45.2)	29.8 (25.0,35.1)	34.8 (30.8,38.9)	10.0 (7.0,14.3)	3.3 (1.6,6.5)	6.7 (4.5,9.7)			
45 - 54	54.9 (47.6,61.9)	69.7 (64.8,74.2)	62.1 (56.9,67.0)	38.7 (32.8,45.0)	28.6 (24.2,33.4)	33.8 (29.6,38.3)	6.4 (3.7,10.9)	1.6 (0.7,4.0)	4.1 (2.4,6.8)			
55 - 64	67.8 (62.1,73.1)	84.2 (78.7,88.5)	76.1 (72.4,79.4)	29.5 (24.6,34.9)	14.6 (10.4,20.1)	22.0 (18.7,25.7)	2.7 (1.5,4.7)	1.2 (0.4,3.3)	1.9 (1.2,3.1)			
Uttarakhand												
15 - 24	71.6 (65.4,77.1)	76.8 (70.1,82.3)	74.1 (68.7,78.9)	21.7 (17.2,27.0)	19.7 (15.0,25.4)	20.7 (17.0,25.0)	6.7 (3.9,11.1)	3.6 (2.1,6.1)	5.2 (3.3,8.1)			
25 - 34	59.8 (54.2,65.1)	66.7 (59.3,73.4)	63.3 (57.9,68.5)	30.5 (25.2,36.3)	25.1 (19.8,31.3)	27.7 (23.6,32.2)	9.7 (6.6,14.1)	8.2 (5.2,12.8)	9.0 (6.4,12.4)			
35 - 44	57.6 (50.9,64.1)	62.8 (54.8,70.1)	60.2 (54.1,66.0)	31.2 (25.7,37.3)	27.7 (22.0,34.1)	29.5 (25.1,34.2)	11.2 (7.8,15.8)	9.6 (5.6,15.9)	10.4 (7.2,14.8)			
45 - 54	59.4 (52.3,66.0)	64.3 (55.5,72.3)	61.8 (55.3,67.9)	28.1 (23.6,33.0)	24.6 (19.8,30.1)	26.4 (22.7,30.4)	12.6 (8.4,18.5)	11.1 (6.9,17.3)	11.8 (8.1,17.0)			
55 - 64	72.9 (65.2,79.3)	74.3 (64.4,82.2)	73.6 (66.3,79.8)	21.0 (15.3,28.2)	19.8 (14.3,26.8)	20.4 (16.0,25.7)	6.1 (2.9,12.3)	5.9 (3.0,11.3)	6.0 (3.1,11.2)			

Note : WHO STEPs guideline used to calculate the cut off value of low, medium and high for total physical activity.

3.5 SOCIO-DEMOGRAPHIC PATTERN

Tobacco

Tobacco is mainly used as smoking and other forms of smokeless tobacco among urban and rural residents of phase-I states of India. The socio-demographic patterns of prevalence of smokers by residence in phase-I states are presented in Table 3.5.1. Pattern of prevalence of smokers among all respondents (combined) was increasing with age groups (6% in 15-24 to 31% in 55-64 of Andhra Pradesh, 13% in 15-24 to 31% in 45-64 of Madhya Pradesh, 2% in 15-24 to 17% in 45-64 of Maharashtra, 34% in 15-24 to 56% in 55-64 of Mizoram, 3% in 15-24 to 22% in 55-64 of Kerala, 5% in 15-24 to 21% in 45-54 of Tamil Nadu, and 5% in 15-24 to 37% in 45-54 of Uttarakhand). By education, the prevalence was high in almost all the states in lower levels of education (illiterate and primary) which was declining with increasing levels of education (higher secondary and college level). Prevalence in lower levels of education was 23% of illiterate and primary respondents in Andhra Pradesh, 21% of illiterate and 37% of primary in Madhya Pradesh, 13% of illiterate and 14% of primary in Maharashtra, 51% of illiterate and 55% of primary in Mizoram, 18% of illiterate and 30% of primary in Kerala, 15% of illiterate and 20% of primary in Tamil Nadu, and 26% of illiterate and 30% of primary in Uttarakhand. Similarly, prevalence in the higher levels of education was comparatively low (7% of higher secondary and 8% of college respondents in Andhra Pradesh, 15% of higher secondary and 12% of college in Madhya Pradesh, 8% of higher secondary and 7% of college in Maharashtra, 39% of higher secondary and 40% of college in Mizoram, 5% of higher secondary and 7% of college in Kerala, 7% of higher secondary and 6% of college in Tamil Nadu, and 11% of higher secondary and college respondents in Uttarakhand). Prevalence of smoking among female respondents was very low compare with males in all the phase-I states except Mizoram. Occupation is an important socioeconomic indicator and differences in pattern of smoking tobacco were observed from one category of occupation to another. Prevalence of smoking in some categories of occupation was high (manual work (29%) and agriculture (26%) in Andhra Pradesh, agriculture (35%) and manual work (30%) in Madhya Pradesh, manual work (19%) and executive (15%) in Maharashtra, agriculture (65%) and manual work (62%) in Mizoram, manual work (35%) and agriculture (25%) in Kerala, service (28%) and manual work (24%) in Tamil Nadu, and manual work (43%) and agriculture (42%) in Uttarakhand).

The socio-demographic patterns of prevalence of smokeless tobacco users by residence in phase-I states are presented in Table 3.5.2. Prevalence of smokeless tobacco users among all respondents (combined) was showing an increasing pattern with increasing age groups of respondents (5% in 15-24 to 14% in 55-64 of Andhra Pradesh, 30% in 15-24 to 49% in 55-64 of Madhya Pradesh, 15% in 15-24 to 51% in 55-64 of Maharashtra, 39% in 15-24 to 59% in 45-54 of Mizoram, 3% in 15-24 to 13% in 55-64 of Kerala, 4% in 15-24 to 23% in 55-64 of Tamil Nadu, and 7% in 15-24 to 13% in 55-64 of Uttarakhand). By education, the prevalence was high in almost all the states in lower levels of education (illiterate and primary) which was declining with increasing levels of education (higher secondary and college level). Prevalence in lower levels of education was 11% of illiterate and 10% of primary respondents in Andhra Pradesh, 42% of illiterate and 46% of primary in Madhya Pradesh, 52% of illiterate and 48% of primary in Maharashtra, 62% of illiterate and 59% of primary in Mizoram, 21% of illiterate and 10% of primary in Kerala, 22% of illiterate and 13% of primary in Tamil Nadu, and 11% of illiterate, 13% of primary and 15% of middle in Uttarakhand. Similarly, prevalence in the higher levels of education was comparatively low (8% of higher secondary and 3% of college respondents in Andhra Pradesh, 32% of higher secondary and 21% of college in Madhya Pradesh, 22% of higher secondary and 17% of college in Maharashtra, 37% of higher secondary and 35% of college in Mizoram, 2% of higher secondary and college in Kerala, 1% of higher secondary and college in Tamil Nadu, and 9% of higher secondary and 8% of college respondents in Uttarakhand). Prevalence of smokeless tobacco users among female respondents was very low compare with males in all the phase-I states except Mizoram. Occupation is an important socioeconomic indicator and differences in pattern of prevalence of smokeless tobacco users were observed from one category of occupation to another. Prevalence in some categories of occupation was high (manual work (15%) and agriculture (11%) in Andhra Pradesh; manual work (56%) executive and business (53%), and agriculture (44%) in Madhya Pradesh; agriculture (50%), manual work (49%), executive and business (35%) in Maharashtra; domestic work (66%) and agriculture (58%), executive and business (56%), service and sales (52%) in Mizoram; manual work (12%) in Kerala; domestic work (20%) and agriculture (19%) in Tamil Nadu, and manual work (29%), executive and business (22%), and agriculture (17%) in Uttarakhand). Overall, smokeless tobacco users was prevalent in

Table 3.5.1 Percentage of smokers (current daily) by age, education, occupation, and place of residence, phase-I states of India, 2007- 08

Characteristic	Smokers (%)																				
	Andhra Pradesh			Madhya Pradesh			Maharashtra			Mizoram			Kerala			Tamil Nadu			Uttarakhand		
	U	R	C	U	R	C	U	R	C	U	R	C	U	R	C	U	R	C	U	R	C
Age group	4.6	6.5	5.9	7.8	15.1	12.9	1.1	3.3	2.3	31.6	36.1	33.7	3.3	3.4	3.4	4.6	5.7	5.2	6.1	5.1	5.4
15-24	13.1	15.6	14.9	16.4	23.7	21.7	8.7	10.3	9.5	42.4	53.0	47.3	10.0	14.2	13.0	15.0	15.1	15.0	13.6	20.6	18.5
25-34	15.6	27.5	24.1	22.0	31.7	28.8	13.0	12.6	12.8	43.4	56.8	49.8	16.0	19.5	18.6	16.4	20.2	18.5	23.8	31.6	29.3
35-44	23.2	33.6	30.8	19.9	35.6	31.1	14.7	19.2	17.2	41.8	61.1	51.6	18.8	18.2	18.4	18.5	22.6	20.8	26.6	41.3	37.2
45-54	18.9	35.0	31.2	18.1	30.3	27.3	15.1	15.7	15.5	42.7	67.3	55.8	16.0	23.5	21.5	12.3	14.7	13.7	17.0	38.5	33.8
55-64	12.6	19.9	17.9	15.3	24.7	22.0	8.5	10.4	9.5	38.6	50.0	44.0	11.5	13.8	13.2	12.6	14.6	13.7	15.2	22.1	20.2
Total																					
Education	14.9	24.7	23.1	16.2	21.3	20.6	7.4	14.4	12.9	38.9	53.3	50.9	16.8	18.0	17.7	15.7	14.5	14.9	20.0	26.6	25.6
Illiterate	22.1	23.3	23.0	25.1	40.8	37.0	14.7	14.2	14.4	45.9	60.8	55.4	26.7	31.2	30.1	18.7	20.5	19.7	26.6	31.4	30.4
Primary	18.1	15.5	16.3	20.0	26.6	24.8	11.2	7.5	8.9	39.7	50.1	45.8	18.6	23.4	22.2	16.6	17.8	17.3	21.9	21.0	21.2
Middle	8.7	14.6	12.5	13.8	21.9	18.7	7.4	7.8	7.6	34.5	41.6	37.6	12.1	13.4	13.1	12.6	14.1	13.4	12.9	20.8	18.6
Secondary	6.3	7.4	6.9	11.1	19.3	15.0	7.4	8.1	7.7	39.1	39.7	39.2	4.7	4.9	4.8	7.0	7.5	7.2	10.9	11.1	11.0
Higher Secondary	8.6	7.3	8.1	10.0	19.0	11.6	7.2	7.6	7.3	38.6	43.7	39.6	6.3	6.6	6.5	5.0	7.8	5.9	10.4	12.3	11.2
College & above	12.6	19.9	17.9	15.3	24.7	22.0	8.5	10.4	9.5	38.6	50.0	44.0	11.5	13.8	13.2	12.6	14.6	13.7	15.2	22.1	20.2
Total																					
Occupation	16.4	19.7	17.9	24.4	33.5	29.5	15.9	12.5	15.0	37.6	42.7	39.2	17.5	21.1	19.9	13.7	14.2	13.8	21.1	36.7	28.2
Executive/Business	25.3	26.2	26.2	26.8	36.4	35.3	12.1	13.2	13.1	56.3	67.0	64.6	17.9	26.5	24.6	21.5	19.9	20.3	44.6	41.9	41.9
Agriculture	0.6	4.6	3.0	0.4	0.8	0.6	3.1	3.5	3.3	16.0	26.4	21.7	0.2	0.6	0.5	0.0	5.4	2.1	0.9	7.1	5.5
Domestic Work	19.5	15.9	17.5	20.5	11.3	18.1	12.1	13.7	12.5	42.0	55.6	46.1	15.1	11.0	12.5	44.7	15.0	27.5	28.0	33.1	30.4
Services/Sales	27.3	29.2	28.7	29.7	29.8	29.7	15.4	21.8	18.9	57.2	71.9	61.8	32.1	36.0	35.0	22.4	24.8	23.5	42.6	42.6	42.6
Manual Worker	8.0	12.1	10.0	7.3	7.1	7.2	4.0	6.5	5.1	30.2	34.6	31.9	3.6	4.8	4.5	2.3	2.0	2.1	9.3	13.8	12.3
Other	12.6	19.9	17.9	15.3	24.7	22.0	8.5	10.4	9.5	38.6	50.0	44.0	11.5	13.8	13.2	12.6	14.6	13.7	15.2	22.1	20.2
Total	2750	3468	6218	2980	2873	5853	2949	3142	6091	2170	2316	4486	2484	2370	4854	2517	2588	5105	2690	2731	5421
Number (n)																					

U: Urban; R: Rural; C: Combined

all the occupational categories in Mizoram, but in other states it was mainly high among manual work and agriculture.

Rural-urban differences in the prevalence of smoking and smokeless tobacco users were also observed across all the socio-demographic categories. Prevalence of smoking among rural respondents was high comparing with urban. Overall, pattern of smoking and smokeless tobacco use in urban and rural subgroups of population remain similar across age, education and occupation (Table 3.5.1 & 3.5.2).

Alcohol

The socio-demographic patterns of prevalence of drinking alcohol by residence in phase-I states are presented in Table 3.5.3. The prevalence of current alcohol drinkers among all respondents (combined) was high which was varying with age groups of adult respondents (21% in 25-34 and 28% in 35-44 of Andhra Pradesh; 20% in 25-34 to 27% in 45-54 of Madhya Pradesh; 16% in 15-24 to 21% in 45-54 of Maharashtra; 16% in 25-34 and 14% in 35-44 of Mizoram; 20% in 25-34 and 24% in 35-44 of Kerala; 18% in 25-34 and 20% in 35-44 of Tamil Nadu; and 20% in 25-34 to 23% in 55-64 of Uttarakhand). Prevalence was comparatively low among younger age group (15-24) varying from 4% to 12% in all the seven states. An increasing pattern of prevalence with age was observed up to age group of 45-54 in most of the states, than the pattern declined with increasing age i.e. in older age groups. Prevalence of drinking alcohol was high in lower levels of education (illiterate(20%) and primary(25%) of Andhra Pradesh; illiterate(21%) and primary(27%) of Madhya Pradesh; illiterate(20%) and primary(19%) of Maharashtra; illiterate(15%) and primary(8%) of Mizoram; illiterate(15%), primary(22%) and middle(23%) of Kerala; illiterate(15%) and primary(20%) of Tamil Nadu; illiterate(11%) and primary(20%) of Uttarakhand), than the pattern was declining among higher levels (higher secondary and collage). Prevalence of drinking alcohol in some of the occupational categories was high (manual worker(33%), service(27%) and agriculture(26%) in Andhra Pradesh; executive and business (34%), and manual worker (29%) in Madhya Pradesh; manual worker (26%), service and sales (23%) and agriculture (22%) in Maharashtra; manual worker (21%) and agriculture (15%) in Mizoram; manual worker (44%), service and sales, and executive (31%) in Kerala; manual worker (26%), service and sales (29%) and agriculture (22%) in Tamil Nadu; manual worker (32%), service and sales, and

executive (38%), and agriculture (31%) in Uttarakhand) in all the phase-I states (Table 3.5.3). A similar pattern of prevalence of drinking alcohol was observed in the rural and urban population across age, education and occupation.

Fruits and Vegetables

Though fruits and vegetable consumption reduces the risk of non-communicable diseases, but the survey showed larger proportion of population consumed inadequate amount of fruits and vegetables (i.e. less than five servings of fruits and vegetables per day). The socio-demographic patterns of prevalence of consumption of less than five servings of fruits and vegetables by residence in phase-I states are presented in Table 3.5.4. Prevalence of low (inadequate) consumption was recorded high among urban as well as rural population of all the seven states. The differences in the prevalence by age groups was marginal (85% in 25-34 to 94% in 55-64 of Andhra Pradesh; 82% in 15-24 to 88% in 55-64 of Madhya Pradesh; 75% in 25-34 to 80% in 55-64 of Maharashtra; 83% in 15-24 to 93% in 55-64 of Mizoram; 85% in 15-24 to 90% in 35-44 of Kerala; 99% in 15-34 and 55-64 of Tamil Nadu; and 87% in 15-24 to 92% in 55-64 of Uttarakhand). A declining pattern of prevalence with increasing levels of education was observed in all the phase-I states (93% of illiterate to 82% of college level in Andhra Pradesh; 87% of illiterate to 67% of college level in Madhya Pradesh; 81% of illiterate to 70% of college level in Maharashtra; 92% of illiterate to 81% of college level in Mizoram; 94% of illiterate to 78% of college level in Kerala; 99.5% of illiterate to 97% of college level in Tamil Nadu; 95% of illiterate to 81% of college level in Uttarakhand).

Prevalence of low (inadequate) consumption of fruits and vegetables was high in some occupational categories which varies by states (domestic work and agriculture (90%) in Andhra Pradesh; manual worker (93%), domestic work(80%) and executive(81%) in Madhya Pradesh; manual worker (80%) and domestic work (79%) in Maharashtra; agriculture (89%) and manual worker (85%) in Mizoram; domestic work(97%) and agriculture (92%) in Kerala; manual worker and agriculture (99%) in Tamil Nadu; manual worker (94%) and agriculture (91%) in Uttarakhand). Overall, prevalence of low consumption of fruits and vegetables was prevalent in all age groups, education and occupation and pattern was similar in both rural and urban population (Table 3.5.4).

Table 3.5.2 Percentage of smokeless tobacco users by age, education, occupation, and place of residence, phase-I states of India, 2007 - 08

Characteristic	Smokeless tobacco users (%)																				
	Andhra Pradesh			Madhya Pradesh			Maharashtra			Mizoram			Kerala			Tamil Nadu			Uttarakhand		
	U	R	C	U	R	C	U	R	C	U	R	C	U	R	C	U	R	C	U	R	C
Age group																					
15-24	5.5	4.2	4.6	20.1	34.2	30.0	11.9	18.0	15.2	31.5	46.8	38.6	1.9	3.4	3.0	2.5	4.9	3.8	6.0	7.6	7.2
25-34	10.7	9.9	10.1	32.9	43.3	40.3	24.2	41.5	33.3	49.5	65.5	56.9	2.5	5.7	4.8	7.4	8.3	7.9	12.3	17.4	15.9
35-44	12.2	10.6	11.1	33.6	47.7	43.5	28.0	52.4	41.4	52.9	62.7	57.6	3.2	4.4	4.1	9.2	17.9	14.0	12.3	15.8	14.7
45-54	9.9	11.2	10.8	33.4	49.1	44.6	31.1	56.2	45.0	52.7	64.5	58.7	5.1	7.6	6.9	11.4	22.7	17.7	12.1	9.9	10.5
55-64	11.3	15.0	14.1	35.1	52.8	48.5	33.2	61.3	50.9	56.5	57.1	56.8	8.4	14.4	12.8	12.1	30.7	23.0	10.7	13.6	13.0
Total	9.2	9.1	9.1	29.0	43.0	39.0	22.7	40.7	32.5	44.4	57.7	50.8	3.5	6.0	5.3	7.4	14.0	11.0	10.0	12.4	11.7
Education																					
Illiterate	11.6	11.4	11.4	34.6	43.5	42.3	34.3	56.6	51.7	44.8	65.2	61.8	16.2	16.2	20.6	20.0	23.2	22.2	11.7	11.3	11.4
Primary	14.1	8.4	9.7	40.2	48.5	46.3	35.0	54.3	47.7	54.4	61.4	58.9	8.9	8.9	10.2	7.7	16.6	12.6	15.5	12.0	12.8
Middle	10.9	6.4	7.8	36.5	43.7	41.7	30.4	37.9	34.9	53.1	57.1	55.4	3.8	3.8	7.2	7.9	10.8	9.5	11.9	15.4	14.6
Secondary	9.6	7.2	8.1	26.8	34.8	31.6	20.2	27.3	23.8	49.8	55.6	52.3	3.1	3.1	4.3	4.4	8.6	6.6	11.9	14.0	13.4
Higher Secondary	6.1	9.4	7.9	23.0	41.3	31.6	17.3	30.0	22.4	34.1	48.2	37.1	2.2	2.2	1.7	1.0	1.9	1.4	9.3	8.8	9.0
College & above	3.9	1.4	2.9	18.5	33.6	21.3	15.8	20.6	17.0	32.7	44.4	35.0	0.8	0.8	1.7	1.3	1.1	1.2	5.6	11.5	8.1
Total	9.2	9.1	9.1	29.0	43.0	39.0	22.7	40.7	32.5	44.4	57.7	50.8	3.5	6.0	5.3	7.4	14.0	11.0	10.0	12.4	11.7
Occupation																					
Executive/Business	11.9	6.0	9.3	40.0	62.8	52.7	32.1	44.1	35.4	50.6	68.2	56.2	4.7	6.0	5.6	2.8	7.7	4.1	16.9	28.8	22.3
Agriculture	13.5	11.2	11.3	39.4	44.1	43.6	31.5	51.1	49.9	49.5	59.8	57.5	5.1	5.5	5.4	16.8	19.6	18.9	7.2	16.8	16.6
Domestic Work	2.7	3.6	3.3	11.0	18.9	15.6	13.4	31.6	22.9	62.2	69.1	66.0	1.7	3.8	3.2	20.0	20.3	20.1	2.8	2.8	2.8
Services/Sales	8.4	10.4	9.5	29.0	29.7	29.2	31.7	34.1	32.4	48.9	59.0	51.9	0.6	6.0	4.0	8.1	8.4	8.3	15.0	18.0	16.4
Manual Worker	21.4	12.6	15.1	54.5	55.7	55.5	39.0	56.6	48.5	47.8	50.2	48.5	8.9	13.5	12.4	11.0	13.3	12.1	24.1	31.3	29.4
Other	3.7	6.8	5.6	16.4	26.9	22.5	11.0	21.0	15.5	27.2	43.9	33.8	1.6	3.0	2.6	2.7	7.3	4.9	7.3	10.1	9.2
Total	9.2	9.1	9.1	29.0	43.0	39.0	22.7	40.7	32.5	44.4	57.7	50.8	3.5	6.0	5.3	7.4	14.0	11.0	10.0	12.4	11.7
Number (n)	2750	3468	6218	2980	2873	5853	2949	3142	6091	2172	2317	4489	2483	2370	4853	2514	2588	5105	2690	2732	5422

U: Urban; R: Rural; C: Combined

Physical Activity

The socio-demographic differences in the prevalence of low physical activity were recorded by residence in phase-I states (Table 3.5.5). Large proportion of respondents were recorded in the category of low physical activity which was varying with age groups (73% in 15-24, 62% in 35-54 and 84% in 55-64 of Andhra Pradesh; 52% in 15-24, 34% in 35-44 and 52% in 55-64 of Madhya Pradesh; 86% in 15-24, 76% in 35-44 and 88% in 55-64 of Maharashtra; 76% in 15-24, 66% in 35-44 and 70% in 55-64 of Mizoram; 87% in 15-24, 64% in 35-44 and 81% in 55-64 of Kerala; 74% in 15-24, 59% in 35-44 and 76% in 55-64 of Tamil Nadu; 74% in 15-24, 60% in 35-44 and 74% in 55-64 of Uttarakhand). Prevalence of low physical activity was high among old and young age people. The pattern of low physical activity was increasing with increasing levels of education (62% of illiterate to 84% of college level in Andhra Pradesh; 30% of illiterate to 79% of college level in Madhya Pradesh; 75% of illiterate to 94% of college level in Maharashtra; 58% of illiterate, 52% of primary to 91% of college level in Mizoram; 64% of illiterate, 60% of primary to 90% of college level in Kerala; 56% of illiterate to 85% of college level in Tamil Nadu; and 57% of illiterate to 89% of college level in Uttarakhand). Accordingly, low physical activity was recorded high in some occupational categories of phase-I states (domestic work (97%), service and sales (68%), executive and business (65%) in Andhra Pradesh; domestic work (77%), service and sales (67%), executive and business (46%) in Madhya Pradesh; domestic work (92%), service and sales (87%), executive and business (90%) in Maharashtra; domestic work (89%), service and sales (93%), executive and business (85%) in Mizoram; domestic work (86%), service and sales (80%), executive and business (86%) in Kerala; domestic work (51%), service and sales (70%), executive and business (82%) in Tamil Nadu; domestic work (72%), service and sales (88%), executive and

business (84%) in Uttarakhand). Those working in occupational category of agriculture and manual worker were doing more physical activity. Urban-rural comparison of low physical activity demonstrated that rural people were doing more physical work than urban in all seven states. However, the pattern of prevalence by age, education and occupation was similar in both rural and urban population (Table 3.5.5).

This chapter discussed the behavioural risk factors of NCD, viz, smoking, alcohol, dietary habits and physical activity in the survey population.

The striking feature of the survey was that, about every 2nd individual was smoker in the state of Mizoram. In rest of the states it was not more than 20%. Mean age of initiation of smoking was around 18-21 years, lowest being in Mizoram. Use of smokeless tobacco was more prevalent in Madhya Pradesh, Maharashtra and Mizoram, where it ranged from 30 to 50%, highest being in Mizoram. Mean age of initiation of smokeless tobacco was 18-20 years.

Consumption of alcohol was varying 6-14% in all the states. Lowest being in Mizoram and highest in Andhra Pradesh and Madhya Pradesh. The mean age of initiation of alcohol use was 20-23 years in all the states.

The consumption of fruits and vegetable was minimum in Tamil Nadu where 99% of the surveyed individuals were not consuming the required 5 servings of fruits and vegetable per day. In other states also the consumption of fruits and vegetables was quite low.

Most of the surveyed individuals, in all the states, were observed in the low physical activity group. Every 3 or 4 out of 5 individual was in the low physical activity group in the states of Andhra Pradesh, Maharashtra, Mizoram, Kerala, Tamil Nadu and Uttarakhand. In the state of Madhya Pradesh it was around 42% only.



Table 3.5.4 Percentage of respondents consumed less than five servings of fruits and vegetables per day by age, education, occupation, and place of residence, phase-I states of India, 2007- 08

Characteristic	Less than five servings of fruits & vegetables consumed per day (%)																																																																																																																																																																					
	Andhra Pradesh				Madhya Pradesh				Maharashtra				Mizoram				Kerala				Tamil Nadu				Uttarakhand																																																																																																																																													
	U	R	C		U	R	C		U	R	C		U	R	C		U	R	C		U	R	C		U	R	C																																																																																																																																											
Age group	83.5	88.2	86.7	69.1	87.5	82.0	74.9	76.3	75.6	77.4	88.8	82.7	85.3	85.3	99.2	98.5	98.8	87.7	87.2	87.4	80.3	86.8	84.9	72.0	88.1	83.6	75.0	75.4	75.2	77.8	88.7	82.9	87.6	87.9	99.4	98.9	99.2	87.8	89.4	88.9	85.1	88.9	87.8	70.6	87.2	82.2	76.7	75.0	75.8	78.4	91.4	84.6	88.8	90.2	89.8	98.7	98.4	98.5	88.8	87.8	88.1	87.4	94.8	92.8	68.4	87.4	82.0	75.6	73.0	74.2	81.9	94.3	88.2	86.8	87.5	87.3	99.0	99.6	99.3	86.4	91.7	90.2	90.2	95.2	94.0	74.4	92.2	87.9	83.3	77.7	79.8	86.4	98.2	92.7	88.0	88.7	88.0	98.1	98.8	98.5	87.3	93.8	92.4	84.0	89.6	88.0	70.5	88.0	83.0	76.0	75.5	75.7	78.8	90.7	84.5	87.4	87.4	87.4	99.0	98.8	98.9	87.7	89.1	88.7																																										
Total	84.0	89.6	88.0	70.5	88.0	83.0	76.0	75.5	75.7	78.8	90.7	84.5	87.4	87.4	99.0	98.8	98.9	87.7	89.1	88.7																																																																																																																																																		
Education	88.1	93.6	92.8	76.9	88.5	86.9	78.7	81.9	81.2	79.8	93.9	91.5	94.5	94.0	94.1	99.8	99.4	99.5	93.2	94.9	94.6	86.1	89.4	88.7	77.1	86.1	84.0	90.2	76.2	80.9	66.6	94.6	84.5	96.9	94.2	94.9	98.9	100.0	99.5	92.2	93.3	93.1	83.4	86.5	85.5	76.6	88.6	85.2	79.5	75.6	77.1	78.5	91.1	85.8	93.8	91.7	92.2	99.5	98.7	99.1	89.0	90.8	90.4	82.1	85.1	84.0	71.3	92.0	83.8	73.5	72.8	73.1	83.2	85.2	84.1	88.6	88.8	88.8	99.5	97.8	98.6	87.9	85.6	86.3	83.3	83.2	83.3	60.9	78.8	69.3	74.6	70.6	73.0	78.0	92.5	81.1	87.2	83.6	84.5	98.9	98.0	98.5	83.8	82.5	83.0	80.9	82.5	81.5	61.9	83.5	65.9	71.8	63.3	69.6	80.3	85.9	81.4	78.0	78.2	78.2	97.2	97.4	97.2	85.4	73.7	80.5	84.0	89.6	88.0	70.5	88.0	83.0	76.0	75.5	75.7	78.8	90.7	84.5	87.4	87.4	87.4	99.8	98.8	98.9	87.7	89.1	88.7																			
Occupation	82.8	77.5	80.5	60.3	96.8	80.6	73.5	70.5	72.7	70.9	90.2	77.1	75.8	80.5	78.9	98.0	91.2	96.3	82.1	83.9	82.9	84.8	90.1	89.8	67.3	77.5	76.3	74.4	71.8	72.0	78.6	91.5	88.6	91.5	91.6	99.3	99.2	65.2	91.7	91.2	86.0	92.4	89.9	67.9	88.6	80.0	78.6	80.1	79.4	70.4	88.9	80.6	98.0	97.2	97.4	94.3	100.0	96.5	90.1	90.6	90.4	80.8	82.9	81.9	66.3	79.0	69.7	69.0	70.8	69.5	79.6	92.4	83.4	88.2	76.3	80.7	100.0	97.3	98.4	84.3	79.1	81.9	81.6	88.7	86.7	84.2	95.6	93.4	79.5	80.1	79.8	81.7	90.8	84.6	86.8	86.5	86.6	99.3	98.3	98.9	92.8	94.4	94.0	85.6	93.0	90.2	69.1	91.2	81.9	79.9	75.6	77.9	83.1	90.7	86.2	86.0	84.7	85.0	99.1	99.3	99.2	87.3	84.3	85.3	84.0	89.6	88.0	70.5	88.0	83.0	76.0	75.5	75.7	78.8	90.7	84.5	87.4	87.4	87.4	99.0	98.8	98.9	87.7	89.2	88.8	2750	3468	6218	2980	2873	5853	2949	3142	6091	2172	2318	4490	2484	2370	4854	2517	2588	5105	2690	2732	5422
Number (n)	2750	3468	6218	2980	2873	5853	2949	3142	6091	2172	2318	4490	2484	2370	4854	2517	2588	5105	2690	2732	5422																																																																																																																																																	

U: Urban; R: Rural; C: Combined.

Table 3.5.5 Percentage of respondents in the category of low physical activity by age, education, occupation, and place of residence, phase-I states of India, 2007- 08

Characteristic	Low physical activity (%)																																									
	Andhra Pradesh						Madhya Pradesh						Maharashtra						Mizoram						Kerala						Tamil Nadu						Uttarakhand					
	U	R	C	U	R	C	U	R	C	U	R	C	U	R	C	U	R	C	U	R	C	U	R	C	U	R	C	U	R	C	U	R	C	U	R	C						
Age group	84.4	67.5	72.7	75.1	42.2	52.0	88.6	83.9	86.1	81.5	70.4	76.3	88.0	87.1	87.3	73.9	72.3	73.9	75.8	73.9	73.9	75.8	73.9	73.9	75.8	73.9	73.9	75.8	73.9	73.9	92.8	66.9	74.1									
15-24	72.5	59.6	63.3	63.9	25.6	36.4	84.5	73.4	78.7	80.1	56.0	69.0	73.7	73.7	73.7	60.4	54.5	60.4	67.0	54.5	60.4	67.0	54.5	60.4	67.0	54.5	60.4	67.0	54.5	60.4	91.4	51.6	63.3									
25-34	71.3	57.9	61.6	58.9	22.7	33.5	82.3	71.1	76.2	77.5	54.0	66.3	74.3	60.2	64.0	53.3	58.6	60.2	65.0	53.3	58.6	65.0	53.3	58.6	65.0	53.3	58.6	65.0	53.3	58.6	88.8	47.9	60.2									
35-44	71.9	60.3	63.4	67.8	25.1	37.3	85.5	73.4	78.8	76.8	61.4	69.0	76.8	68.7	70.9	62.1	57.2	62.1	68.4	57.2	62.1	68.4	57.2	62.1	68.4	57.2	62.1	68.4	57.2	62.1	90.1	51.1	61.8									
45-54	91.4	81.5	83.8	80.4	43.2	52.3	93.0	84.5	87.6	69.3	71.1	70.3	85.7	79.0	80.8	71.4	76.1	76.1	82.8	71.4	76.1	82.8	71.4	76.1	82.8	71.4	76.1	82.8	71.4	76.1	97.1	66.9	73.6									
55-64	77.5	63.8	67.7	68.3	31.8	42.3	86.1	77.2	81.2	79.1	62.5	71.1	79.4	74.5	75.8	61.6	65.8	61.6	70.8	61.6	65.8	70.8	61.6	65.8	70.8	61.6	65.8	70.8	61.6	65.8	91.6	57.6	67.1									
Total	72.9	60.2	62.2	51.0	26.5	29.9	75.5	75.1	75.2	55.9	58.3	57.9	70.9	62.1	63.8	53.3	55.9	53.3	61.9	53.3	55.9	61.9	53.3	55.9	61.9	53.3	55.9	61.9	53.3	55.9	87.3	51.4	57.0									
Education	73.8	57.8	61.3	57.0	27.9	34.8	79.8	73.0	75.3	57.7	48.7	52.0	66.0	57.5	59.6	57.6	57.6	57.6	57.1	58.0	57.6	57.1	58.0	57.6	57.1	58.0	57.6	57.1	58.0	57.6	77.4	51.9	57.3									
Illiterate	73.6	59.9	64.2	59.6	38.9	44.4	82.1	73.0	76.6	69.6	57.7	62.7	67.6	62.4	63.7	59.9	62.4	62.4	65.3	59.9	62.4	65.3	59.9	62.4	65.3	59.9	62.4	65.3	59.9	62.4	92.2	56.0	63.5									
Primary	77.6	71.8	73.8	74.1	42.1	54.7	85.3	80.2	82.7	81.3	73.1	77.7	75.7	74.1	74.5	70.1	68.3	70.1	72.0	68.3	70.1	72.0	68.3	70.1	72.0	68.3	70.1	72.0	68.3	70.1	93.1	56.7	67.1									
Middle	84.0	79.2	81.5	81.5	42.4	63.2	88.5	81.7	85.8	88.5	83.0	87.3	86.2	84.4	84.9	76.0	77.9	76.0	79.4	76.0	77.9	79.4	76.0	77.9	79.4	76.0	77.9	79.4	76.0	77.9	92.6	69.7	78.4									
Secondary	83.2	84.7	83.8	84.1	58.1	79.3	95.3	89.8	93.8	91.9	89.6	91.4	92.4	88.4	89.8	87.3	79.0	84.5	87.3	79.0	84.5	87.3	79.0	84.5	87.3	79.0	84.5	87.3	79.0	84.5	96.7	79.1	89.2									
Higher Secondary	77.5	63.8	67.7	68.3	31.8	42.3	86.1	77.2	81.2	79.1	62.5	71.1	79.4	74.5	75.8	61.6	65.8	61.6	70.8	61.6	65.8	70.8	61.6	65.8	70.8	61.6	65.8	70.8	61.6	65.8	91.6	57.6	67.1									
College & above	77.5	63.8	67.7	68.3	31.8	42.3	86.1	77.2	81.2	79.1	62.5	71.1	79.4	74.5	75.8	61.6	65.8	61.6	70.8	61.6	65.8	70.8	61.6	65.8	70.8	61.6	65.8	70.8	61.6	65.8	91.6	57.6	67.1									
Total	67.5	62.7	65.4	79.6	20.0	46.4	89.1	92.0	89.9	84.9	84.1	84.6	85.9	85.8	85.9	81.9	81.9	81.9	82.9	81.9	85.9	82.9	81.9	85.9	82.9	81.9	85.9	82.9	81.9	85.9	93.0	72.3	83.7									
Occupation	54.2	46.2	46.6	27.1	14.6	16.0	72.4	63.1	63.6	43.9	30.0	33.1	69.2	46.8	51.6	42.9	42.9	42.9	48.5	41.4	42.9	48.5	41.4	42.9	48.5	41.4	42.9	48.5	41.4	42.9	78.6	34.4	35.3									
Executive/Business	97.9	96.7	97.1	83.7	72.1	76.9	92.3	91.2	91.7	89.1	88.8	88.9	87.6	84.9	85.6	62.4	51.4	62.4	44.5	62.4	51.4	62.4	44.5	62.4	51.4	62.4	44.5	62.4	51.4	96.0	62.9	71.5										
Agriculture	65.7	70.3	68.2	72.0	53.0	66.9	86.5	88.9	87.1	92.5	93.8	92.9	87.1	76.1	80.1	76.3	69.9	76.3	61.2	76.3	69.9	61.2	76.3	69.9	61.2	76.3	69.9	61.2	76.3	93.7	80.4	87.6										
Domestic Work	48.5	46.1	46.8	37.7	12.8	17.7	50.5	61.3	56.4	63.4	40.2	56.1	41.2	38.4	39.1	56.5	53.1	56.5	50.4	56.5	53.1	50.4	56.5	53.1	50.4	56.5	53.1	50.4	56.5	73.0	38.1	47.4										
Services/Sales	95.5	93.0	93.9	91.1	83.1	86.5	95.9	88.7	92.6	88.7	87.0	88.1	91.9	90.4	90.8	88.5	91.0	89.7	88.5	91.0	89.7	88.5	91.0	89.7	88.5	91.0	89.7	88.5	91.0	93.3	73.3	79.9										
Manual Worker	77.5	63.8	67.7	68.3	31.8	42.3	86.1	77.2	81.2	79.1	62.4	71.1	79.4	74.5	75.8	61.6	65.8	61.6	70.8	61.6	65.8	70.8	61.6	65.8	70.8	61.6	65.8	70.8	61.6	65.8	91.6	57.6	67.1									
Other	2750	3468	6218	2980	2873	5853	2949	3142	6091	2172	2318	4490	2484	2370	4854	2517	2588	5105	2690	2588	5105	2517	2588	5105	2690	2588	5105	2690	2588	2732	5422	5422										
Total	2750	3468	6218	2980	2873	5853	2949	3142	6091	2172	2318	4490	2484	2370	4854	2517	2588	5105	2690	2588	5105	2517	2588	5105	2690	2588	5105	2690	2588	2732	5422	5422										
Number (n)	U: Urban;	R: Rural;	C: Combined.																																							

U: Urban; R: Rural; C: Combined.

CHAPTER 4

Hypertension and Diabetes

This chapter focuses on the prevalence of hypertension and diabetes in the study population along with the information regarding history of hypertension and diabetes and the nature of treatment advised by the treating physician.

4.1 HYPERTENSION

The blood pressure is an important determinant of the risk of cardiovascular diseases, ischemic heart disease, congestive cardiac failure and renal failure. In the survey the blood pressure of the respondents was measured using automated blood pressure measuring instrument (OMRON®). Table 4.1.1a-c provides percentage of respondents with history of raised blood pressure, treatment and life style modification advised, seeking consultation and treatment from AYUSH by sex and place of residence in all the phase-I states. The diagnosis of hypertension by health professional ranged between 2% in Madhya Pradesh to 9% in Kerala. Of those diagnosed for hypertension, majority of them were taking prescribed medicine. Over three-quarter of them (77%) were taking prescribed treatment in Tamil Nadu and Maharashtra whereas only 46% was taking treatment in Uttarakhand and Mizoram. The phenomenon appears to be more common in urban areas in all the states. The advice on dietary modification was ranged from 33 to 71% in all the states under survey where as advise to lose weight was lowest 22% in Mizoram and highest 44% in Maharashtra. Only 1% consulted AYUSH practitioners in Madhya Pradesh of which only one fourth were taking

treatment from the system. In Tamil Nadu, 3% consulted AYUSH system and of these 54% were taking treatment. In rest of the states, the AYUSH consultation ranged from a low 8% to a high 22% and the compliance of the treatment from same ranged between 41 - 80% (Table 4.1.1c).

Among the urban respondents, the diagnosis of hypertension by health professional ranged between 6% in Madhya Pradesh to 10% in Andhra Pradesh and Kerala. Of those diagnosed for hypertension, majority of them were taking prescribed medicine. Over four-fifth respondents (80%) were taking prescribed treatment in Tamil Nadu and only 52% were taking treatment in Mizoram. The advice on dietary modification and to lose weight ranged from 26 to 74% in all the states under survey. Only 2% consulted AYUSH practitioners in Tamil Nadu of which 81% were taking treatment from the system. In Madhya Pradesh, 3% consulted AYUSH system and of these 22% were taking treatment. In rest of the states, the AYUSH consultation ranged from a low 6 % to a high 19% and the compliance of the treatment from same ranged between 43 to 94% (Table 4.1.1a).

Among the rural respondents, the diagnosis of hypertension by health professional ranged between 1% in Madhya Pradesh to 9% in Kerala. Of those diagnosed for hypertension, 60-70% were taking prescribed medicine in all the states except Mizoram and Uttarakhand. The advice on dietary modification ranged from 30 to 72% in all the states under survey. Less than 1% consulted AYUSH practitioners in Madhya Pradesh of

Table 4.1.1a Percentage of respondents with history of raised blood pressure, treatment and life style modification advised, seeking consultation and treatment from an AYUSH practitioner by sex and place of residence (Urban), phase-I states of India, 2007-08

Characteristics	AP	MP	MH	MZ	KE	TN	UTK
Hypertension diagnosed by health professional							
Male	9.7	3.9	6.1	8.5	8.8	5.6	5.7
Female	10.5	7.3	8.6	6.4	11.4	6.0	9.6
Total	10.1	5.5	7.2	7.4	10.1	5.8	7.5
Diagnosed Hypertensive							
Currently taking drugs							
Male	71.1	62.3	80.4	49.1	56.9	85.2	52.7

Characteristics	AP	MP	MH	MZ	KE	TN	UTK
Female	73.4	61.4	78.0	57.1	60.7	75.5	59.8
Total	72.3	61.7	79.1	52.4	59.1	80.3	56.8
Advised dietary modifications							
Male	70.0	71.5	52.6	54.3	61.5	63.9	65.5
Female	70.0	63.3	59.3	34.9	61.2	67.5	79.8
Total	70.0	66.4	56.3	46.2	61.4	65.8	73.7
Advised to lose weight							
Male	48.5	45.5	40.0	32.3	22.7	37.8	36.5
Female	37.1	42.1	49.9	16.4	32.1	34.4	43.8
Total	42.7	43.4	45.4	25.7	28.2	36.1	40.7
Advised quit smoking							
Male	23.0	42.2	19.6	29.4	28.0	17.3	27.8
Female	1.2	8.0	6.9	13.0	0.0	0.0	16.8
Total	11.9	20.8	12.7	22.5	11.9	8.5	21.5
Advised to increase physical activity							
Male	53.6	64.0	39.0	37.7	3.7	44.6	49.1
Female	40.9	52.7	35.1	23.8	29.9	34.0	53.7
Total	47.2	56.9	36.8	31.9	31.5	39.1	51.8
Consulted AYUSH practitioner							
Male	6.7	2.4	21.2	4.2	11.4	2.3	12.4
Female	5.9	3.5	16.2	9.0	12.5	1.4	19.4
Total	6.3	2.9	18.5	6.2	12.0	1.8	16.4
Taking treatment from AYUSH practitioner							
Male	89.9	23.0	56.7	76.2	25.0	68.1	52.1
Female	100.0	20.3	65.7	29.5	55.0	100.0	80.2
Total	94.7	21.9	61.0	44.0	43.1	80.6	71.4

AP: Andhra Pradesh MP: Madhya Pradesh MH: Maharashtra MZ: Mizoram KE: Kerala TN: Tamil Nadu UTK: Uttarakhand

Table 4.1.1b Percentage of respondents with history of raised blood pressure, treatment and life style modification advised, seeking consultation and treatment from an AYUSH practitioner by sex and place of residence (Rural), phase-I states of India, 2007-08

Characteristics	AP	MP	MH	MZ	KE	TN	UTK
Hypertension diagnosed by health professional							
Male	5.5	0.8	2.6	5.6	7.6	2.5	3.5
Female	7.4	1.6	3.0	6.1	10.0	4.2	3.0
Total	6.4	1.2	2.8	5.8	8.9	3.4	3.2
Diagnosed Hypertensive							
Currently taking drugs							
Male	60.6	55.8	78.3	37.4	59.2	71.4	42.6
Female	65.1	54.0	66.2	37.9	65.0	71.5	30.5
Total	63.2	60.1	71.9	37.6	62.6	71.4	36.9
Advised dietary modifications							
Male	69.4	68.3	45.3	38.3	57.6	70.1	51.1
Female	73.8	68.8	46.9	23.0	62.5	62.3	70.0
Total	72.0	68.7	46.2	30.7	60.5	65.2	60.1
Advised to lose weight							
Male	31.8	31.4	38.5	22.4	26.1	41.0	17.6
Female	32.3	21.1	45.8	11.2	32.8	28.7	14.7
Total	32.1	24.7	42.4	16.8	30.0	33.3	16.2
Advised quit smoking							
Male	27.7	51.8	22.5	41.5	28.9	13.5	32.1
Female	7.5	9.4	23.0	17.1	1.6	0.0	3.8
Total	16.1	24.3	22.8	29.4	13.0	5.1	18.7

Characteristics	AP	MP	MH	MZ	KE	TN	UTK
Advised to increase physical activity							
Male	26.0	59.9	53.3	31.9	35.0	48.4	29.0
Female	33.8	31.1	39.5	14.2	30.9	34.6	24.2
Total	30.5	41.2	46.0	23.1	32.6	39.7	26.7
Consulted AYUSH practitioner							
Male	5.4	0.3	33.4	8.1	14.1	9.9	23.1
Female	12.7	0.3	24.1	3.7	12.3	3.2	26.5
Total	9.6	0.3	28.5	5.9	13.0	5.6	24.7
Taking treatment from AYUSH practitioner							
Male	84.7	25.2	97.2	29.9	37.7	28.6	89.6
Female	63.0	35.9	89.8	60.1	44.0	65.1	84.1
Total	68.3	30.2	93.9	39.2	41.2	41.3	86.8

AP: Andhra Pradesh MP: Madhya Pradesh MH: Maharashtra MZ: Mizoram KE: Kerala TN: Tamil Nadu UTK: Uttarakhand

Table 4.1.1c Percentage of respondents with history of raised blood pressure, treatment and life style modification advised, seeking consultation and treatment from an AYUSH practitioner by sex and place of residence (combined), phase-I states of India, 2007-08

Characteristics	AP	MP	MH	MZ	KE	TN	UTK
Hypertension diagnosed by health professional							
Male	6.7	1.7	4.2	7.1	7.9	3.9	4.2
Female	8.3	3.2	5.5	6.2	10.4	5.0	4.7
Total	7.5	2.4	4.8	6.7	9.2	4.5	4.4
Diagnosed Hypertensive							
Currently taking drugs							
Male	65.0	60.1	79.7	44.5	58.5	80.4	46.9
Female	68.1	58.8	74.3	48.2	63.8	73.7	45.9
Total	67.0	59.3	76.8	46.2	61.6	76.6	46.3
Advised dietary modifications							
Male	69.6	70.5	50.2	48.1	58.8	66.1	57.2
Female	72.4	65.3	55.5	29.4	62.1	65.1	75.1
Total	71.2	32.8	53.1	39.7	60.7	65.5	66.6
Advised to lose weight							
Male	38.8	40.8	39.5	28.4	25.1	38.9	25.6
Female	34.0	34.6	48.6	14.0	32.6	31.8	30.0
Total	36.2	36.9	44.4	22.0	29.5	34.9	27.9
Advised quit smoking							
Male	25.7	45.4	20.6	34.1	28.6	16.0	30.2
Female	5.3	8.5	11.9	14.9	1.2	0.0	10.7
Total	14.5	22.0	15.9	25.4	12.7	7.1	20.0
Advised to increase physical activity							
Male	37.6	62.6	43.7	35.4	34.6	45.9	37.5
Female	36.4	45.0	36.5	19.3	30.6	34.2	39.7
Total	37.4	51.5	39.8	28.2	32.3	39.4	38.7
Consulted AYUSH practitioner							
Male	5.9	0.9	25.2	5.7	13.3	4.9	18.6
Female	10.3	1.2	18.7	6.6	12.3	2.2	22.7
Total	8.3	1.1	21.7	6.1	12.7	3.4	20.8
Taking treatment from AYUSH practitioner							
Male	87.1	24.2	74.3	51.3	34.5	40.5	79.2
Female	70.7	23.0	75.4	35.3	47.3	77.1	82.3
Total	76.0	23.5	74.8	42.3	41.7	53.7	81.0

AP: Andhra Pradesh MP: Madhya Pradesh MH: Maharashtra MZ: Mizoram KE: Kerala TN: Tamil Nadu UTK: Uttarakhand

which only 30% were taking treatment from the system. In rest of the states, the AYUSH consultation ranged from a low 6 % to a high 29% and the compliance of the treatment from same ranged between 39 to 94% (Table 4.1.1b).

The mean systolic blood pressure ranged from 123 mm Hg to 126 mm Hg and mean diastolic blood pressure ranged from 77 mm Hg to 80 mm Hg in all the seven surveyed states with no much residential and sex differentials (Table 4.1.2).

According to WHO STEPS guidelines, the respondents were categorized into four categories

namely, normal, pre-hypertensive, Stage-I hypertensive and Stage-II hypertensive on the basis of their blood pressure level⁷. In the present survey, this categorization is done after recording the resting blood pressure for each study subject. The upper and the lower limit of the systolic and diastolic blood pressure for each category have been given in Table 4.1.3.

Overall the respondents in the normal category ranged from a low 22% in Mizoram to a high 40% in Andhra Pradesh. The percentage of pre hypertension ranged from a low 43% to a high 49% in all the states except in Mizoram where it was as high as 58%. The

Table 4.1.2 Mean Systolic and Diastolic blood pressure by sex and place of residence, phase-I states of India, 2007-08

State / Residence	Systolic blood pressure			Diastolic blood pressure		
	Male	Female	Total	Male	Female	Total
Andhra Pradesh						
Urban	126.5	120.0	123.2	79.2	76.5	78.0
Rural	125.0	120.0	122.5	77.6	76.0	77.0
Combined	125.4	120.0	123.0	78.0	76.1	77.1
Madhya Pradesh						
Urban	130.1	123.7	127.1	80.7	77.7	79.3
Rural	127.1	124.3	125.8	77.9	77.4	77.7
Combined	127.9	124.1	126.1	78.7	77.5	78.1
Maharashtra						
Urban	123.7	120.4	122.2	80.9	78.6	79.8
Rural	125.0	121.2	123.1	80.7	78.6	79.6
Combined	124.4	120.8	122.7	80.8	78.6	79.7
Mizoram						
Urban	126.1	122.0	124.1	82.7	80.5	81.6
Rural	127.1	122.1	124.7	80.9	78.2	79.6
Combined	126.6	122.1	124.4	81.8	79.4	80.7
Kerala						
Urban	128.1	122.9	125.4	79.4	76.9	78.1
Rural	127.1	122.6	124.8	77.9	76.3	77.0
Combined	127.4	122.7	125.0	78.3	76.4	77.3
Tamil Nadu						
Urban	128.0	122.0	125.0	80.0	77.0	78.1
Rural	126.0	122.0	124.0	77.5	76.4	77.0
Combined	127.0	122.0	124.2	78.4	76.6	77.5
Uttarakhand						
Urban	130.0	123.0	126.9	81.0	77.9	79.6
Rural	128.8	121.4	125.0	78.8	75.7	77.1
Combined	129.2	121.8	125.5	79.5	76.3	77.9

Table 4.1.3 Categories of Hypertension

Category	Systolic Blood Pressure (mm Hg)	Diastolic Blood Pressure (mm Hg)
Normal	<120 and	<80
Pre-Hypertension	120-139 or	80-89
Stage-I Hypertension	140-159 or	90-99
Stage-II Hypertension	≥ 160 or	≥ 100

Table 4.1.4a Percentage of respondents according to category of hypertension by age and place of residence (Urban), phase-I states of India, 2007-08

State/ Age group	Category of hypertension			
	Normal	Pre -hypertension	Stage -I hypertension	Stage -II hypertension
Andhra Pradesh				
15 - 19	56.2(49.4,62.8)	40.7(34.4,47.4)	3.1(1.4,6.4)	0.0
20 - 24	52.0(45.2,58.7)	44.5(38.3,51.0)	3.5(1.7,6.8)	0.0
25 - 34	39.1(34.8,43.5)	48.0(44.1,52.0)	10.8(8.9,13.2)	2.1(1.2,3.7)
35 - 44	26.3(22.3,30.9)	49.6(44.5,54.8)	19.4(16.1,23.2)	4.6(2.9,7.3)
45 - 54	17.6(13.5,22.6)	45.2(39.4,51.2)	23.1(18.9,28.0)	14.0(10.6,18.4)
55 - 64	15.3(11.6,20.0)	44.2(38.8,49.8)	26.0(21.0,31.6)	14.5(10.9,18.9)
15 - 64	37.7(34.5,41.1)	46.1(42.8,49.3)	12.2(11.0,13.6)	4.0(3.2,4.9)
Madhya Pradesh				
15 - 19	39.5(33.4,46.1)	50.7(44.3,57.1)	8.3(5.9,11.5)	1.5(0.6,3.5)
20 - 24	34.3(29.7,39.2)	48.0(43.7,52.4)	15.7(11.7,20.8)	1.9(1.0,3.8)
25 - 34	34.4(29.9,39.2)	46.8(43.1,50.5)	15.1(12.2,18.5)	3.8(2.5,5.7)
35 - 44	26.7(22.6,31.3)	46.1(41.4,50.9)	20.5(16.9,24.7)	6.7(5.0,9.0)
45 - 54	16.3(12.7,20.7)	41.8(35.4,48.5)	30.6(25.4,36.4)	11.3(7.9,16.0)
55 - 64	14.1(11.4,17.3)	33.1(28.5,37.9)	31.7(27.4,36.4)	21.1(17.4,25.4)
15 - 64	30.2(27.5,33.0)	46.0(43.7,48.4)	18.1(16.1,20.2)	5.7(4.8,6.7)
Maharashtra				
15 - 19	52.1(43.8,60.3)	42.9(35.4,50.7)	4.4(2.4,8.0)	0.6(0.1,2.7)
20 - 24	42.5(34.8,50.6)	49.4(41.9,57.0)	7.7(5.0,11.8)	0.3(0.0,2.6)
25 - 34	33.4(28.5,38.6)	52.8(47.6,57.9)	12.4(9.4,16.1)	1.4(0.7,2.7)
35 - 44	21.6(16.7,27.4)	51.2(46.2,56.2)	25.4(21.0,30.5)	1.8(0.9,3.5)
45 - 54	18.4(13.8,24.0)	52.7(45.6,59.7)	23.3(18.2,29.2)	5.7(3.5,9.1)
55 - 64	10.3(7.3,14.3)	45.9(38.8,53.1)	32.0(26.6,37.9)	11.8(8.9,15.5)
15 - 64	32.0(27.8,36.5)	49.9(45.9,53.9)	15.7(13.3,18.4)	2.4(1.8,3.1)
Mizoram				
15 - 19	17.5(10.8,27.2)	65.1(53.0,75.5)	15.0(9.0,24.1)	2.4(0.6,9.5)
20 - 24	15.6(10.4,22.5)	72.8(62.8,81.0)	9.3(4.4,18.5)	2.3(0.9,5.9)
25 - 34	18.1(10.9,28.6)	64.6(54.0,74.0)	14.3(10.8,18.6)	3.0(1.1,7.8)
35 - 44	22.4(14.4,33.0)	52.7(41.9,63.2)	17.5(13.6,22.1)	7.5(3.6,15.1)
45 - 54	18.3(11.7,27.4)	56.8(45.8,67.1)	18.0(13.4,23.8)	6.9(3.1,14.6)
55 - 64	25.3(13.8,41.7)	45.0(32.4,58.4)	18.1(12.7,25.2)	11.6(5.4,23.0)
15 - 64	18.7(13.1,26.0)	62.1(13.1,26.0)	14.7(11.6,18.4)	4.5(2.2,9.0)
Kerala				
15 - 19	50.4(42.6,58.3)	47.9(40.2,55.6)	1.7(0.5,5.2)	0.0
20 - 24	45.9(37.5,54.6)	42.7(34.3,51.6)	10.1(6.1,16.3)	1.3(0.2,8.8)
25 - 34	36.0(30.9,41.4)	50.4(44.4,56.4)	10.8(7.6,15.3)	2.8(1.4,5.4)
35 - 44	25.2(20.5,30.7)	50.9(44.3,57.4)	18.3(14.7,22.5)	5.6(3.6,8.7)
45 - 54	18.9(14.3,24.5)	48.1(42.3,53.8)	21.4(17.6,25.9)	11.7(8.8,15.3)
55 - 64	10.4(7.7,13.7)	45.1(39.0,51.3)	29.5(25.1,34.3)	15.0(11.9,18.8)
15 - 64	32.5(29.1,36.2)	48.3(44.2,52.4)	14.1(12.3,16.2)	5.1(4.1,6.4)
Tamil Nadu				
15 - 19	47.5(41.1,54.0)	49.1(42.7,55.5)	2.8(1.0,7.7)	0.6(0.1,4.7)
20 - 24	46.4(40.3,52.5)	43.3(37.0,49.7)	10.0(6.3,15.5)	0.4(0.0,2.8)
25 - 34	40.2(35.7,44.8)	44.5(40.4,48.7)	14.0(11.3,17.3)	1.3(0.6,2.6)
35 - 44	30.0(25.1,35.3)	47.2(42.7,51.7)	19.0(15.9,22.5)	3.9(2.5,5.9)
45 - 54	21.6(18.3,25.3)	42.7(38.1,47.4)	21.6(16.9,27.2)	14.1(10.9,18.1)
55 - 64	16.9(13.0,21.7)	38.8(33.1,44.7)	25.5(20.8,31.0)	18.8(14.3,24.3)
15 - 64	35.6(33.0,38.3)	44.7(42.6,46.9)	14.9(12.9,17.2)	4.8(4.0,5.7)

State/ Age group	Category of hypertension			
	Normal	Pre-hypertension	Stage -I hypertension	Stage -II hypertension
Uttarakhand				
15 - 19	40.2(34.0,46.8)	50.7(45.3,56.2)	8.2(5.5,12.0)	0.8(0.2,3.9)
20 - 24	38.8(30.8,46.4)	50.6(44.1,57.1)	7.8(5.0,11.8)	3.3(1.6,7.0)
25 - 34	34.0(29.5,38.6)	48.9(44.3,53.6)	13.8(10.9,17.2)	3.3(1.8,6.0)
35 - 44	22.9(18.4,28.2)	47.4(42.2,52.6)	21.5(17.6,25.9)	8.2(5.9,11.5)
45 - 54	16.7(12.8,21.4)	39.8(34.5,45.4)	30.9(26.1,36.2)	12.5(9.5,16.4)
55 - 64	12.4(8.6,17.4)	35.6(30.7,40.8)	30.1(25.2,35.6)	21.9(17.0,27.7)
15 - 64	30.0(26.4,33.7)	47.6(44.5,50.0)	16.6(14.7,18.6)	6.2(5.0,7.7)

Table 4.1.4b Percentage of respondents according to category of hypertension by age and place of residence (Rural), phase-I states of India, 2007-08

State/ Age group	Category of hypertension			
	Normal	Pre-hypertension	Stage -I hypertension	Stage -II hypertension
Andhra Pradesh				
15 - 19	55.1(46.4,63.5)	40.6(32.7,49.0)	4.3(1.7,10.5)	0.0
20 - 24	52.5(44.2,60.6)	40.1(33.3,47.3)	6.9(3.9,12.1)	0.5(0.1,3.2)
25 - 34	43.6(38.6,48.8)	45.3(40.9,49.8)	9.6(7.1,12.9)	1.4(0.7,3.0)
35 - 44	36.3(29.6,43.4)	45.7(39.3,52.3)	14.8(11.0,19.7)	3.2(1.8,5.7)
45 - 54	26.6(22.7,31.0)	38.4(34.0,43.1)	23.4(20.3,26.8)	11.5(8.9,14.9)
55 - 64	24.7(19.4,30.9)	36.5(30.9,42.4)	25.0(21.5,28.8)	13.8(10.7,17.5)
15 - 64	41.1(37.5,44.7)	42.2(39.5,44.9)	12.8(11.3,14.5)	3.9(3.2,4.9)
Madhya Pradesh				
15 - 19	41.4(34.9,48.2)	48.0(42.0,54.2)	8.8(5.9,12.8)	1.8(0.6,5.7)
20 - 24	40.4(34.3,46.8)	47.8(41.0,54.6)	9.5(7.0,12.8)	2.3(1.0,5.3)
25 - 34	36.3(32.1,40.8)	46.0(41.8,50.3)	14.4(11.2,18.2)	3.3(2.3,4.8)
35 - 44	30.2(25.8,35.0)	47.6(42.8,52.4)	18.3(15.0,22.2)	3.9(2.2,6.7)
45 - 54	25.9(20.6,32.1)	47.2(41.9,52.6)	19.3(15.2,24.2)	7.6(4.9,11.6)
55 - 64	19.2(15.1,24.0)	37.9(33.4,42.6)	26.9(22.6,31.6)	16.1(13.7,18.7)
15 - 64	33.6(30.9,36.4)	46.3(43.7,48.9)	15.3(13.3,17.5)	4.8(3.7,6.1)
Maharashtra				
15 - 19	50.4(41.0,59.8)	40.2(32.0,49.0)	8.7(5.7,13.0)	0.8(0.2,3.2)
20 - 24	36.0(29.5,43.0)	48.7(42.6,54.8)	14.0(9.5,20.0)	1.4(0.5,3.7)
25 - 34	36.9(31.4,42.8)	45.9(41.0,50.9)	14.7(11.4,18.8)	2.5(1.4,4.3)
35 - 44	27.3(22.3,32.9)	48.2(42.6,53.9)	20.3(16.4,24.8)	4.2(3.0,5.9)
45 - 54	21.2(16.0,27.5)	45.8(40.7,50.9)	26.0(21.9,30.7)	7.0(5.2,9.4)
55 - 64	18.1(13.7,23.4)	39.9(36.0,43.8)	30.0(25.5,34.9)	12.1(10.2,14.4)
15 - 64	32.9(28.7,37.4)	45.3(41.8,48.9)	17.8(15.6,20.3)	3.9(3.2,4.9)
Mizoram				
15 - 19	28.6(21.3,37.2)	52.5(44.8,60.2)	13.9(9.3,20.2)	5.0(1.9,12.6)
20 - 24	26.0(20.6,32.2)	57.4(50.5,64.0)	12.4(8.9,17.1)	4.3(1.7,10.1)
25 - 34	23.1(18.5,28.4)	58.4(53.2,63.4)	14.9(12.1,18.2)	3.6(1.5,8.6)
35 - 44	25.6(19.8,32.4)	55.4(49.3,61.5)	15.9(11.9,20.9)	3.1(1.0,8.9)
45 - 54	26.4(21.3,32.2)	51.3(44.8,57.7)	16.8(12.5,22.1)	5.6(2.6,11.5)
55 - 64	28.4(19.1,40.0)	41.4(32.6,50.8)	20.0(14.2,27.4)	10.3(5.4,18.6)
15 - 64	25.8(21.6,30.5)	54.6(50.1,59.0)	15.0(12.7,17.8)	4.6(2.1,9.8)
Kerala				
15 - 19	51.0(42.5,59.5)	44.7(36.5,53.2)	3.4(1.4,8.2)	0.9(0.2,3.6)
20 - 24	49.3(42.0,56.6)	44.0(36.8,51.4)	6.3(3.7,10.6)	0.4(0.1,3.3)
25 - 34	36.1(31.9,40.6)	51.5(46.8,56.2)	10.5(7.8,14.1)	1.9(0.8,4.1)
35 - 44	24.5(19.0,30.8)	55.6(50.2,60.9)	16.9(13.6,20.7)	3.1(1.6,6.0)

State/ Age group	Category of hypertension			
	Normal	Pre-hypertension	Stage -I hypertension	Stage -II hypertension
45 - 54	21.8(17.2,27.3)	46.2(40.3,52.2)	26.0(21.8,30.7)	6.0(4.1,8.6)
55 - 64	17.8(13.1,23.7)	35.0(30.6,39.8)	30.1(25.4,35.4)	17.0(13.6,21.1)
15 - 64	34.3(30.9,37.9)	48.1(44.7,51.5)	14.0(12.3,15.9)	3.6(2.8,4.6)
Tamil Nadu				
15 - 19	48.5(41.4,55.7)	47.7(41.1,54.4)	3.7(1.7,8.0)	0.0
20 - 24	49.6(42.5,56.6)	44.0(36.4,51.8)	6.2(3.5,10.8)	0.3(0.0,2.0)
25 - 34	44.2(39.7,48.8)	44.1(40.3,47.9)	10.3(7.5,13.8)	1.5(0.6,3.4)
35 - 44	38.2(33.2,43.6)	42.7(38.2,47.3)	15.4(12.2,19.2)	3.7(2.4,5.7)
45 - 54	28.4(23.9,33.3)	44.6(39.6,49.8)	19.5(15.3,24.4)	7.5(5.4,10.4)
55 - 64	23.1(19.3,27.3)	40.2(35.7,44.8)	22.0(17.9,26.7)	14.7(11.0,19.4)
15 - 64	39.8(37.1,42.6)	43.9(41.5,46.4)	12.4(10.6,14.5)	3.8(3.0,4.9)
Uttarakhand				
15 - 19	41.9(36.0,48.0)	52.0(46.4,57.5)	5.8(3.8,8.8)	0.4(0.1,2.8)
20 - 24	36.2(30.1,42.7)	49.7(42.6,56.8)	11.0(7.9,15.1)	3.2(1.3,7.5)
25 - 34	35.8(32.1,39.7)	53.5(49.2,57.9)	8.2(6.2,10.8)	2.5(1.4,4.3)
35 - 44	31.8(26.8,37.2)	50.2(44.9,55.5)	14.5(11.2,18.5)	3.5(2.2,5.6)
45 - 54	25.4(21.2,30.1)	44.9(40.2,49.7)	21.5(16.9,27.0)	8.2(5.5,12.0)
55 - 64	20.2(15.8,25.6)	39.5(35.2,43.9)	24.8(19.8,30.6)	15.5(11.8,19.9)
15 - 64	33.3(30.7,35.9)	49.4(46.9,52.0)	12.8(11.5,14.4)	4.5(3.6,5.6)

Table 4.1.4c Percentage of respondents according to category of hypertension by age and place of residence (Combined), phase-I states of India, 2007-08

State/ Age group	Category of hypertension			
	Normal	Pre-hypertension	Stage -I hypertension	Stage -II hypertension
Andhra Pradesh				
15 - 19	55.4(49.0,61.6)	40.6(34.7,46.8)	4.0(1.9,8.1)	0.0()
20 - 24	52.3(46.4,58.2)	41.5(36.5,46.7)	5.8(3.6,9.3)	0.3(0.0,2.2)
25 - 34	42.3(38.6,46.2)	46.1(42.7,49.5)	10.0(8.1,12.3)	1.6(1.0,2.7)
35 - 44	33.5(28.6,38.9)	46.8(42.0,51.7)	16.1(13.1,19.6)	3.6(2.4,5.4)
45 - 54	24.4(21.3,27.9)	40.1(36.5,43.7)	23.3(20.8,26.1)	12.2(9.9,14.8)
55 - 64	22.9(18.4,28.1)	38.0(33.3,42.9)	25.2(22.2,28.4)	13.9(11.3,16.9)
15 - 64	40.2(37.4,42.9)	43.3(41.1,45.4)	12.7(11.5,13.9)	3.9(3.3,4.6)
Madhya Pradesh				
15 - 19	40.8(35.9,45.9)	48.8(44.2,53.5)	8.6(6.4,11.5)	1.7(0.7,4.1)
20 - 24	38.6(34.1,43.2)	47.8(43.0,52.7)	11.4(9.2,14.1)	2.2(1.2,4.1)
25 - 34	35.8(32.5,39.2)	46.2(43.1,49.4)	14.6(12.1,17.3)	3.4(2.6,4.5)
35 - 44	29.2(25.8,32.8)	47.1(43.5,50.8)	19.0(16.3,21.9)	4.7(3.3,6.6)
45 - 54	23.3(19.3,27.9)	45.8(41.6,50.0)	22.3(18.9,26.2)	8.6(6.3,11.6)
55 - 64	18.1(14.8,21.9)	36.9(33.2,40.7)	27.9(24.4,31.7)	17.1(15.1,19.3)
15 - 64	32.6(30.6,34.8)	46.2(44.3,48.2)	16.1(14.5,17.8)	5.0(4.2,6.0)
Maharashtra				
15 - 19	51.1(44.8,57.5)	41.4(35.7,47.3)	6.8(4.8,9.5)	0.7(0.2,2.0)
20 - 24	39.1(34.1,44.3)	49.0(44.3,53.8)	11.0(8.2,14.6)	0.9(0.4,2.1)
25 - 34	35.3(31.5,39.2)	49.1(45.6,52.7)	13.6(11.3,16.3)	2.0(1.3,3.0)
35 - 44	24.7(21.2,28.7)	49.5(45.8,53.3)	22.6(19.6,25.9)	3.1(2.3,4.2)
45 - 54	20.0(16.4,24.2)	48.7(44.6,52.9)	24.9(21.6,28.4)	6.4(5.0,8.3)
55 - 64	15.4(12.4,19.0)	41.9(38.5,45.5)	30.7(27.2,34.4)	12.0(10.4,13.9)
15 - 64	32.5(29.5,35.7)	47.4(44.8,50.0)	16.9(15.3,18.6)	3.2(2.8,3.8)
Mizoram				
15 - 19	22.8(17.8,28.8)	59.0(52.2,65.5)	14.5(10.5,19.7)	3.6(1.6,7.9)
20 - 24	20.3(16.3,25.0)	65.7(59.5,71.4)	10.7(7.3,15.5)	3.2(1.7,6.1)
25 - 34	20.5(15.9,26.0)	61.7(55.8,67.3)	14.6(12.2,17.2)	3.3(1.7,6.3)
35 - 44	23.9(18.8,29.8)	54.0(47.7,60.2)	16.7(13.9,20.0)	5.4(2.9,9.6)

State/ Age group	Category of hypertension			
	Normal	Pre-hypertension	Stage -I hypertension	Stage -II hypertension
45 - 54	22.5(18.2,27.4)	53.9(47.7,60.1)	17.4(14.2,21.1)	6.2(3.6,10.5)
55 - 64	26.9(19.3,36.2)	43.1(35.6,50.9)	19.1(15.0,24.0)	10.9(6.7,17.2)
15 - 64	22.1(18.6,26.2)	58.5(53.8,63.0)	14.8(12.9,17.1)	4.6(2.7,7.6)
Kerala				
15 - 19	50.9(44.3,57.4)	45.5(39.1,52.1)	3.0(1.4,6.4)	0.7(0.2,2.6)
20 - 24	48.4(42.7,54.3)	43.7(37.9,49.6)	7.2(4.9,10.5)	0.6(0.2,2.6)
25 - 34	36.1(32.7,39.6)	51.2(47.4,55.0)	10.6(8.4,13.4)	2.1(1.2,3.7)
35 - 44	24.7(20.5,29.4)	54.3(50.0,58.5)	17.2(14.7,20.1)	3.8(2.4,5.8)
45 - 54	21.0(17.4,25.2)	46.7(42.1,51.3)	24.8(21.5,28.3)	7.5(5.9,9.5)
55 - 64	15.9(12.2,20.3)	37.7(34.0,41.5)	30.0(26.3,33.9)	16.5(13.8,19.6)
15 - 64	33.8(31.2,36.6)	48.1(45.4,50.9)	14.0(12.7,15.5)	4.0(3.3,4.8)
Tamil Nadu				
15 - 19	48.1(43.2,53.0)	48.3(43.7,53.0)	3.3(1.8,6.1)	0.3(0.0,2.0)
20 - 24	48.1(43.4,52.8)	43.6(38.7,48.7)	8.0(5.6,11.2)	0.3(0.1,1.3)
25 - 34	42.3(39.1,45.5)	44.3(41.5,47.1)	12.0(10.1,14.4)	1.4(0.8,2.4)
35 - 44	34.5(31.0,38.2)	44.7(41.6,47.9)	17.0(14.7,19.5)	3.8(2.8,5.1)
45 - 54	25.5(22.6,28.7)	43.8(40.3,47.3)	20.4(17.2,23.9)	10.3(8.5,12.6)
55 - 64	20.7(17.9,23.9)	39.7(36.2,43.2)	23.3(20.2,26.8)	16.3(13.4,19.6)
15 - 64	37.9(36.1,39.9)	44.3(42.6,46.0)	13.5(12.2,15.0)	4.2(3.7,4.9)
Uttarakhand				
15 - 19	41.4(36.9,46.2)	51.6(47.3,55.9)	6.4(4.7,8.7)	0.5(0.1,1.8)
20 - 24	36.8(31.9,41.9)	50.0(44.6,55.3)	10.0(7.6,13.1)	3.2(1.7,6.1)
25 - 34	35.3(32.3,38.3)	52.2(48.8,55.5)	9.8(8.1,11.8)	2.7(1.8,4.1)
35 - 44	29.2(25.4,33.2)	49.4(45.4,53.4)	16.6(13.9,19.6)	4.9(3.7,6.5)
45 - 54	23.2(19.9,26.7)	43.6(39.9,47.4)	23.9(20.3,28.0)	9.3(7.1,12.1)
55 - 64	18.7(15.0,23.1)	38.7(35.1,42.4)	25.9(21.6,30.6)	16.7(13.6,20.4)
15 - 64	32.4(30.3,34.5)	48.8(46.8,50.8)	13.9(12.7,15.1)	4.9(4.2,5.8)

respondents in the stage-I or II of hypertension was recorded between 17% in Andhra Pradesh and 21% in Madhya Pradesh (Table 4.1.4c).

Among the urban households, respondents in the normal category ranged from a low 19% in Mizoram to a high 38% in Andhra Pradesh. The percentage of pre hypertension ranged from a low 45% to a high 50% in all the states except in Mizoram where it was as high as 62%. The respondents in the stage I and II hypertension was recorded between 16% in Andhra Pradesh to 24% in Madhya Pradesh (Table 4.1.4a).

Among the rural households, respondents in the normal category ranged from a low 26% in Mizoram to a high 41% in Andhra Pradesh. The percentage of pre hypertension ranged from a low 42% in Andhra Pradesh to a high 55% in Mizoram. The respondents in the stage I and II hypertension was recorded between 16% in Tamil Nadu to 22% in Maharashtra (Table 4.1.4b).

4.2 SOCIO-DEMOGRAPHIC PATTERN OF HYPERTENSION

Hypertension is a major NCD risk factors especially related to cardiovascular disease. The socio-

demographic patterns of respondents in the category of hypertension (stage I & II) are presented in Table 4.2. Overall, prevalence and pattern of hypertension among all respondents (combined) was recorded as increasing with age groups (5% in 15-24 to 39% in 55-64 of Andhra Pradesh; 12% in 15-24 to 45% in 55-64 of Madhya Pradesh; 10% in 15-24 to 43% in 55-64 age group of Maharashtra; 16% in 15-24 to 30% in 55-64 of Mizoram; 6% in 15-24 to 47% in 55-64 of Kerala; 6% in 15-24 to 40% in 55-64 of Tamil Nadu; and 10% in 15-24 to 43% in 55-64 of Uttarakhand). Prevalence of hypertension in the younger age group (15-24) was low comparing with other age groups. By education, prevalence of hypertension was varying with lower to higher levels of education (19% of illiterate, 13% of higher secondary and 14% of college & higher level in Andhra Pradesh; 23% of illiterate, 17% of middle and secondary, and 28% of college & higher level in Madhya Pradesh; 28% of illiterate, 16% of higher secondary and 17% of college & higher level in Maharashtra; 21% of illiterate, 15% of middle, 26% of higher secondary and college level in Mizoram; 28% of illiterate, 32% of primary, 12% of higher secondary, and 14% of college & higher level in Kerala; 21% of illiterate, 23% of primary, 14% of higher

Table 4.2 Percentage of respondents in the category of stage I & II hypertension by age, education, occupation, and place of residence, phase-I states of India, 2007- 08

Characteristic	Stage I & II hypertensive (%)																																																																																																																																																	
	Andhra Pradesh			Madhya Pradesh			Maharashtra			Mizoram			Kerala			Tamil Nadu			Uttarakhand																																																																																																																															
	U	R	C	U	R	C	U	R	C	U	R	C	U	R	C	U	R	C	U	R	C																																																																																																																													
Age group	3.3	6.0	5.2	13.8	11.2	12.0	6.6	12.4	9.8	14.3	17.7	15.9	6.4	5.5	5.7	7.4	5.3	6.3	10.0	9.9	9.9	12.9	11.0	11.6	18.8	17.6	18.0	13.8	17.2	15.6	17.2	18.5	17.9	13.6	12.4	12.7	15.3	11.7	13.4	17.1	10.7	12.5																																																																																																								
15-24	24.0	18.0	19.7	27.2	22.2	23.7	27.2	24.5	25.7	25.0	19.0	22.1	23.9	19.9	21.0	22.9	19.1	20.8	29.7	18.1	21.5	37.2	34.9	35.5	41.9	26.9	30.9	31.3	25.0	22.3	23.6	33.1	32.0	32.3	35.7	27.0	30.7	43.5	29.7	33.2	40.4	38.8	39.1	52.8	42.9	45.0	43.8	42.1	42.7	29.7	30.2	30.0	44.5	47.2	46.5	52.0	40.3	42.6	16.2	16.7	16.6	23.8	20.1	21.1	18.1	21.8	20.1	19.2	19.6	19.4	19.2	17.6	18.0	19.6	16.3	17.8	22.8	17.3	18.8																																																																			
25-34	21.8	18.2	18.8	23.9	22.9	23.0	27.4	28.1	27.9	34.5	18.6	21.3	35.9	26.1	28.0	23.4	19.6	20.7	21.7	18.3	18.8	18.1	16.8	17.1	23.0	18.1	19.3	25.7	23.2	24.0	18.9	17.2	17.8	26.4	34.3	32.4	24.2	22.0	22.9	26.6	16.3	18.4	17.6	16.1	16.5	20.6	15.8	17.1	18.8	22.2	20.9	11.6	18.0	15.3	27.4	20.9	22.6	18.8	13.8	16.1	18.4	13.9	14.8	13.5	14.7	14.3	21.3	13.9	16.8	16.5	15.4	15.9	20.4	17.6	19.8	16.0	17.0	17.6	12.1	14.8	19.7	16.0	17.0	10.8	14.6	12.9	23.9	21.6	22.8	13.7	20.1	16.4	22.8	36.0	25.6	10.8	12.8	12.3	17.4	10.3	14.1	22.3	19.9	20.8	14.8	13.4	14.2	28.1	26.0	27.7	16.6	17.9	17.0	27.0	20.6	25.7	15.2	13.4	14.0	17.9	15.5	17.1	26.8	22.2	24.8	16.2	16.7	16.6	23.8	20.1	21.1	18.1	21.8	20.1	19.2	19.6	19.4	19.2	17.6	18.0	19.6	16.3	17.8	22.8	17.3	18.8
55-64	20.4	26.4	23.1	30.3	27.2	28.5	19.4	30.5	22.4	29.2	22.4	27.0	21.1	28.0	25.7	27.6	18.6	25.2	29.9	28.3	29.2	18.7	18.5	18.5	25.4	20.2	20.8	22.7	25.1	25.0	30.1	19.4	21.8	22.5	17.9	18.9	22.2	16.7	18.0	20.6	13.1	14.7	14.1	20.2	15.8	17.6	17.3	17.9	17.7	12.6	13.8	13.3	18.8	16.1	16.8	16.1	16.8	16.1	16.8	14.9	13.0	14.5	17.7	13.3	15.3	33.1	30.3	32.4	20.8	20.4	20.7	22.2	24.8	23.0	23.4	19.6	21.0	36.9	22.6	28.5	34.4	28.8	31.8	19.9	14.4	15.9	24.5	20.7	21.4	22.9	27.6	25.5	16.2	23.7	18.5	26.3	19.9	21.4	20.5	17.6	19.2	22.6	21.1	21.5	11.5	15.0	13.7	19.3	18.7	19.0	11.6	14.0	12.7	17.4	21.6	19.1	14.3	14.3	14.3	15.4	14.4	14.9	17.0	14.9	15.6	16.2	16.7	16.6	23.8	20.1	21.1	18.1	21.8	20.1	19.2	19.6	19.4	19.2	17.6	18.0	19.6	16.3	17.8	22.8	17.3	18.8
Total	2458	2750	5727	2811	2847	5658	2713	3043	5756	2075	2259	4334	2225	2144	4369	2339	2487	4826	2521	2695	5216	2458	2750	5727	2811	2847	5658	2713	3043	5756	2075	2259	4334	2225	2144	4369	2339	2487	4826	2521	2695	5216																																																																																																								

U: Urban; R: Rural; C: Combined.

secondary and 17% of college & higher level in Tamil Nadu; and 19% of illiterate, 15% of middle, and 25% of college & higher level in Uttarakhand). Overall pattern of prevalence of hypertension was decreasing with increasing levels of education in most of the states. However, the prevalence was high in some of the occupational categories (executive (23%) and agriculture (19%) in Andhra Pradesh; service (32%), and executive (29%) in Madhya Pradesh; manual worker (26%) and agriculture (25%) in Maharashtra; executive (27%) and service (23%) in Mizoram; executive (26%), service and manual worker (21%) in Kerala; service (29%) and executive (25%) in Tamil Nadu; service (32%) and

executive (29%) in Uttarakhand). Low prevalence of hypertension was recorded among the occupation category of domestic work in all the seven states (varying from 13% to 18%). Urban-rural difference in the prevalence was marginal and pattern of prevalence by age, education and occupation was similar in both rural and urban population (Table 4.2).

4.3 DIABETES

Diabetes mellitus is an important marker of risk for the arterial disease of the coronary, cerebral and peripheral arterial trees, and for micro vascular disease leading to blindness and renal failure. In the survey, the

Table 4.3a Percentage of respondents with history of raised blood sugar, treatment and life style modification advised, seeking consultation and treatment from an AYUSH practitioner by sex and place of residence (Urban), phase-I states of India, 2007-08

Characteristics	Andhra Pradesh	Madhya Pradesh	Maharashtra	Mizoram	Kerala	Tamil Nadu	Uttarakhand
Raised blood sugar diagnosed							
Male	4.8	1.7	1.1	0.8	7.1	5.1	2.2
Female	3.0	1.7	1.0	0.7	5.8	3.9	2.5
Total	3.9	1.7	1.1	0.7	6.4	4.5	2.3
Diagnosed Diabetics							
Currently taking insulin							
Male	16.5	13.1	49.2	33.6	10.6	15.8	27.6
Female	17.3	26.3	28.7	16.3	14.4	13.0	26.5
Total	16.8	19.2	40.5	28.3	12.3	14.6	27.0
Currently taking oral drugs							
Male	87.8	81.6	84.0	68.1	61.4	91.3	63.3
Female	84.0	77.5	75.7	52.4	79.4	80.0	72.6
Total	86.4	79.7	80.5	61.9	69.8	86.4	67.9
Advised dietary modifications							
Male	86.5	92.8	53.6	47.2	71.0	77.0	80.5
Female	86.1	85.1	51.7	46.8	82.7	83.4	90.0
Total	86.3	89.2	52.8	47.0	76.5	79.7	85.2
Advised to lose weight							
Male	49.5	49.2	45.3	66.7	21.1	41.3	42.9
Female	50.0	47.5	27.9	7.9	34.2	38.2	43.5
Total	49.7	48.4	37.9	41.3	27.2	39.9	43.2
Advised to increase physical activity							
Male	63.5	71.3	49.5	40.1	46.6	65.8	60.8
Female	64.5	67.1	41.5	53.3	45.6	56.4	55.5
Total	63.8	69.3	46.1	45.9	46.1	61.8	58.2
Consulted AYUSH practitioner							
Male	4.7	18.1	36.8	*	17.7	0.8	20.2
Female	7.1	18.1	20.8	*	7.9	3.2	25.6
Total	5.6	18.1	30.0	*	13.1	1.8	22.8
Taking treatment from AYUSH practitioner							
Male	100.0	60.0	92.7	*	50.8	100.0	91.5
Female	56.0	63.0	100.0	*	79.1	68.0	77.3
Total	79.0	61.0	94.8	*	58.7	75.6	83.5

* figure not shown, based on fewer than 10 unweighted cases

history pertaining to diabetes was elicited from the respondents.

Table 4.3a-c presents history of raised blood sugar, treatment and life style modification advised, seeking consultation and treatment from an AYUSH practitioner. Over 1% of the respondents in the states of Madhya Pradesh, Mizoram, Uttarakhand and Maharashtra had reported raised blood sugar whereas it was 6% in Kerala, 3% in Tamil Nadu and 2.2% in Andhra Pradesh respectively. Amongst those who diagnosed diabetes, currently taking insulin was ranged from 12% in Tamil Nadu to 46% in Maharashtra. More than 66% were on oral drugs with

not much of sex and residence difference. More than 50% of respondents in most of the states had received advice for dietary modifications, lose weight and increase physical activity.

Only 3% of deagnosed cases consulted AYUSH practitioner in Tamil Nadu of which 58% were taking treatment from the system. The consultation from AYUSH system in other states ranged from 8% to 31% and more than 65% of them were taking treatment from same system. The highest compliance of seeking treatment from AYUSH system was recorded in Maharashtra (93%) (Table 4.3c).

Among the urban respondents, around 1% of the

Table 4.3b Percentage of respondents with history of raised blood sugar, treatment and life style modification advised, seeking consultation and treatment from an AYUSH practitioner by sex and place of residence (Rural), phase-I states of India, 2007-08

Characteristics	Andhra Pradesh	Madhya Pradesh	Maharashtra	Mizoram	Kerala	Tamil Nadu	Uttarakhand
Raised blood sugar diagnosed							
Male	1.8	0.1	0.8	0.6	6.4	2.0	0.8
Female	1.2	0.2	0.9	0.2	5.7	1.5	0.7
Total	1.5	0.2	0.9	0.4	5.9	1.8	0.7
Diagnosed Diabetics							
Currently taking insulin							
Male	17.1	22.9	64.0	39.0	14.2	11.2	32.1
Female	13.2	0.0	41.5	0.0	14.3	3.8	36.4
Total	15.6	9.6	51.9	28.5	14.2	7.9	36.7
Currently taking oral drugs							
Male	86.1	100.0	58.9	69.1	58.2	83.7	100.0
Female	84.1	41.0	76.5	45.3	80.9	94.2	83.8
Total	85.4	65.7	68.4	62.7	68.7	88.3	92.1
Advised dietary modifications							
Male	82.3	0.0	82.4	34.7	87.6	87.6	91.6
Female	74.1	0.0	84.0	0.0	84.0	87.1	83.3
Total	79.1	0.0	83.3	25.4	85.9	87.4	87.6
Advised to lose weight							
Male	33.5	0.0	74.4	17.7	37.5	50.8	50.5
Female	30.0	83.1	73.6	45.3	34.3	38.5	48.0
Total	32.4	48.3	74.0	25.1	36.1	45.4	49.3
Advised to increase physical activity							
Male	57.5	78.4	74.5	52.6	56.9	65.6	71.5
Female	46.3	65.3	73.6	0.0	41.0	49.4	55.9
Total	53.1	70.8	74.0	38.5	49.5	58.5	64.9
Consulted AYUSH practitioner							
Male	13.3	55.5	26.1	*	13.3	8.2	39.3
Female	4.1	*	37.2	*	15.8	*	40.4
Total	9.7	53.3	32.1	*	14.4	4.6	39.8
Taking treatment from AYUSH practitioner							
Male	59.2	100.0	88.3	*	82.0	43.5	78.7
Female	100.0	*	92.0	*	57.3	*	80.4
Total	66.0	100.0	90.7	*	69.5	43.5	79.5

* figure not shown, based on fewer than 10 unweighted cases

respondents in the states, Mizoram and Maharashtra had reported raised blood sugar whereas it was 6% in Kerala and 5% in Tamil Nadu, 4% in Andhra Pradesh, and 2% in Uttarakhand and Madhya Pradesh respectively. Amongst those who diagnosed diabetes, were currently taking insulin ranged from 12% in Kerala to 41% in Maharashtra. More than 62% were on oral drugs with not much of sex difference. More than 50% in most of the states had received advice for dietary modifications, lose weight and increase physical activity. Only 2% consulted AYUSH practitioner in Tamil Nadu of which 76% were taking treatment from the system. The consultation from AYUSH system in other states ranged

from 6% to 30% and more than 60% were taking treatment from same system. The highest compliance of seeking treatment from AYUSH system was recorded in Maharashtra (95%) (Table 4.3a).

Among the rural respondents, less than 2% of the respondents in all the states except Kerala had reported raised blood sugar. Amongst those who diagnosed diabetes, were currently taking insulin ranged from 8% in Tamil Nadu to 52% in Maharashtra. More than 62% were on oral drugs with lesser proportion among females in some states. More than 25% of respondents in most of the states had received advice for dietary modifications, lose weight

Table 4.3c Percentage of respondents with history of raised blood sugar, treatment and life style modification advised, seeking consultation and treatment from an AYUSH practitioner by sex and place of residence (Combined), phase-I states of India, 2007-08

Characteristics	Andhra Pradesh	Madhya Pradesh	Maharashtra	Mizoram	Kerala	Tamil Nadu	Uttarakhand
Raised blood sugar diagnosed							
Male	2.7	0.6	0.9	0.7	6.5	3.4	1.2
Female	1.7	0.6	1.0	0.5	5.3	2.6	1.1
Total	2.2	0.6	1.0	0.6	5.9	3.0	1.2
Diagnosed Diabetics							
Currently taking insulin							
Male	16.8	14.7	55.6	35.1	13.1	14.3	29.6
Female	15.2	20.0	35.7	12.3	14.3	9.9	33.2
Total	16.2	17.3	46.0	28.4	13.7	12.4	31.4
Currently taking oral drugs							
Male	87.0	84.6	73.1	68.5	59.1	88.8	79.8
Female	84.0	68.9	76.2	50.7	80.1	84.4	77.6
Total	85.9	76.9	74.6	66.2	69.0	87.0	78.7
Advised dietary modifications							
Male	84.4	94.0	66.1	42.2	82.8	80.4	85.5
Female	80.0	88.6	69.4	35.5	83.6	84.6	87.0
Total	82.7	91.4	67.7	39.7	83.2	82.2	86.2
Advised to lose weight							
Male	41.7	41.2	57.9	47.2	32.8	44.3	46.3
Female	40.2	55.9	52.9	16.9	34.2	38.3	45.5
Total	41.1	48.4	55.5	35.8	33.5	41.7	45.9
Advised to increase physical activity							
Male	60.5	72.5	60.3	45.1	54.0	65.8	65.7
Female	55.3	66.7	59.1	40.6	42.3	54.1	55.7
Total	58.5	69.6	59.7	43.4	48.6	60.7	60.8
Consulted AYUSH practitioner							
Male	8.9	24.3	32.2	*	14.6	3.2	28.6
Female	5.6	13.8	29.8	*	13.5	2.2	32.2
Total	7.6	19.1	31.0	*	14.1	2.7	30.3
Taking treatment from AYUSH practitioner							
Male	70.3	75.0	91.9	*	71.0	52.6	83.8
Female	72.3	63.0	94.6	*	61.0	68.0	79.0
Total	70.9	70.7	92.7	*	66.6	57.9	81.3

* figure not shown, based on fewer than 10 unweighted cases

and increase physical activity. Only 5% consulted AYUSH practitioner in Tamil Nadu of which 44% were taking treatment from the system. The consultation from AYUSH system in other states ranged from 10% to 53% and more than 66% were taking treatment from same system. The highest compliance of seeking treatment from AYUSH system was recorded in Maharashtra (91%) (Table 4.3b).

This chapter presented the prevalence of hypertension and diabetes in the study population and also the history of raised BP and sugar level.

Only 2 to 9% of the surveyed population had the history of raised blood pressure level. Nineteen to 24% of the respondents were recorded in the hypertension stage I and II. One to 6% of the respondents had history of raised blood sugar levels.



CHAPTER 5

Physical Measurements

This chapter describes various physical measurements such as height, weight, waist circumference and body mass index (BMI), which are key indicators for surveillance of non-communicable diseases. Weight of an individual is directly related to the Body Mass Index (BMI), waist circumference, blood pressure and probability of developing diabetes mellitus-2.

5.1 WEIGHT

Having weight more than the ideal weight for age and height is a risk factor for development of colorectal cancer, uterine cancer, coronary artery disease and it would also exacerbate the symptoms of osteoarthritis. The weight is a continuous variable, reflecting the body mass of an individual in light clothing; it is used for calculating BMI.

5.2 HEIGHT

Height is another key variable required for calculation of body mass index (BMI). Height is a continuous variable measured with the individual standing on a firm leveled surface, without wearing any foot wear, and stand with feet together, with heels, calves, buttocks, dorsal spine and head in same plane.

5.3 BODY MASS INDEX (BMI)

BMI is a valid indicator for finding out whether the body weight of an individual is appropriate for the height of the individual. It is calculated from height and weight measurements as body weight per meter². Worldwide researches have shown that there is a strong association between BMI and health risk. The excess of adipose

tissue in the adults is associated with excess morbidity and mortality from a large number of health conditions like diabetes, hypertension, hypercholesterolemia, carcinomas of colon and breast, gall bladder stones and osteoarthritis. On the other hand low BMI is an indicator of risk to health, often being associated with tobacco, alcohol use and drug addiction (Table 5.1).

5.4 WAIST CIRCUMFERENCE

The waist circumference is one of the sensitive indicators for abdominal obesity. Abdominal obesity has got a stronger association with coronary heart diseases as compared to BMI. The waist measurement is taken at the level of mid point between the inferior margin of the rib and crest of ileum in the mid axillary plane, using a non-stretchable measuring tape, without clothing. A cut-off level of 102 cm in males and 88 cm in females have been recommended for developed countries (ATP3 Guidelines), however lower cut-off levels are appropriate for Indians- 90 cm in males and 80 cm in females (The Asia Pacific Guidelines)⁸.

Table 5.2 presents the BMI, mean height, weight and waist circumference by sex and the place of residence. The mean BMI in all the states ranged between 20 to 23 kg/m² with marginally lower in rural population. The average height of males ranged between 163 to 166 cm where as it was 152 to 156 cm in females with not much residential differences. The average weight of males ranged between 53 kg in Madhya Pradesh and 61 kg in Kerala whereas for females, it was between 46 kg in Madhya Pradesh to 55 kg in Kerala. The averages were slightly higher in urban population in all the surveyed

Table: 5.1 Categories of BMI

Body Mass Index (BMI)	Category of Relative Weight
<18.5	Under Weight
18.5- 24.9	Normal Weight
25.0- 29.9	Grade-1 Over Weight
30-39.9	Grade-2 Over Weight
≥ 40	Grade-3 Over Weight

Source: WHO Step-wise approach to NCD surveillance

Table 5.2 Mean value for body mass index (BMI), height, weight and waist circumference by sex and place of residence, phase-I states of India, 2007-08

State/Residence	BMI (kg/m ²)			Height (cm)			Weight (kg)			Waist circumference (cm)			
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	
Andhra Pradesh	Urban	22.9	23.2	23.1	164.7	152.2	158.6	62.0	53.3	57.8	81.0	73.6	77.2
	Rural	21.3	21.1	21.2	163.1	151.4	157.2	56.2	48.2	52.2	76.1	71.0	73.1
	Combined	21.8	21.7	21.7	163.5	151.6	157.6	57.9	49.7	54.0	77.4	71.0	74.2
Madhya Pradesh	Urban	21.7	22.4	22.0	165.4	151.9	159.1	58.8	50.6	55.0	78.3	71.0	74.9
	Rural	19.2	19.4	19.4	163.5	151.4	157.7	51.1	44.7	48.0	72.4	65.4	69.1
	Combined	19.9	20.3	20.1	164.0	151.5	158.1	53.3	46.4	50.0	74.1	67.0	70.7
Maharashtra	Urban	22.0	21.7	21.9	164.4	153.3	159.3	59.1	50.9	55.4	78.0	72.8	75.6
	Rural	21.0	20.7	20.9	162.6	152.0	157.3	55.3	47.2	51.3	73.6	67.7	70.7
	Combined	21.5	21.2	21.3	163.4	152.5	158.2	57.1	48.8	53.2	75.6	69.9	72.9
Mizoram	Urban	22.0	21.1	21.5	166.1	156.6	161.5	61.0	52.9	57.1	79.4	72.2	76.0
	Rural	21.8	20.3	21.1	162.2	154.3	158.5	57.4	49.5	53.7	75.9	66.7	71.5
	Combined	21.9	20.7	21.3	164.2	155.5	160.1	59.3	51.3	55.5	77.7	69.6	73.8
Kerala	Urban	22.6	23.6	23.1	166.7	153.2	159.7	62.9	55.5	59.1	82.5	81.3	81.9
	Rural	22.1	23.2	22.7	166.3	152.7	159.3	60.8	54.1	57.3	81.6	81.0	81.3
	Combined	22.2	23.3	22.7	166.4	152.8	159.4	61.4	54.5	57.8	81.9	81.1	81.5
Tamil Nadu	Urban	22.4	23.5	23.0	165.0	152.0	158.3	61.0	54.3	57.6	81.0	75.5	78.2
	Rural	20.5	21.4	21.0	163.4	151.3	157.0	55.0	49.0	52.0	76.0	70.5	73.3
	Combined	21.4	22.4	22.0	164.1	151.5	158.0	57.7	51.4	54.5	78.3	73.0	75.5
Uttarakhand	Urban	22.5	23.4	22.9	164.9	152.6	159.3	60.8	55.0	58.1	82.7	77.1	80.2
	Rural	20.5	20.7	20.6	163.2	151.4	157.1	53.9	47.3	50.6	77.0	67.7	72.3
	Combined	21.1	21.4	21.3	163.7	151.7	157.8	56.1	49.3	52.7	78.8	70.1	74.4

states. The mean waist circumference of males ranged between 74 cm in Madhya Pradesh to 82 cm in Kerala. For females, it was ranged from 67 cm in Madhya Pradesh to 81 cm in Kerala. The respondents in urban area had higher mean waist circumference as compared to rural population (Table 5.2).

There was a marked variation among states with respect to category of BMI. The respondents in under weight category were 14% to 15% in Kerala and Mizoram, and 39% in Madhya Pradesh. In other four states, respondents in the underweight category ranged from 23 to 28%. The grade I overweight were only 7% in Madhya Pradesh closely followed by 9% in Mizoram, 11% in Uttarakhand and Maharashtra where as it was 15% in Andhra Pradesh, 18% in Tamil Nadu and 22% in Kerala. The obesity of grade 2 and above was around 5% in

Tamil Nadu and Kerala, 4% in Andhra Pradesh and it was around 2% in rest of the states (Table 5.3c).

Among the urban respondents, in under weight category were less than 19% in all states except Madhya Pradesh (27%). The grade I overweight were only 10% in Mizoram closely followed by 15% in Maharashtra and Madhya Pradesh, in rest of the states it ranged from 20 to 26%. The obesity of grade 2 and above was less than 10% in all the states (Table 5.3a).

Among the rural respondents, in under weight category were 16% in Kerala and Mizoram, in rest of the states it ranged from 27 to 44%. The grade I overweight were only 3% in Madhya Pradesh closely followed by 7 to 12% in Maharashtra, Mizoram, Uttarakhand and Tamil Nadu, but it was 21% in Kerala. The obesity of grade 2 and above was less than 4% in all the states (Table 5.3b).

Table 5.3a Percentage of respondents according to BMI categories by age and place of residence (Urban), phase-I states of India, 2007- 08

State/ Age group	Category of BMI				
	Under weight (<18.5)	Normal weight (18.5-24.9)	Grade-1 Over weight (25.0 - 29.9)	Grade- 2 Over weight (30.0 - 39.9)	Grade-3 Over weight (\geq 40.0)
Andhra Pradesh					
15 - 19	40.7(33.0,48.8)	53.8(45.5,61.9)	4.0(2.0,7.9)	1.4(0.5,4.4)	0.0
20 - 24	27.2(22.3,32.6)	60.9(55.0,66.5)	11.0(8.0,14.9)	1.0(0.3,3.2)	0.0
25 - 34	12.2(9.6,15.3)	55.1(51.2,59.0)	25.9(22.8,29.3)	6.4(4.7,8.8)	0.4(0.1,1.3)
35 - 44	8.4(6.0,11.5)	45.8(41.1,50.6)	32.9(28.5,37.7)	12.4(9.7,15.6)	0.5(0.2,1.6)
45 - 54	9.2(6.3,13.3)	45.1(40.0,50.3)	31.3(25.5,37.9)	13.8(10.5,17.9)	0.6(0.2,1.9)
55 - 64	8.6(6.1,12.1)	48.0(41.9,54.3)	27.1(22.3,32.6)	15.7(12.1,20.2)	0.5(0.1,1.9)
15 - 64	17.3(14.5,20.4)	52.2(49.6,54.8)	22.5(19.9,25.4)	7.7(6.2,9.4)	0.3(0.2,0.6)
Maharashtra					
15 - 19	45.9(38.9,53.0)	49.8(43.0,56.6)	3.3(1.8,6.2)	1.0(0.2,3.9)	0.0
20 - 24	25.4(19.8,31.8)	67.9(61.3,73.9)	5.8(3.5,9.4)	0.5(0.1,2.4)	0.3(0.1,2.1)
25 - 34	14.5(11.2,18.7)	71.3(66.2,75.9)	12.3(9.2,16.1)	1.7(0.8,3.9)	0.1(0.0,1.0)
35 - 44	8.6(5.9,12.3)	67.6(62.2,72.7)	20.5(16.0,25.9)	3.1(1.9,5.0)	0.2(0.0,1.1)
45 - 54	6.7(3.9,11.2)	60.5(54.0,66.6)	28.3(22.3,35.1)	4.6(2.7,7.6)	0.0
55 - 64	10.9(7.6,15.4)	58.7(52.3,64.8)	23.3(18.2,29.2)	6.9(4.7,10.0)	0.3(0.1,1.4)
15 - 64	18.4(15.4,21.8)	64.5(60.8,68.0)	14.5(11.8,17.7)	2.5(1.7,3.5)	0.1(0.0,0.5)
Madhya Pradesh					
15 - 19	53.5(47.8,59.1)	41.7(36.8,46.7)	4.1(2.2,7.6)	0.7(0.2,2.7)	0.0
20 - 24	31.3(26.0,37.0)	61.0(55.4,66.2)	6.1(4.0,9.2)	1.7(0.7,4.1)	0.0
25 - 34	27.4(22.6,32.8)	55.7(52.0,59.3)	14.2(10.8,18.4)	2.5(1.6,4.0)	0.2(0.0,1.4)
35 - 44	14.6(11.2,19.0)	54.4(49.6,59.2)	23.0(19.3,27.2)	7.6(5.5,10.4)	0.3(0.1,1.3)
45 - 54	15.9(11.8,21.2)	51.6(46.6,56.5)	24.5(19.2,30.7)	7.5(5.2,10.8)	0.4(0.1,1.8)
55 - 64	15.3(11.8,19.8)	49.6(44.9,54.2)	24.5(19.7,30.1)	10.6(8.0,13.9)	0.0
15 - 64	27.2(24.0,30.6)	53.0(50.6,55.3)	15.2(12.8,18.0)	4.4(3.5,5.6)	0.2(0.1,0.4)
Mizoram					
15 - 19	24.3(17.1,33.2)	69.8(62.6,76.1)	6.0(2.8,12.4)	0.0	0.0
20 - 24	10.6(5.5,19.5)	77.8(67.8,85.3)	10.1(6.1,16.2)	0.6(0.1,4.2)	0.9(0.3,2.8)
25 - 34	9.4(6.9,12.7)	81.4(78.1,84.4)	7.3(4.9,10.7)	1.6(0.8,3.1)	0.4(0.1,1.7)
35 - 44	10.2(7.8,13.4)	76.3(72.5,79.7)	11.3(7.8,16.0)	1.8(0.7,4.3)	0.4(0.1,1.4)
45 - 54	9.4(7.1,12.4)	77.1(71.7,81.8)	10.5(7.0,15.4)	2.5(1.0,6.5)	0.4(0.1,1.8)
55 - 64	15.2(8.0,26.9)	57.7(47.1,67.6)	22.1(13.1,34.9)	2.8(0.9,8.8)	2.2(0.7,6.5)
15 - 64	12.6(10.3,15.4)	75.8(72.5,78.9)	9.7(7.1,13.1)	1.3(0.7,2.5)	0.5(0.3,1.0)

State/ Age group	Category of BMI				
	Under weight (<18.5)	Normal weight (18.5-24.9)	Grade-1 Over weight (25.0 - 29.9)	Grade- 2 Over weight (30.0 - 39.9)	Grade-3 Over weight (≥40.0)
Kerala					
15 - 19	37.6(30.9,44.7)	53.6(47.4,59.7)	8.2(5.0,13.3)	0.6(0.1,4.1)	0.0
20 - 24	22.1(16.3,29.3)	65.5(57.6,72.6)	10.4(6.1,17.0)	2.0(0.6,6.0)	0.0
25 - 34	10.5(7.7,14.1)	54.5(49.3,59.6)	29.7(24.9,35.1)	5.2(3.7,7.4)	0.0
35 - 44	7.9(5.6,11.1)	52.2(46.5,57.9)	31.8(26.5,37.6)	8.1(6.0,10.7)	0.0
45 - 54	7.1(4.8,10.4)	50.5(45.5,55.5)	34.4(29.6,39.6)	7.8(5.5,11.0)	0.2(0.0,1.2)
55 - 64	8.1(5.9,11.0)	53.4(49.0,57.8)	32.0(27.5,36.9)	5.8(3.8,8.7)	0.7(0.3,1.9)
15 - 64	14.4(12.3,16.7)	54.5(51.4,57.5)	25.7(23.0,28.7)	5.3(4.3,6.5)	0.1(0.0,0.2)
Tamil Nadu					
15 - 19	51.5(43.8,59.2)	40.4(33.5,47.7)	6.9(4.0,11.7)	1.1(0.3,4.9)	0.0
20 - 24	22.4(17.2,28.6)	59.9(53.2,66.3)	14.8(10.3,20.9)	2.3(1.1,4.9)	0.5(0.1,3.9)
25 - 34	13.9(10.7,17.7)	51.6(46.8,56.4)	27.8(23.4,32.7)	6.7(4.9,9.0)	0.0
35 - 44	10.1(7.3,13.7)	50.6(45.9,55.2)	30.1(25.8,34.7)	9.3(6.8,12.5)	0.0
45 - 54	11.6(8.5,15.5)	45.3(39.7,51.1)	31.7(26.8,37.0)	10.9(7.7,15.2)	0.5(0.2,1.6)
55 - 64	9.8(7.5,12.8)	49.7(44.1,55.3)	31.4(26.7,36.5)	9.1(6.1,13.4)	0.0
15 - 64	18.3(15.6,21.3)	50.2(47.8,52.7)	24.6(22.1,27.3)	6.7(5.5,8.3)	0.2(0.1,0.5)
Uttarakhand					
15 - 19	45.6(39.4,51.9)	48.1(42.1,54.2)	3.8(2.2,6.3)	1.2(0.4,3.3)	1.3(0.4,4.1)
20 - 24	22.4(17.4,28.4)	68.8(61.8,75.0)	7.2(4.6,10.9)	0.8(0.3,2.7)	0.8(0.2,3.1)
25 - 34	13.6(10.8,17.1)	55.3(50.8,59.8)	25.3(21.5,29.6)	5.5(3.6,8.3)	0.3(0.0,1.9)
35 - 44	8.4(6.0,11.7)	54.3(49.5,59.0)	27.7(23.5,32.4)	9.4(7.2,12.1)	0.2(0.1,1.0)
45 - 54	10.0(6.6,15.0)	45.3(39.4,51.4)	32.3(27.0,38.1)	10.7(8.1,14.0)	1.7(0.7,4.0)
55 - 64	9.1(5.9,13.7)	47.2(40.9,53.6)	29.2(23.6,35.4)	13.5(9.7,18.6)	1.0(0.4,2.6)
5 - 64	18.6(16.3,21.0)	54.1(51.4,56.7)	20.5(18.3,22.8)	6.1(5.0,7.5)	0.8(0.5,1.3)

Table 5.3b Percentage of respondents according to BMI categories by age and place of residence (Rural), phase-I states of India, 2007-08

State/ Age group	Category of BMI				
	Under weight (<18.5)	Normal weight (18.5-24.9)	Grade-1 Over weight (25.0 - 29.9)	Grade- 2 Over weight (30.0 - 39.9)	Grade-3 Over weight (≥40.0)
Andhra Pradesh					
15 - 19	47.9(40.7,55.2)	49.7(42.6,56.8)	1.6(0.6,4.4)	0.9(0.1,6.0)	0.0
20 - 24	31.9(26.6,37.6)	61.4(55.4,67.0)	4.9(2.7,8.5)	1.2(0.4,3.7)	0.7(0.1,5.1)
25 - 34	23.2(18.9,28.0)	59.5(55.0,63.9)	14.4(11.3,18.1)	2.8(1.6,4.9)	0.1(0.0,0.8)
35 - 44	20.1(16.2,24.8)	58.2(53.3,63.0)	18.0(14.3,22.4)	3.6(2.1,6.4)	0.0
45 - 54	23.8(18.9,29.5)	56.8(51.3,62.1)	14.6(11.2,18.9)	4.1(2.3,7.1)	0.7(0.2,2.2)
55 - 64	28.0(23.1,33.5)	53.8(48.3,59.2)	15.2(11.8,19.4)	2.9(1.7,4.8)	0.1(0.0,1.0)
15 - 64	27.7(24.6,31.1)	57.8(54.3,60.2)	12.0(10.2,14.2)	2.7(1.9,3.7)	0.2(0.1,0.7)
Maharashtra					
15 - 19	44.9(37.6,52.5)	50.4(50.4)	3.4(1.6,6.7)	0.4(0.0,2.8)	1.0(0.2,3.9)
20 - 24	28.7(22.0,36.6)	66.3(57.5,74.1)	3.8(1.8,7.6)	0.0	1.2(0.4,3.6)
25 - 34	26.7(22.0,32.1)	64.4(59.4,69.2)	8.1(5.8,11.2)	0.6(0.2,1.5)	0.2(0.0,1.2)
35 - 44	20.1(15.8,25.3)	69.7(64.0,74.9)	8.3(5.8,11.7)	1.6(0.8,3.1)	0.3(0.1,1.3)
45 - 54	21.6(16.2,28.2)	62.8(55.6,69.4)	12.4(8.7,17.4)	2.5(1.2,5.2)	0.6(0.2,2.0)
55 - 64	20.2(15.8,25.5)	62.9(59.3,66.4)	13.6(10.2,18.0)	2.4(1.3,4.3)	0.8(0.4,1.9)
15 - 64	27.1(23.6,30.8)	63.3(59.7,66.7)	7.9(6.4,9.8)	1.1(0.7,1.7)	0.6(0.3,1.2)
Madhya Pradesh					
15 - 19	59.2(52.2,65.8)	40.5(34.1,47.3)	0.3(0.0,2.4)	0.0	0.0
20 - 24	46.2(39.4,53.1)	53.2(46.1,60.2)	0.6(0.1,2.5)	0.0	0.0
25 - 34	42.2(38.2,46.4)	55.5(51.3,59.6)	2.0(1.3,3.3)	0.2(0.0,1.2)	0.1(0.0,1.0)
35 - 44	36.9(32.8,41.3)	57.6(53.7,61.4)	4.7(3.1,7.1)	0.8(0.2,2.5)	0.0
45 - 54	35.8(29.6,42.6)	57.5(51.3,63.4)	5.9(3.9,8.9)	0.8(0.3,2.2)	0.0
55 - 64	42.1(36.5,47.9)	50.0(44.8,55.2)	6.3(4.2,9.4)	1.4(0.8,2.7)	0.2(0.0,1.1)
15 - 64	43.5(40.4,46.7)	53.0(49.9,56.0)	3.0(2.4,3.9)	0.4(0.2,0.8)	0.2(0.0,0.2)

State/ Age group	Category of BMI				
	Under weight (<18.5)	Normal weight (18.5-24.9)	Grade-1 Over weight (25.0 - 29.9)	Grade- 2 Over weight (30.0 - 39.9)	Grade-3 Over weight (≥40.0)
Mizoram					
15 - 19	21.0(15.1,28.5)	73.9(66.4,80.3)	3.0(1.5,5.7)	1.8(0.7,5.0)	0.3(0.0,2.0)
20 - 24	13.6(8.8,20.5)	80.5(74.0,85.8)	4.5(2.7,7.6)	0.8(0.3,2.6)	0.4(0.1,3.3)
25 - 34	15.8(11.6,21.0)	74.6(69.7,79.0)	8.3(5.9,11.6)	1.1(0.4,2.8)	0.2(0.1,1.0)
35 - 44	11.8(8.7,15.8)	77.3(72.7,81.3)	9.2(6.1,13.9)	0.7(0.2,3.1)	1.0(0.4,2.5)
45 - 54	15.1(10.5,21.2)	72.9(67.2,77.8)	10.4(7.1,15.2)	1.2(0.3,4.5)	0.4(0.1,1.8)
55 - 64	25.9(17.7,36.1)	62.2(53.1,70.5)	9.4(6.2,14.1)	1.3(0.3,5.0)	1.2(0.3,4.3)
15 - 64	16.2(12.7,20.4)	74.9(71.3,78.2)	7.3(5.6,9.5)	1.1(0.6,2.0)	0.5(0.3,0.9)
Kerala					
15 - 19	36.6(29.8,44.0)	56.0(48.4,63.3)	6.4(3.5,11.6)	1.0(0.2,4.1)	0.0
20 - 24	18.9(13.5,25.8)	63.8(55.7,71.1)	15.2(10.0,22.3)	2.2(0.8,5.6)	0.0
25 - 34	11.0(8.1,14.7)	60.1(55.4,64.7)	24.9(20.7,29.6)	3.5(2.0,6.1)	0.4(0.1,2.1)
35 - 44	11.4(8.6,14.9)	57.0(51.7,62.0)	24.2(20.3,28.6)	7.5(5.1,10.8)	0.0
45 - 54	10.5(7.7,14.2)	56.1(51.6,60.6)	29.1(25.3,33.2)	4.0(2.4,6.6)	0.3(0.1,1.3)
55 - 64	11.7(8.9,15.3)	57.8(53.5,62.0)	22.2(18.4,26.6)	7.9(6.0,10.4)	0.3(0.1,1.3)
15 - 64	15.8(14.0,17.8)	58.5(55.8,61.2)	21.2(19.2,23.2)	4.3(3.4,5.5)	0.2(0.1,1.5)
Tamil Nadu					
15 - 19	57.6(50.4,64.5)	39.6(2.6,46.9)	2.5(1.0,6.0)	0.4(0.1,3.0)	0.0
20 - 24	33.4(27.5,39.8)	59.8(52.7,66.6)	5.5(2.7,11.0)	1.0(0.3,2.9)	0.3(0.1,2.6)
25 - 34	24.2(21.0,27.6)	60.3(56.6,63.8)	12.8(10.3,15.8)	2.8(1.6,4.9)	0.0
35 - 44	22.0(18.5,25.9)	55.3(50.1,60.4)	17.4(14.1,21.2)	5.0(3.2,7.9)	0.3(0.1,1.3)
45 - 54	24.7(20.8,29.0)	55.1(51.1,59.1)	16.2(12.9,20.2)	4.0(2.3,6.7)	0.0
55 - 64	29.8(25.2,34.9)	51.1(46.2,55.9)	15.3(11.5,20.0)	3.6(2.3,5.5)	0.2(0.0,1.6)
15 - 64	30.1(27.7,32.7)	54.7(52.2,57.1)	12.1(10.5,13.9)	2.9(2.1,4.1)	0.1(0.1,0.4)
Uttarakhand					
15 - 19	50.2(44.6,55.7)	47.5(42.2,52.9)	2.0(1.0,4.2)	0.0	0.3(0.0,2.0)
20 - 24	26.4(20.7,33.1)	68.5(62.2,74.2)	4.3(2.6,7.0)	0.5(0.1,2.2)	0.2(0.0,1.7)
25 - 34	26.7(21.9,32.0)	63.7(58.6,68.6)	7.6(5.3,10.7)	1.6(0.7,3.6)	0.4(0.1,2.9)
35 - 44	26.4(21.8,31.6)	61.4(56.5,66.1)	9.7(7.1,13.2)	2.1(1.2,3.8)	0.3(0.1,1.3)
45 - 54	31.0(25.7,36.8)	54.5(49.3,59.6)	11.5(8.8,15.0)	2.6(1.4,4.7)	0.4(0.1,1.6)
55 - 64	31.4(25.7,37.6)	51.9(46.2,57.6)	13.7(10.0,18.4)	3.0(1.5,6.2)	0.0
15 - 64	32.0(28.6,35.5)	58.5(55.3,61.7)	7.7(6.3,9.4)	1.5(0.9,2.5)	0.3(0.1,0.7)

Table 5.3c Percentage of respondents according to BMI categories by age and place of residence(Combined), phase-I states of India, 2007-08

State/ Age group	Category of BMI				
	Under weight (<18.5)	Normal weight (18.5-24.9)	Grade-1 Over weight (25.0 - 29.9)	Grade- 2 Over weight (30.0 - 39.9)	Grade-3 Over weight (≥40.0)
Andhra Pradesh					
15 - 19	47.9(40.7,55.2)	49.7(42.6,56.8)	1.6(0.6,4.4)	0.9(0.1,6.0)	0.0
15 - 19	45.8(40.3,51.4)	50.9(45.3,56.4)	2.3(1.2,4.2)	1.0(0.3,3.6)	0.0
20 - 24	30.4(26.5,34.6)	61.2(56.8,65.4)	6.8(4.9,9.4)	1.1(0.5,2.7)	0.5(0.1,3.5)
25 - 34	20.0(16.9,23.5)	58.3(54.9,61.5)	17.7(15.3,20.5)	3.9(2.8,5.3)	0.2(0.1,0.5)
35 - 44	16.8(13.9,20.2)	54.7(50.9,58.5)	22.2(19.1,25.6)	6.1(4.6,8.1)	0.1(0.0,0.4)
45 - 54	19.9(16.3,24.2)	53.7(49.4,57.8)	19.1(15.9,22.7)	6.7(5.0,8.9)	0.6(0.3,1.6)
55 - 64	23.5(19.5,28.0)	52.4(48.1,56.8)	18.0(15.0,21.5)	5.9(4.4,7.8)	0.2(0.1,0.7)
15 - 64	24.8(22.4,27.3)	55.9(53.6,58.1)	15.0(13.4,16.8)	4.1(3.4,4.9)	0.3(0.1,0.5)
Maharashtra					
15 - 19	45.4(40.2,50.6)	50.1(45.3,54.9)	3.3(2.1,5.4)	0.6(0.2,2.0)	0.5(0.1,2.2)
20 - 24	27.1(22.7,32.1)	67.1(61.7,72.1)	4.7(3.1,7.1)	0.3(0.1,1.1)	0.8(0.3,2.0)
25 - 34	20.9(17.9,24.3)	67.7(64.2,71.1)	10.1(8.2,12.4)	1.1(0.6,2.1)	0.1(0.0,0.6)
35 - 44	14.9(12.2,18.1)	68.8(64.9,72.4)	13.8(11.3,16.8)	2.2(1.5,3.4)	0.2(0.1,0.8)
45 - 54	15.0(11.6,19.1)	61.8(56.9,66.3)	19.5(15.9,23.6)	3.4(2.2,5.2)	0.4(0.1,1.1)

State/ Age group	Category of BMI				
	Under weight (<18.5)	Normal weight (18.5-24.9)	Grade-1 Over weight (25.0 - 29.9)	Grade- 2 Over weight (30.0 - 39.9)	Grade-3 Over weight (≥40.0)
55 - 64	16.8(13.6,20.5)	61.3(58.1,64.5)	17.2(14.2,20.7)	4.0(2.9,5.7)	0.6(0.3,1.3)
15 - 64	23.1(20.8,25.6)	63.8(61.3,66.3)	10.9(9.4,12.6)	1.7(1.3,2.3)	0.4(0.2,0.7)
Madhya Pradesh					
15 - 19	57.5(52.4,62.4)	40.9(36.1,45.7)	1.5(0.8,2.7)	0.2(0.1,0.8)	0.0
20 - 24	41.6(36.7,46.7)	55.6(50.4,60.6)	2.3(1.5,3.5)	0.5(0.2,1.3)	0.0
25 - 34	38.0(34.8,41.3)	55.5(52.4,58.6)	5.5(4.3,6.9)	0.8(0.5,1.3)	0.1(0.0,0.6)
35 - 44	30.3(27.1,33.7)	56.6(53.6,59.7)	10.2(8.5,12.1)	2.8(2.0,3.9)	0.1(0.0,0.4)
45 - 54	30.2(25.6,35.2)	55.8(51.2,60.3)	11.2(8.9,14.0)	2.7(1.8,4.0)	0.1(0.0,0.5)
55 - 64	35.6(31.1,40.3)	49.9(45.8,54.0)	10.7(8.5,13.5)	3.7(2.8,4.8)	0.1(0.0,0.8)
15 - 64	38.8(36.4,41.2)	53.0(50.7,55.2)	6.6(5.7,7.5)	1.6(1.3,2.0)	0.1(0.0,0.2)
Mizoram					
15 - 19	22.7(17.8,28.4)	71.8(66.7,76.4)	4.5(2.6,7.7)	0.9(0.3,2.4)	0.1(0.0,0.9)
20 - 24	12.0(8.2,17.2)	79.0(73.1,83.9)	7.6(5.1,11.1)	0.7(0.2,2.0)	0.7(0.3,1.9)
25 - 34	12.4(10.0,15.2)	78.3(75.4,80.9)	7.8(6.0,10.0)	1.3(0.8,2.3)	0.3(0.1,0.9)
35 - 44	11.0(9.0,13.4)	76.8(73.9,79.4)	10.3(7.9,13.3)	1.3(0.6,2.7)	0.7(0.3,1.5)
45 - 54	12.3(9.6,15.6)	75.0(71.1,78.5)	10.5(7.9,13.7)	1.8(0.8,4.0)	0.4(0.2,1.2)
55 - 64	20.9(14.7,28.7)	60.1(53.3,66.5)	15.4(10.2,22.4)	2.0(0.8,4.9)	1.7(0.7,3.9)
15 - 64	14.3(12.2,16.7)	75.4(73.0,77.6)	8.5(6.9,10.5)	1.2(0.8,1.9)	0.5(0.3,0.8)
Kerala					
15 - 19	36.8(31.5,42.5)	55.4(49.7,60.9)	6.9(4.4,10.6)	0.9(0.3,3.0)	0.0
20 - 24	19.7(15.3,25.0)	64.2(57.9,70.0)	14.0(9.9,19.4)	2.1(1.0,4.6)	0.0
25 - 34	10.9(8.6,13.7)	58.7(54.9,62.3)	26.2(22.8,29.8)	4.0(2.7,5.8)	0.3(0.1,1.5)
35 - 44	10.4(8.3,13.1)	55.7(51.6,59.6)	26.2(23.0,29.8)	7.6(5.8,10.0)	0.0
45 - 54	9.6(7.4,12.3)	54.6(51.1,58.0)	30.6(27.5,33.8)	5.0(3.6,6.9)	0.3(0.1,0.9)
55 - 64	10.8(8.6,13.4)	56.6(53.3,59.9)	24.8(21.8,28.1)	7.4(5.8,9.3)	0.4(0.2,1.0)
15 - 64	15.4(14.0,17.0)	57.5(55.3,59.5)	22.4(20.8,24.0)	4.6(3.8,5.4)	0.2(0.1,0.4)
Tamil Nadu					
15 - 19	54.9(49.7,60.0)	39.9(35.0,45.1)	4.4(2.8,7.0)	0.7(0.2,2.3)	0.0
20 - 24	28.3(24.3,32.8)	59.9(55.0,64.6)	9.8(7.0,13.4)	1.6(0.8,2.9)	0.4(0.1,1.8)
25 - 34	19.3(17.0,21.8)	56.2(53.3,59.1)	19.9(17.3,22.6)	4.6(3.5,6.1)	0.0
35 - 44	16.6(14.3,19.2)	53.2(49.7,56.7)	23.1(20.5,26.0)	7.0(5.4,9.0)	0.2(0.0,0.7)
45 - 54	18.9(16.3,21.8)	50.8(47.5,54.2)	23.0(20.1,26.2)	7.0(5.3,9.3)	0.2(0.1,0.7)
55 - 64	21.6(18.5,24.9)	50.5(46.9,54.1)	21.9(18.8,25.4)	5.9(4.3,7.9)	0.1(0.0,0.9)
15 - 64	24.8(23.0,26.7)	52.7(51.0,54.4)	17.7(16.3,19.3)	4.7(3.9,5.5)	0.2(0.1,0.3)
Uttarakhand					
15 - 19	48.9(44.6,53.3)	47.7(43.5,51.9)	2.5(1.5,4.0)	0.3(0.1,0.9)	0.6(0.2,1.5)
20 - 24	25.2(20.9,30.1)	68.6(63.8,73.0)	5.1(3.7,7.2)	0.6(0.2,1.6)	0.4(0.1,1.3)
25 - 34	22.8(19.4,26.7)	61.3(57.5,64.9)	12.8(10.7,15.2)	2.7(1.8,4.1)	0.4(0.1,1.8)
35 - 44	21.0(17.7,24.7)	59.3(55.6,62.8)	15.2(12.8,17.8)	4.3(3.3,5.6)	0.3(0.1,1.9)
45 - 54	25.2(21.3,29.6)	52.0(47.9,56.0)	17.2(14.6,20.2)	4.8(3.7,6.3)	0.7(0.3,1.6)
55 - 64	26.4(22.0,31.3)	50.9(46.2,55.5)	17.1(13.9,20.9)	5.4(3.6,7.9)	0.2(0.1,0.6)
15 - 64	28.2(25.7,30.8)	57.3(54.9,59.6)	11.3(10.1,12.6)	2.8(2.3,3.6)	0.4(0.3,0.7)

The central obesity was as high as 24% in males and 60% in females of Kerala and it was lowest in Madhya Pradesh with 8% in males and 14% in females. In other states it ranged between 11 and 18% in males, and 17 to 31% in females.

This chapter presented the physical measurements

such as height, weight, waist circumference and BMI, of the surveyed individuals. The prevalence of over weight according to the BMI categorization was highest in Andhra Pradesh, Kerala and Tamil Nadu, specially in urban areas, where it was more than one fifth of the population. The central obesity was highest in Kerala.

5.5 SOCIO-DEMOGRAPHIC PATTERN OF OVERWEIGHT

Overweight (obesity) is a major risk factor of non-communicable diseases. The socio-demographic pattern of respondents in the category of overweight (grade I, II & III) across age, education, occupation and residence are presented in Table 5.4. Overall, prevalence and pattern of overweight among all respondents (combined) was varying with age groups (6% in 15-24, 28% in 35-44 and 24% in 55-64 of Andhra Pradesh; 2% in 15-24 to 15% in 55-64 of Madhya Pradesh; 5% in 15-24 to 23% in 45-54, and 22% in 55-64 age group of Maharashtra; 7% in 15-24 to 19% in 55-64 of Mizoram; 12% in 15-24 to 36% in 45-54, and 33% in 55-64 of Kerala; 9% in 15-24 to 30% in 45-54, and 28% in 55-64 of Tamil Nadu; and 4% in 15-24 to 17% in 55-64 of Uttarakhand). By education, prevalence of overweight was varying with lower to higher levels of education (15% of illiterate, 20% of primary and middle, 32% of college & higher level in Andhra Pradesh; 5% of illiterate, 16% of higher secondary, and 29% of college & higher level in Madhya Pradesh; 11% of illiterate, 14% of higher secondary and 21% of college & higher level in Maharashtra; 8% of illiterate, 12% of secondary and higher secondary, and 13% of college level in Mizoram; 25% of illiterate, 27% of primary,

28% of secondary, and 30% of college & higher level in Kerala; 17% of illiterate, 23% of primary, and 32% of college & higher level in Tamil Nadu; and 8% of illiterate to 20% of college & higher level in Uttarakhand). Overall pattern of prevalence of overweight was increasing with increasing levels of education in most of the states. However, the prevalence was high in some of the occupational categories (executive (37%) and service (31%) in Andhra Pradesh; service (26%) and executive (16%) in Madhya Pradesh; executive (23%) and service (18%) in Maharashtra; executive (19%) and manual worker (14%) in Mizoram; executive (39%), domestic work (36%), and service (27%) in Kerala; executive (36%) and service (29%) in Tamil Nadu; service and executive (22%) in Uttarakhand). Low prevalence of overweight was recorded among the occupation category of agriculture and manual work in all the seven states. Prevalence of overweight among urban respondents was higher comparing with rural in all states. However, pattern of prevalence by age, education and occupation was similar in both rural and urban population. Except the younger age group (15-24), the overweight peoples are prevalent in all age groups across educational levels and occupation (Table 5.4).



Table 5.4 Percentage of respondents in the category of overweight (Grade I, II & III) by age, education, occupation, and place of residence, phase-I states of India, 2007- 08

Characteristic	Overweight (Grade I, II & III) (%)																							
	Andhra Pradesh			Madhya Pradesh			Maharashtra			Mizoram			Kerala			Tamil Nadu			Uttarakhand					
	U	R	C	U	R	C	U	R	C	U	R	C	U	R	C	U	R	C	U	R	C			
Age group	9.3	4.8	6.2	6.3	0.5	2.2	5.6	4.8	5.2	9.0	5.5	7.4	10.5	12.4	11.9	13.5	5.0	8.8	13.5	5.0	8.8	7.5	3.5	3.5
15-24	32.7	17.3	21.8	16.4	2.3	6.5	14.1	8.8	11.4	9.2	9.6	9.4	35.0	28.9	30.5	34.5	15.6	24.5	34.5	15.6	24.5	31.0	9.6	9.6
25-34	45.8	21.6	28.4	30.9	5.5	13.1	23.7	10.2	16.3	13.5	10.9	12.3	39.9	31.7	33.9	39.4	22.7	30.2	39.4	22.7	30.2	37.4	12.2	12.2
35-44	45.7	19.4	26.4	32.5	6.7	14.1	32.8	15.6	23.3	13.4	12.1	12.7	42.4	33.4	35.8	43.1	20.2	30.2	43.1	20.2	30.2	44.6	14.5	14.5
45-54	43.3	18.2	24.1	35.1	7.9	14.5	30.4	16.9	21.9	27.1	12.0	19.0	38.5	30.5	32.6	40.5	19.1	27.9	40.5	19.1	27.9	43.7	16.7	16.7
55-64	30.5	15.0	19.4	19.8	3.5	8.2	17.1	9.7	13.1	11.6	8.9	10.3	31.1	25.7	27.1	31.5	15.2	22.6	31.5	15.2	22.6	27.4	9.5	9.5
Total	24.1	12.7	14.5	14.2	3.8	5.2	13.3	10.0	10.8	10.7	7.0	7.6	29.4	24.2	25.2	25.0	13.0	16.6	25.0	13.0	16.6	21.3	7.8	7.8
Illiterate	31.7	16.8	20.1	14.8	3.0	5.8	14.3	9.8	11.3	10.3	7.6	8.6	28.1	27.0	27.3	30.6	17.3	23.3	30.6	17.3	23.3	27.3	8.0	8.0
Primary	28.7	16.5	20.3	13.3	2.6	5.6	18.1	9.7	13.0	9.1	8.1	8.5	27.5	24.3	25.1	31.8	18.8	24.8	31.8	18.8	24.8	18.3	8.6	8.6
Middle	30.3	17.7	22.2	15.6	0.5	6.5	15.3	9.7	11.5	13.2	11.3	12.4	28.5	27.9	28.1	33.4	14.6	23.6	33.4	14.6	23.6	22.9	7.0	7.0
Secondary	28.5	13.0	20.2	24.1	6.8	16.0	16.0	10.4	13.8	12.3	9.1	11.7	31.0	21.9	24.3	30.5	11.3	21.8	30.5	11.3	21.8	25.8	14.2	14.2
Higher Secondary	40.5	19.7	32.1	32.2	13.3	28.5	23.2	14.6	21.0	12.2	14.0	12.5	38.4	26.3	30.4	37.8	21.2	32.2	37.8	21.2	32.2	39.5	20.2	20.2
College & above	30.5	15.0	19.4	19.8	3.5	8.2	17.1	9.7	13.1	11.6	8.9	10.3	31.1	25.7	27.1	31.5	15.2	22.6	31.5	15.2	22.6	27.4	9.5	9.5
Total	44.5	28.1	37.3	31.1	3.9	16.1	22.9	21.6	22.6	19.1	19.0	19.1	43.1	43.1	39.4	42.3	18.9	36.4	42.3	18.9	36.4	39.8	21.7	21.7
Executive/Business	18.8	11.3	11.6	13.2	3.0	4.2	12.7	9.1	9.3	9.3	8.1	8.4	28.8	28.8	16.9	22.5	11.9	14.4	22.5	11.9	14.4	22.3	7.9	7.9
Agriculture	36.0	20.5	26.3	25.1	5.6	13.8	22.3	10.8	16.3	12.5	8.0	10.0	38.7	38.8	35.5	25.5	0.0	15.7	25.5	0.0	15.7	33.8	11.5	11.5
Domestic Work	36.0	26.3	30.7	30.7	12.1	25.7	20.3	10.3	17.7	10.2	16.0	11.9	30.0	30.0	27.0	39.8	20.7	28.7	39.8	20.7	28.7	34.7	21.6	21.6
Services/Sales	19.5	13.9	15.5	11.0	2.6	4.3	6.2	7.7	7.0	14.0	14.0	14.0	20.5	20.5	19.3	23.4	14.9	19.6	23.4	14.9	19.6	17.9	4.3	4.3
Manual Worker	18.4	8.6	12.3	14.8	3.6	8.3	8.0	6.6	7.4	8.1	4.4	6.7	28.7	28.7	25.3	36.5	19.8	28.5	36.5	19.8	28.5	13.8	5.4	5.4
Other	30.5	15.0	19.4	19.8	3.5	8.2	17.1	9.7	13.1	11.6	8.9	10.3	31.1	31.1	27.1	31.5	15.2	22.6	31.5	15.2	22.6	27.4	9.5	9.5
Total	2716	3440	6156	2934	2816	5750	2939	3126	6065	2155	2297	4452	2460	2460	4806	2483	2554	5037	2483	2554	5037	2638	2668	2668
Number (n)																								

U: Urban; R: Rural; C: Combined.

CHAPTER 6

Summary and Conclusions

The IDSP - NCD risk factors survey, Phase-I was carried out in seven states of India namely, Andhra Pradesh, Kerala, Madhya Pradesh, Maharashtra, Mizoram, Tamil Nadu and Uttarakhand. During the survey, the household coverage was 4905 households in Andhra Pradesh, 4430 in Kerala, 4998 in Madhya Pradesh, 4997 in Maharashtra, 4569 in Mizoram, 4799 in Tamil Nadu and 4932 in Uttarakhand. From these households, the number of individuals selected randomly and interviewed was 6218 in Andhra Pradesh, 4859 in Kerala, 5853 in Madhya Pradesh, 6091 in Maharashtra, 4495 in Mizoram, 5177 in Tamil Nadu and 5433 in Uttarakhand. The household non-response rates were less than 5% in Andhra Pradesh, Madhya Pradesh, Maharashtra, Tamil Nadu and Uttarakhand, and it was 9% in Mizoram and 11% in Kerala. The individual response rates was over 99% in Andhra Pradesh, Maharashtra, Mizoram and Uttarakhand, and it was between 96 to 98% in other states. The analysis of the survey data have been presented and discussed in the present report providing information about the proportion of population or subgroup of population under the risk of Non-communicable diseases.

Except Mizoram, majority of the households in every state are Hindu, which varies from 92% in Madhya Pradesh to 56% in Kerala. In Mizoram, 92% of households are Christian and 26% households in Kerala are Muslim. The access to piped drinking water in urban households was more than 84% in all the states except Madhya Pradesh (69%) and Kerala (42%). However, it varied between 87% in rural Tamil Nadu to 10% in rural Madhya Pradesh. More than three-fourth of the urban households in all the states have flush toilet facility except Madhya Pradesh where less than half of all households have such facilities (48%). The flush toilet facility in rural households varied from a high 90% in Kerala to a low 2% in Madhya Pradesh. Overall, more than 90% households used electricity as main source of lighting in Andhra Pradesh, Maharashtra, Mizoram, Kerala and Tamil Nadu. However, it was 72% in Uttarakhand and 68% in Madhya Pradesh. The differences between rural and urban area in usage of electricity was also higher in some states.

Amongst the rural households in each state, majority of the households were still using wood as a main source of cooking fuel, which varied from 87% in Madhya Pradesh to 66% in Mizoram and Kerala. However, LPG was commonly used in urban households. The rural households reside in *kachha* houses were high in Madhya Pradesh (64%) followed by Maharashtra (61%), Mizoram (42%) and Uttarakhand (32%).

Literacy rate was high in Mizoram (91%) and Kerala (90%) but it varied from a high 75% in Maharashtra to a low 55% in Andhra Pradesh. However, there existed sex and rural-urban differentials in educational attainment in most of the states.

Tobacco is one of the major risk factors of non-communicable diseases. The current daily smokers among males were high in Mizoram (64%) followed by Madhya Pradesh (38%) and Uttarakhand (35%). Low prevalence of smoking among males was recorded in Maharashtra (15%). The prevalence of smoking among females was low in all the states except Mizoram (17%). However, daily smokeless tobacco users among males were high in Madhya Pradesh (52%) followed by Mizoram (44%) and Maharashtra (41%). In other states, it varied from a high 21% in Uttarakhand to a low 5% in Kerala. The prevalence of smokeless tobacco users among females was high in Mizoram (53%) followed by Maharashtra (23%) and Madhya Pradesh (22%). However, the prevalence among females was low in other states. Overall, prevalence tobacco use in any form (i.e. smoking or smokeless) was high in Mizoram (68%) followed by Madhya Pradesh (47%), Maharashtra (37%) and Uttarakhand (27%).

The mean age of initiation of smoking tobacco among young age (15-34 years) people was recorded 19 and 20 years in all the states except Mizoram (17 Years). However, the mean age of initiation of smokeless tobacco use among young age (15-34 years) people was recorded 20 years in all the states except Mizoram (18 Years)

The alcohol consumption is a known risk factors of many non-communicable diseases. The alcohol

consumption at least once in last one year among males varied from a high 37% in Andhra Pradesh to a low 21% in Mizoram. The alcohol consumption among females was low in all the states. Those who consumed alcohol in last seven days, binge drinkers were high in Uttarakhand (52%) followed by Andhra Pradesh (23%), Madhya Pradesh (13%) and Kerala (11%). The mean age of initiation of alcohol consumption by young age (15-34 years) people was recorded 20 years in Andhra Pradesh and Madhya Pradesh, 21 years in Maharashtra, Mizoram, Tamil Nadu and Uttarakhand, and 22 years in Kerala.

Nutritional inadequacy is the major risk factors of many non-communicable diseases. Overall, the population of states consuming less than five servings of fruits and vegetables per day were 99% in Tamil Nadu, 89% in Uttarakhand, 88% in Andhra Pradesh, 87% in Kerala, 85% in Mizoram, 83% in Madhya Pradesh and 76% in Maharashtra which was inadequate as per WHO recommended standards. On an average the people were consuming fruits only two days in a week in Andhra Pradesh, Madhya Pradesh, Maharashtra, Mizoram and Tamil Nadu; and three days in a week in Kerala and Uttarakhand. The consumption of vegetables in a week varied between 4 days in Maharashtra to 7 days in Mizoram. It showed that the consumption of vegetables was comparatively higher against fruits in all the states.

Physical inactivity is the leading cause of diabetes, hypertension and coronary heart disease. Overall, the population of states in low category of physical activity were 42% in Madhya Pradesh, 66% in Tamil Nadu, 67% in Uttarakhand, 68% in Andhra Pradesh, 81% in Maharashtra, 71% in Mizoram and 76% in Kerala. The population of state detected with pre hypertension stage varied from a low 43% in Andhra Pradesh and Tamil Nadu to a high 58% in Mizoram. However, the stage I and stage II hypertension among the people was recorded between 17% in Andhra Pradesh to 21% in Madhya Pradesh. According to BMI, the population in the category of over weight was high in Kerala (27%) followed by Tamil Nadu (23%) and Andhra Pradesh (19%). In rest of the four states, it varied from a high 15% in Uttarakhand to a low 8% in Madhya Pradesh. However, the population recorded as under weight were 39% in Madhya Pradesh, 28% in Uttarakhand, 25% in Tamil Nadu and Andhra

Pradesh, and 23% in Maharashtra, 15% in Kerala and 14% in Mizoram. However, the population in the category of central obesity was 43% in Kerala, 25% in Tamil Nadu, and 18% in Uttarakhand, 14% in Andhra Pradesh and Maharashtra, 12% in Mizoram and 11% in Madhya Pradesh.

Overall, prevalence of smoking and smokeless tobacco users among female population was low compare with males in all the states except Mizoram. The increasing pattern of prevalence was recorded with increasing age of people. A declining pattern of prevalence was observed with increasing level of education. Prevalence of tobacco use among the occupation of agriculture and manual worker was high compare with others. A similar pattern of increasing prevalence with age and decreasing with level of education was also observed with current alcohol drinkers. The habits of tobacco and alcohol use starts at early young age which contributes to the high risk of NCD at later age. High proportion of population was taking inadequate amount of fruits and vegetables which increases the risk of NCD. Its distribution across all age groups, education, occupation and residence was found very high with some marginal differences. Besides that, more than half of the population was found in the category of low physical activity in all the states except Madhya Pradesh. More female respondents were in the category of low physical activity as compare with males across all the age groups. Rural population was doing more physical work than urban. The increasing pattern of prevalence of hypertension was recorded with increasing age of people. It was prevalent in all education levels and occupational categories. High prevalence of overweight was recorded in all the age groups except the younger age. It was prevalent in both sexes, but higher in urban population compare with rural. Low prevalence of overweight was recorded among illiterates as well as among the people working in agriculture or manual worker. Overall, NCD risk factors were prevalent across all the socioeconomic and demographic categories of population in phase-I states.

These were the major health issues related to Non-communicable diseases of people in phase-I states. ■

References

1. Risk factor surveillance for non-communicable diseases (NCDs): the multi-site ICMR-WHO collaborative initiative, presented in Forum 9, Mumbai, 12-16 September 2005.
2. The World Health Report 2002; Reducing Risks, Promoting Healthy Life, WHO.
3. Lisle Kish: A procedure for objective respondent selection within the household. *Am Stat Assoc Journal*, 1949; 44: 380-387.
4. Primary Census Abstract: Census of India, 2001, Office of the Registrar General, India, Ministry of Home Affairs, Govt. of India.
5. Lehtonen R. and Pahkinen E. 2004. Practical Methods for Design and Analysis of Complex Surveys. John Wiley & Sons, Ltd.: England.
6. Global Physical Activity Questionnaire (GPAQ), Analysis Guide, www.who.int/chp/steps.
7. The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. *JAMA* 2003;289:2560-71.
8. WHO/IASO/IOTF: The Asia-Pacific perspective: redefining obesity and its treatment [article online]. Available from <http://www.idi.org.au/home.htm>. Accessed 21 August 2003.



Appendix - A

SAMPLE WEIGHTS

First, appropriate sampling weights for households were constructed for each state data set separately for Urban and Rural sectors. The element weight consisted of factors reflecting ward selection probabilities, Census enumeration block (CEB) selection probabilities within wards; and household selection probabilities within CEB; and household non-response adjustments.

For Urban area of a state, the weight HWT_{ijk} for the household k in CEB j of ward i , can be expressed as follows

$$HWT_{ijk} = w_{1i} \times w_{2ji} \times w_{3k|i,j} \quad i=1, \dots, 50, j=1, \dots, 50$$

where $w_{1i} = \frac{1}{\pi_i}$: the reciprocal of the inclusion probability π_i of ward i

$$\text{where } \pi_i = \frac{a \times \text{Population of ward } i}{\text{Total Urban Population}} \quad \text{and}$$

$a (=50)$ is the total number wards to be selected from the urban sector

$w_{2ji} = \frac{1}{\pi_{j|i}}$: the reciprocal of the conditional probability of selection of CEB j in ward i

$$\text{where } \pi_{j|i} = \frac{\text{Population of selected CEB } j \text{ within ward } i}{\text{Population of selected ward } i}$$

$w_{3k|i,j} = \frac{1}{\pi_{k|i,j} \times \hat{\theta}_{k|i,j}}$: the reciprocal of the product of conditional inclusion probability $\pi_{k|i,j}$ of household k in the j^{th} selected CEB of the i^{th} ward and estimated conditional response probability $\hat{\theta}_{k|i,j}$ of household k from within the j^{th} selected CEB of ward i .

$$\text{where } \pi_{k|i,j} = \frac{\text{Number of households sampled from selected CEB } j \text{ of ward } i}{\text{Number of households in selected CEB } j \text{ of ward } i}$$

$$HWT_{ijk} = \frac{\text{Size of Urban Population}}{50 \times \text{Population of selected CEB from ward } i} \times \frac{\text{Number of households in selected CEB of ward } i}{\text{Number of households sampled from selected CEB of ward } i \text{ with HH Result code completed}}$$

In rural sector, from the lists of villages, 50 villages (or cluster of villages) were selected with probability proportional to size and from each village 50 household were selected using systematic sampling.

Proceeding as above it can be shown the weight for the k^{th} selected household of the i^{th} selected village, HWT_{ik} ,

$$HWT_{ik} = \frac{\text{Size of Rural Population}}{50 \times \text{Population of } i^{\text{th}} \text{ selected village}} \times \frac{\text{Number of households in } i^{\text{th}} \text{ selected village}}{\text{Number of households selected from } i^{\text{th}} \text{ village with HH Result code complete}}$$

INDIVIDUAL WEIGHTS

From each selected household one member aged 15-54 is selected using the Kish Method and all usual members aged 55-64 were selected. Since objective of the study is to obtain estimates for each age group (15-24 through 55-64) and sex groups, post stratification is used for improvement of efficiency of the estimators.

Post stratification weights for individuals were constructed using the state age distributions for both sexes of the urban sector which are available on the population level. We first divide the target population of persons age 15-64 in 10 age - sex post strata with five age group (15-24 through 55-64) and two sex groups (male and female).

In the subsequent lines the symbol l is used to denote the age group $[15 + (l - 1)*10, 15 + 10*l]$, $l = 1, 2, \dots, 5$ and m for sex, $m = 1$ if sex is male and $m=2$ if sex is female.

For Urban,

Define :

$$\delta_{ijknlm} = \begin{cases} 1 & \text{if } n^{\text{th}} \text{ selected respondent of the } k^{\text{th}} \text{ household of the } j^{\text{th}} \text{ CEB of the } i^{\text{th}} \\ & \text{ward belongs to age group } l \text{ and of sex } m. \\ 0 & \text{otherwise} \end{cases}$$

$$\hat{N}_{lm} \begin{cases} \text{estimated number of persons of age group } l \text{ and sex } m \text{ if one person from the list of persons age} \\ \text{15-54 is selected from household of the population } (l = 1, 2, 3, 4, m = 1, 2) \\ \text{estimated number of the persons belonging to the age group } l \text{ and sex group } m (l = 5, m = 1, 2) \end{cases}$$

\hat{N}_{lm} is obtained as

$$\hat{N}_{lm} = \frac{1}{\hat{\theta}_{lm}} \sum_{\substack{\text{over all} \\ \text{all possible} \\ \text{values of} \\ i, j, k, n}} HWT_{ijk} \times \delta_{ijknlm} \quad \text{where } \hat{\theta}_{lm} \text{ is the estimated group response rate.}$$

Calibrated Individual weight

$$IWT_{ijklm} = \frac{N_{lm}}{\hat{N}_{lm}} \times HWT_{ijk}$$

Denoted by

N_{lm} = Number of person of sex m belonging to age group l in the urban sector of the population
($l = 1, 2, 3, 4, 5$ and sex $m = 1, 2$)

y_{ijkn} = the observed value of the study variable for the respondent n belonging to household k ,
CEB j and ward i .

Estimate of the population total of sex group m and age group l is

$$\hat{Y}_{lm} = \sum_{\substack{\text{over all} \\ \text{all possible} \\ \text{values of} \\ i, j, k, n}} \delta_{ijknlm} \times IWT_{ijklm}$$

$$\hat{N}_l = \hat{N}_{l1} + \hat{N}_{l2} \quad , \quad \hat{Y}_l = \hat{Y}_{l1} + \hat{Y}_{l2} \quad , \quad l = 1, \dots, 5$$

$$\hat{N}_m = \hat{N}_{1m} + \dots + \hat{N}_{5m} \quad , \quad \hat{Y}_m = \hat{Y}_{1m} + \dots + \hat{Y}_{5m} \quad , \quad m = 1, 2$$

$$\hat{N} = \sum_{l=1}^5 \sum_{m=1}^2 N_{l,m} \quad , \quad \hat{Y} = \sum_{l=1}^5 \sum_{m=1}^2 \hat{Y}_{l,m}$$

Estimate of the mean of the study variable for sex group m and age group l, \widehat{Y}_{lm} and for and overall are $\frac{\widehat{Y}_{lm}}{\widehat{N}_{lm}}, \frac{\widehat{Y}_{m.}}{\widehat{N}_{m.}}, \frac{\widehat{Y}_{.l}}{\widehat{N}_{.l}}, \frac{\widehat{Y}}{\widehat{N}}$, respectively.

For Rural,

Define :

$$\delta_{iknlm} = \begin{cases} 1 & \text{if } n^{\text{th}} \text{ selected respondent of the } k^{\text{th}} \text{ household of the } i^{\text{th}} \text{ village} \\ & \text{belongs to age group l and of sex m.} \\ 0 & \text{otherwise} \end{cases}$$

$$\widehat{N}_{lm} = \begin{cases} \text{estimated number of persons of age group l and sex m if one person from the list of} \\ \text{persons age 15-54 is selected from household of the population (l =1,2,3,4, m=1,2)} \\ \text{estimated number of the persons belonging to the age group l and sex group m (l =5, m=1,2)} \end{cases}$$

\widehat{N}_{lm} is obtained as

$$\widehat{N}_{lm} = \frac{1}{\widehat{\theta}_{l,m}} \sum_{\substack{\text{over all} \\ \text{all possible} \\ \text{values of} \\ i,j,k,n}} HWT_{ik} \times \delta_{ijknlm}, \quad \text{where } \widehat{\theta}_{l,m} \text{ is the estimated group response rate.}$$

Calibrated Individual weight

$$IWT_{iklm} = \frac{N_{lm}}{\widehat{N}_{lm}} \times HWT_{ik}$$

Denoted by

N_{lm} = Number of person of sex m belonging to age group l in the rural sector of the population
(l = 1,2 ,3,4,5 and sex m =1,2)

y_{ikn} , = the observed value of the study variable for the respondent n belonging to household k of village i.

Estimate of the population total of sex group m and age group l is

$$\widehat{Y}_{l,m} = \sum_{\substack{\text{over all} \\ \text{all possible} \\ \text{values of} \\ i,j,k,n}} \delta_{ijknlm} \times y_{ikn} \times IWT_{ijkml}$$

Estimate of the mean of the study variable for age-sex group l and m, sex group m, age group l and overall mean can be obtained.

Appendix - B

INTEGRATED DISEASE SURVEILLANCE PROJECT (IDSP)

NCD RISK FACTORS SURVEY (PHASE -I), INDIA

(Name of State Year -2007)

HOUSEHOLD QUESTIONNAIRE

IDENTIFICATION	
STATE :	[] []
DISTRICT :	[] []
TEHSIL/TALUK	[] [] [] []
CITY/TOWN/VILLAGE:	[] [] [] [] [] [] [] []
URBAN/RURAL (<i>URBAN=1, RURAL =2, URBAN SLUM -3</i>)	[]
PSU NUMBER	[] [] []
SEGMENT NUMBER:	[]
Household Number	[] [] [] []
Name of Household Head: _____	
Address of HOUSEHOLD: _____	

INTERVIEWER VISITS				
	1	2	3	FINAL VISIT
Date				Day [] [] Month [] [] Year 2 0 [] []
Interviewer's Name				Interviewer Code [] []
Result				Result* []
Next Visit: Date Time				Total Number of Visits []
<p>*RESULT CODES:</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <p>1. COMPLETED</p> <p>2. NO HOUSEHOLD MEMBER/ NO COMPETENT RESPONDENT AT HOME AT THE TIME OF VISIT</p> <p>3. ENTIRE HOUSEHOLD ABSENT FOR EXTENDED PERIOD</p> <p>4. POSTPONED</p> <p>5. REFUSED</p> </div> <div style="width: 48%;"> <p>6. DWELLING VACANT OR ADDRESS NOT A DWELLING</p> <p>7. DWELLING DESTROYED</p> <p>8. DWELLING NOT FOUND</p> <p>9. OTHER _____ (SPECIFY)</p> </div> </div>				
NAME DATE	SUPERVISOR [] []	EDITED & CHECKED BY [] []	KEYED BY [] []	

HOUSEHOLD STRUCTURE (HS)						
List of all household members who usually live in your household aged 12 years and above						
LINE NO.	NAME	RELATIONSHIP	SEX	AGE IN COMPLETED YEARS	RESIDENTIAL STATUS	RECRUITED FOR SURVEY
	Please give me names of the persons who usually live in your household (may be temporarily away from home)	(With head of household)	Male-1 Female-2		(Present-1; temporarily away from home-2)	Put a tick mark against one member age 15-54 selected below by kish method and all members age 55-64
(1)	(2)	(3)	(4)	(5)	(6)	(7)
01						
02						
03						
04						
05						
06						
07						
08						
09						
10						
11						
12						
Codes for Q.3 Relationship to Head of Household:		01 - HEAD, 02 - WIFE OR HUSBAND, 03 - SON OR DAUGHTER 04 - SON IN LAW OR DAUGHTER IN LAW 05 - GRANDCHILD 06 - PARENT 07 - PARENT IN LAW			08 - BROTHER OR SISTER 09 - BROTHER IN LAW OR SISTER IN LAW 10 - NIECE OR NEPHEW 11 - OTHER RELATIVE 12 - ADOPTED OR FOSTER CHILD 13 - NOT RELATED	

LIST ALL USUAL MEMBERS OF THE HOUSEHOLD AGE 15 - 54 IN THE HOUSEHOLD*

Line No.	Sex	Age	Adult Number	Select one member (R) by using Kish Table	Enter a specific Kish Table used for selection of one member below. (A or B1 or B2 or C..... as assigned for each randomly selected household 1 to 50)

*Arrange all the members aged 15-54 in the following order - oldest male, next oldest male, and so on for all males followed by oldest female, next oldest female, etc. Then use selection table assigned to the household to choose R individual RESPONDENT.

Integrated Disease Surveillance Project (IDSP)

GENERAL HOUSEHOLD INFORMATION		RESPONSE	SKIP
1.	Number of members who usually live in the household	<input type="text"/> <input type="text"/>	
2.	Religion of the head of the household:	Hindu 01 Muslim 02 Christian 03 Sikh 04 Buddhist/neo buddhist 05 Jain 06 Jewish 07 Parsi 08 No religion 09 Other 96 (Specify)	
3.	What is the main source of drinking water?	PIPED WATER Piped into Residence 11 Public Tap 12 GROUND WATER: Hand Pump in Residence 21 Public Hand Pump 22 WELL WATER Well in Residence Covered well 31 Open well 32 Public Well Covered well 33 Open well 34 SURFACE WATER: Spring 41 River/Stream 42 Pond 43 Dam 44 Rainwater 51 Tanker Truck 61 Any other 96 (specify)	
4.	What kind of toilet facilities do you have?	Flush Toilet Own Flush Toilet 11 Shared Flush Toilet 12 Public Flush Toilet 13 Pit Toilet/Latrine Own Pit Toilet 21 Shared Pit Toilet 22 Public Pit Toilet 23 No facility/Bush/Field 31 Other 96 (Specify)	

5.	What is the main source of lighting for your household?	Electricity 1 Kerosene 2 Gas 3 Oil 4 Other 6 (Specify)																																																													
6.	What is the type of house ?	Pucca 1 Semi-Pucca 2 Kachha 3																																																													
7.	How many rooms are there in your household?	Rooms..... <input type="text"/> <input type="text"/>																																																													
8.	Do you have a separate room, which is used as kitchen ?	Yes 1 No 2																																																													
9.	What type of fuel does your household mainly use for cooking?	Wood 01 Crop Residue 02 Dung Cakes 03 Coal/Coke/Lignite 04 Charcoal 05 Kerosene 06 Electricity 07 Liquid Petroleum Gas (LPG) 08 Bio-Gas 09 Others 96 (Specify)																																																													
10.	Does this household own this house or any other house?	Yes 1 No 2																																																													
11.	Does this household own any agriculture land ?	Yes 1 No 2	If No, go to 14																																																												
12.	How much agriculture land does this household own?	Acres <input type="text"/> <input type="text"/> . <input type="text"/> None																																																													
13.	Out of this land, how much is irrigated ?	Acres <input type="text"/> <input type="text"/> . <input type="text"/> None																																																													
14.	Does the household own any livestock?	Yes 1 No 2																																																													
15.	Does the household own any of the following: (<i>READ ALL THE OPTIONS AND RECORD THE RESPONSE</i>)	<table border="0"> <thead> <tr> <th></th> <th>Yes</th> <th>No</th> </tr> </thead> <tbody> <tr><td>A mattress?</td><td>1</td><td>2</td></tr> <tr><td>A pressure cooker?</td><td>1</td><td>2</td></tr> <tr><td>A chair?</td><td>1</td><td>2</td></tr> <tr><td>A cot or bed?</td><td>1</td><td>2</td></tr> <tr><td>A table?</td><td>1</td><td>2</td></tr> <tr><td>A clock or Watch?</td><td>1</td><td>2</td></tr> <tr><td>An electric fan?</td><td>1</td><td>2</td></tr> <tr><td>A bicycle?</td><td>1</td><td>2</td></tr> <tr><td>A radio or transistor?</td><td>1</td><td>2</td></tr> <tr><td>A sewing machine?</td><td>1</td><td>2</td></tr> <tr><td>A telephone or Mobile?</td><td>1</td><td>2</td></tr> <tr><td>A refrigerator?</td><td>1</td><td>2</td></tr> <tr><td>A television?</td><td>1</td><td>2</td></tr> <tr><td>A moped, scooter, or motorcycle?</td><td>1</td><td>2</td></tr> <tr><td>A car?</td><td>1</td><td>2</td></tr> <tr><td>A water pump?</td><td>1</td><td>2</td></tr> <tr><td>A bullock cart?</td><td>1</td><td>2</td></tr> <tr><td>A thresher?</td><td>1</td><td>2</td></tr> <tr><td>A tractor?</td><td>1</td><td>2</td></tr> </tbody> </table>		Yes	No	A mattress?	1	2	A pressure cooker?	1	2	A chair?	1	2	A cot or bed?	1	2	A table?	1	2	A clock or Watch?	1	2	An electric fan?	1	2	A bicycle?	1	2	A radio or transistor?	1	2	A sewing machine?	1	2	A telephone or Mobile?	1	2	A refrigerator?	1	2	A television?	1	2	A moped, scooter, or motorcycle?	1	2	A car?	1	2	A water pump?	1	2	A bullock cart?	1	2	A thresher?	1	2	A tractor?	1	2	
	Yes	No																																																													
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A table?	1	2																																																													
A clock or Watch?	1	2																																																													
An electric fan?	1	2																																																													
A bicycle?	1	2																																																													
A radio or transistor?	1	2																																																													
A sewing machine?	1	2																																																													
A telephone or Mobile?	1	2																																																													
A refrigerator?	1	2																																																													
A television?	1	2																																																													
A moped, scooter, or motorcycle?	1	2																																																													
A car?	1	2																																																													
A water pump?	1	2																																																													
A bullock cart?	1	2																																																													
A thresher?	1	2																																																													
A tractor?	1	2																																																													

16.	<p>What is the type of oil/cooking medium most commonly used in the house?</p> <p>(CHOOSE ONLY ONE IDENTIFIED BY MAXIMUM CONSUMPTION)</p>	<p>Cooking Oil</p> <p>Mustard oil 01</p> <p>Coconut oil 02</p> <p>Groundnut oil 03</p> <p>Sunflower oil 04</p> <p>Soyabean oil 05</p> <p>Palm oil 06</p> <p>Vanaspati oil 07</p> <p>Pure Ghee 08</p> <p>Butter 09</p> <p>Others 96</p> <p>(Specify)</p>	
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INTEGRATED DISEASE SURVEILLANCE PROJECT (IDSP)

NCD RISK FACTORS SURVEY (PHASE -I), INDIA

(Name of State Year -2007)

INDIVIDUAL QUESTIONNAIRE

IDENTIFICATION	
STATE CODE:	<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>
DISTRICT CODE	<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>
TEHSIL/TALUK	<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>
CITY/TOWN/VILLAGE	<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>
SEGMENT NUMBER:	<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>
URBAN/RURAL (URBAN=1, RURAL =2, URBAN SLUM = 3)	<input style="width: 20px; height: 20px;" type="text"/>
PSU NUMBER	<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>
HOUSEHOLD NUMBER	<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>
LINE NUMBER OF PARTICIPANT NAME: _____	<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>

CONSENT	RESPONSE			
CONSENT HAS BEEN READ OUT TO PARTICIPANT	YES 1		NO 2	
			IF NO, READ CONSENT	
CONSENT HAS BEEN OBTAINED	YES 1		NO 2	
			IF NO, END	
	1	2	3	FINAL VISIT
Date	_____	_____	_____	Day <input style="width: 20px; height: 20px;" type="text"/>
Interviewer's Name & Code (Step 1 & Step 2)	_____	_____	_____	Month <input style="width: 20px; height: 20px;" type="text"/>
Technician's Name & Code (Step 3)	_____	_____	_____	Year <input style="width: 20px; height: 20px;" type="text"/> 2 <input style="width: 20px; height: 20px;" type="text"/> 0 <input style="width: 20px; height: 20px;" type="text"/>
				Interviewer's Code <input style="width: 20px; height: 20px;" type="text"/>
				Result* (Step-1) <input style="width: 20px; height: 20px;" type="text"/>
				Result* (Step- 2) <input style="width: 20px; height: 20px;" type="text"/>
				Result* (Step- 3) <input style="width: 20px; height: 20px;" type="text"/>
Next Visit Date/ Time	_____	_____		Total Number of Visits <input style="width: 20px; height: 20px;" type="text"/>
*RESULT CODES: 1. COMPLETED 2. NOT AT HOME 3. POSTPONED 4. REFUSED 5. PARTLY COMPLETED 6. NOT ELIGIBLE 9. OTHER (SPECIFY) _____				
NAME DATE	SUPERVISOR	EDITED & CHECKED BY		KEYED BY
 <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>	 <input style="width: 20px; height: 20px;" type="text"/>

STEP- I DEMOGRAPHIC INFORMATION																														
QUESTIONS AND FILTERS		Response	Skip																											
101.	Sex	Male 1 Female 2																												
102.	Age	Age in completed Years <input type="text"/> <input type="text"/>																												
103.	What is your current marital status?	Never married 1 Currently 2 Married 2 Married but gauna not performed..... 3 Widowed/Divorced/Separated 4																												
104.	Have you ever attended school?	Yes 1 No 2	If no, go to 107																											
105.	if yes , what is the highest grade of education you completed?	Grade*..... <input type="text"/> <input type="text"/>																												
106.	Check 105 Grade 0-5 <input type="text"/> ↓	Grade 6 & above <input type="text"/> → Go to 108																												
107.	Can you read and write?	Yes 1 No 2																												
108.	What is your main work/ occupation?	Professional/Executive/Manager/ Big business 1 Clerical/Medium business 2 Sales 3 Agriculture/Self-employed 4 Agriculture employer 5 Household and domestic work 6 Services 7 Skilled manual 8 Unskilled manual 9 Other (Specify)..... 10 Do not work 11																												
<p>*GRADE FOR DIFFERENT LEVEL OF COMPLETED EDUCATION</p> <table border="0"> <thead> <tr> <th>EDUCATION LEVEL</th> <th></th> <th>GRADE</th> </tr> </thead> <tbody> <tr> <td>CLASS I TO XII</td> <td>: 1 TO 12 YEARS</td> <td>= 1 TO 12 GRADE</td> </tr> <tr> <td>BACHELOR'S DEGREE</td> <td>: 15 YEARS (12+3)</td> <td>= 15 GRADE</td> </tr> <tr> <td>MASTER'S DEGREE</td> <td>: 17 YEARS (12+3+2)</td> <td>= 17 GRADE</td> </tr> <tr> <td>ENGINEERING</td> <td>: 16 YEARS (12+4)</td> <td>= 16 GRADE</td> </tr> <tr> <td>MBBS</td> <td>: 17 YEARS (12+5)</td> <td>= 17 GRADE</td> </tr> <tr> <td>POLYTECHNIC</td> <td>: 13 YEARS (10+3)</td> <td>= 13 GRADE</td> </tr> <tr> <td>ITI</td> <td>: 11 YEARS (10 +1)</td> <td>= 11 GRADE</td> </tr> <tr> <td>PH. D.</td> <td>: 20 YEARS (12+3+2+3)</td> <td>= 20 GRADE</td> </tr> </tbody> </table>				EDUCATION LEVEL		GRADE	CLASS I TO XII	: 1 TO 12 YEARS	= 1 TO 12 GRADE	BACHELOR'S DEGREE	: 15 YEARS (12+3)	= 15 GRADE	MASTER'S DEGREE	: 17 YEARS (12+3+2)	= 17 GRADE	ENGINEERING	: 16 YEARS (12+4)	= 16 GRADE	MBBS	: 17 YEARS (12+5)	= 17 GRADE	POLYTECHNIC	: 13 YEARS (10+3)	= 13 GRADE	ITI	: 11 YEARS (10 +1)	= 11 GRADE	PH. D.	: 20 YEARS (12+3+2+3)	= 20 GRADE
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ITI	: 11 YEARS (10 +1)	= 11 GRADE																												
PH. D.	: 20 YEARS (12+3+2+3)	= 20 GRADE																												

STEP- I BEHAVIOURAL INFORMATION

Now I am going to ask you some questions about various health behaviours. This includes things like smoking, drinking alcohol, eating fruits and vegetables and physical activity. Let's start with tobacco

Smoking Tobacco use

Questions		Response	Skip
201.	Do you currently smoke any tobacco products, such as bidis, cigarettes, cigars or pipes, hookah or any other local tobacco products?	Yes 1 No 2	If No, go to 205
202.	If Yes , do you smoke daily ?	Yes 1 No 2	if No, go to 205
203.	On an average, how many (number of times in case of hookah) of the following do you smoke each day? <i>(RECORD FOR EACH TYPE)</i> <i>RECORD 88, IF ANY PRODUCT IS NOT USED INSTEAD OF LEAVING BLANK IN THE PRODUCT CATEGORIES).</i> <i>(RECORD FOR ANY NEW FORM OF TOBACCO USE REPORTED BY THE RESPONDENT e.g. REVERSE SMOKING etc.)</i>	<p style="text-align: center;">Number</p> <p style="text-align: center;">Bidis <input type="text"/> <input type="text"/></p> <p style="text-align: center;">Manufactured Cigarettes <input type="text"/> <input type="text"/></p> <p style="text-align: center;">Hand-rolled Cigarettes <input type="text"/> <input type="text"/></p> <p style="text-align: center;">Pipes <input type="text"/> <input type="text"/></p> <p style="text-align: center;">Cigars, Cheroots <input type="text"/> <input type="text"/></p> <p style="text-align: center;">Hookah <input type="text"/> <input type="text"/></p> <p style="text-align: center;">Other local smoked tobacco products..... <input type="text"/> <input type="text"/> (SPECIFY)</p>	
204.	How old were you at that time when you first started using the tobacco product(s) daily ?	Age in completed years <input type="text"/> <input type="text"/> Don't remember 7 7	Go to 208
205.	In the past, did you ever smoke tobacco products such as bidis, cigarettes, cigars or pipes daily ?	Yes 1 No 2	If No, go to 207
206.	How old were you when you stopped smoking daily?	Age in completed years <input type="text"/> <input type="text"/> Don't remember 7 7	
207.	Are you currently exposed to tobacco smoke at your home or workplace daily ?	Yes 1 No 2	

Smokeless Tobacco use			
Questions		Response	Skip
208.	Do you currently use any smokeless tobacco , such as (chewing tobacco, <i>tuibu</i> snuff, betel, gutka, pan masala, etc.)?	Yes 1 No 2	if No, go to 212
209.	If yes , Do you currently use smokeless tobacco products daily ?	Ye 1 No 2	if No, go to 212
210.	On average, how many times a day do you use... <i>(RECORD FOR EACH TYPE)</i> <i>SPECIFY 77 IF NO PRODUCTS WERE USED IN EACH CATEGORY INSTEAD OF LEAVING CATEGORIES BLANK.</i>	Chewing tobacco <input type="text"/> <input type="text"/> Pan with tobacco <input type="text"/> <input type="text"/> Tuibu, Tobacco Snuff, by mouth <input type="text"/> <input type="text"/> Snuff, by nose <input type="text"/> <input type="text"/> Other <input type="text"/> <input type="text"/> Other (specify).....	
211.	How old were you at that time when you first started using smokeless tobacco daily ?	Age in completed years <input type="text"/> <input type="text"/>	Go to 214
212.	If you are not using currently, in the past did you ever use smokeless tobacco products daily such as chewing tobacco, tuibu, snuff, betel, gutka, etc.?	Yes1 No2	if No, go to 214
213.	How old were you when you stopped using smokeless tobacco products daily ?	Age in completed years <input type="text"/> <input type="text"/>	

Alcohol Consumption			
The next questions ask about the consumption of alcohol.			
Questions		Response	Skip
214.	Have you consumed any alcoholic products (such as beer, wine, whisky, locally prepared alcohol, etc.) within the past 12 months ?	Yes 1 No 2	if No, go to 219
215.	In the past 12 months, how frequently have you had at least one drink?	5-7 days per week 1 1-4 days per week 2 1-3 days per month 3 Less than once per month 4	
216.	When you drink alcohol, on average , how many standard drinks do you have during one day? (<i>USE SHOWCARD</i>)	Number <input type="text"/> <input type="text"/>	
217.	Have you consumed alcohol (such as beer, wine, spirits, or any locally prepared wine, etc.) within the past 30 days ?	Yes 1 No 2	If No go to 220
218.	During each of the past 7 days, how many standard drinks of any alcoholic drink did you have each day? <i>(USE SHOWCARD)</i>	Monday <input type="text"/> <input type="text"/> Tuesday <input type="text"/> <input type="text"/> Wednesday <input type="text"/> <input type="text"/>	Go to 220

		Thursday <input type="text"/>	
		Friday <input type="text"/>	
		Saturday <input type="text"/>	
		Sunday <input type="text"/>	
219.	If answer to Question 214 is No, then Have you ever (past user) consumed alcohol (such as beer, wine, spirits, or any local wine product)?	Yes 1 No 2	if No, go to 221
220.	How old were you when you started consuming alcohol regularly?	Age in years <input type="text"/> Don't Remember 7 7	

Diet

The next questions ask about the fruits and vegetables that you usually eat. I have a nutrition card here that shows you some examples of local fruits and vegetables. Each picture represents the size of a serving. As you answer these questions please think of a 'typical' or a 'usual' week.

Questions		Response	Skip
221.	In a typical week, on how many days do you eat fruit?	Number of days <input type="text"/>	If zero days, go to 223
222.	How many servings of fruit do you eat on one of those days? (USE SHOWCARD)	Number of servings <input type="text"/>	
223.	In a typical week, how many days do you eat vegetables? (USE SHOWCARD)	Number of days <input type="text"/>	If zero days, go to 225
224.	How many servings of vegetables do you eat on one of those days? (USE SHOWCARD)	Number of servings <input type="text"/>	
225.	How often do you consume each of the following ? (USE CODE: DAILY - 1; AT LEAST ONCE IN A WEEK - 2; ONCE IN A MONTH -3; OCCASIONALLY OR RARELY - 4; NEVER - 5)	Butter/Ghee <input type="text"/> Fried local foods (Samosa, Kachori, etc.) <input type="text"/> Red meat <input type="text"/> Eggs <input type="text"/> Chicken <input type="text"/> Fish <input type="text"/> Aerated drinks <input type="text"/> Sweetened drinks <input type="text"/> Pizza/burgers/French fries etc <input type="text"/> Cakes, Pastries or other bakery items <input type="text"/> Chips, Namkeen etc <input type="text"/>	

Physical Activity

Next I am going to ask you about the time you spend doing different types of physical activity in a **typical week**. Please answer these questions even if you do not consider yourself to be a physically active person.

Think first about the time you spend doing work. Work includes things that you have to do such as paid or unpaid work, study/training, household chores, harvesting food/crops, fishing or hunting for food, seeking employment.

In answering the following questions '**Vigorous -Intensity activities**' are activities that require hard physical effort and cause large increase in breathing or heart rate, '**Moderate-Intensity activities**' are activities that require effort and cause small increases in breathing or heart rate.

Questions		Response	Skip
226.	Does your work involve vigorous-intensity activity that causes large increases in breathing or heart rate like (carrying or lifting heavy loads, digging or construction work etc.) for at least 10 minutes continuously ?	Yes 1 No 2	If No, go to 229
227.	In a typical week, on how many days do you do vigorous-intensity activities as part of your work?	Number of days <input type="text"/>	
228.	How much time do you spend doing vigorous-intensity activity at home/work on a typical day?	Hours : minutes <input type="text"/> : <input type="text"/> Hours minutes	
229.	Does your work involve moderate -intensity activity that causes small increases in breathing or heart rate for at least 10 minutes continuously (such as brisk walking or carrying loads, manual washing of clothes, dry sweeping of floor, wet mopping of floor, drawing water from well, carrying water from tap, carrying water from river or well, manual grinding or pounding of cereals, gardening at home, carrying groceries from market, etc.) ?	Yes 1 No 2	If No, go to 232
230.	In a typical week, on how many days do you do moderate-intensity activities as part of your work?	Number of days <input type="text"/>	
231.	How much time do you spend doing moderate-intensity activity at work on a typical day?	Hours : minutes <input type="text"/> : <input type="text"/> Hours minutes	

Travel (related to Physical Activity) to and from places

The next questions exclude the physical activities at work that you have already mentioned. Now I would like to ask you about the usual way you travel to and from places. For example to work, for shopping, to market, to place of worship etc.

232.	Do you walk or use a bicycle (pedal cycle) for at least 10 minutes continuously to get to and from places?	Yes 1 No 2	If No, go to 235
233.	In a typical week, on how many days do you walk or bicycle for at least 10 minutes continuously to get to and from places?	Number of days <input type="text"/>	
234.	How much time do you spend walking or bicycling for travel on a typical day?	Hours : minutes <input type="text"/> : <input type="text"/> Hours minutes	

Recreational Activity			
235.	Do you do any vigorous-intensity sports , fitness or recreational (leisure) activities that cause large increases in breathing or heart rate like (running or football,...) for at least 10 minutes continuously ?	Yes 1 No 2	If No, go to 238
236.	In a typical week, on how many days do you do vigorous-intensity sports, fitness, or recreational activity?	Number of days <input style="width: 40px; height: 20px;" type="text"/>	
237.	How much time do you spend doing vigorous-intensity sports, fitness or recreational (leisure) activities on a typical day ?	Hours : minutes <input style="width: 30px; height: 20px;" type="text"/> : <input style="width: 30px; height: 20px;" type="text"/> Hours minutes	
238.	Do you do any moderate-intensity sports , fitness or recreational (leisure) activities that cause small increases in breathing or heart rate such as brisk walking (cycling, swimming, volleyball etc.) for at least 10 minutes continuously ?	Yes 1 No 2	If No, go to 241
239.	In atypical week, on how many days do you do moderate-intensity sports, fitness, or recreational activity?	Number of days <input style="width: 40px; height: 20px;" type="text"/>	
240.	How much time do you spend doing moderate-intensity sports, fitness, or recreational activities on a typical day?	Hours : minutes <input style="width: 30px; height: 20px;" type="text"/> : <input style="width: 30px; height: 20px;" type="text"/> Hours minutes	
Yoga Activity			
241.	Do you regularly practice Yogic Exercise /Yogasan ?	Yes 1 No 2	If No, go to 244
242.	If yes , how many days in a week?	Number of days <input style="width: 40px; height: 20px;" type="text"/>	
243.	How much time do you spend doing Yoga in a typical day ?	Hours : minutes <input style="width: 30px; height: 20px;" type="text"/> : <input style="width: 30px; height: 20px;" type="text"/> Hours minutes	
Sedentary Behaviour			
The following question is about sitting or reclining at work, at home, getting to and from places, or with friends including time spent [sitting at a desk, sitting with friends, traveling in car, bus, train, reading, playing cards or watching television], but do not include time spent sleeping.			
244.	How much time do you usually spend sitting or reclining on a typical day ?	Hours : minutes <input style="width: 30px; height: 20px;" type="text"/> : <input style="width: 30px; height: 20px;" type="text"/> Hours minutes	

Integrated Disease Surveillance Project (IDSP)

History of Raised Blood Pressure		Response	Skip
245.	When was your blood pressure last measured by a health professional ?	Within past 12 months 1 1-5 years ago 2 More than 5 years ago 3 Never 4	
246.	Have you ever been told by a doctor or other health worker that you have raised (high) blood pressure or hypertension?	Yes 1 No 2	If No, go to 248
247.	Are you currently receiving any of the following treatments/advice for raised (high) blood pressure prescribed by a doctor or other health worker as well as any advice ?		
	Drugs (medication) that you have taken in the last 2 weeks	Yes 1 No 2	
	Special prescribed diet	Yes 1 No 2	
	Advice or treatment to lose weight	Yes 1 No 2	
	Advice or treatment to stop smoking	Yes 1 No 2 Not Applicable 8	
	Advice to start or do more physical activity	Yes 1 No 2	
248.	During the past 12 months have you visited to an AYUSH Practitioner for high blood pressure or hypertension?	Yes 1 No 2	If No, go to 250
249.	Are you currently taking any treatment/medicine from an AYUSH Practitioner for your high blood pressure?	Yes 1 No 2	
History of Diabetes			
250.	Has your blood sugar been measured in the last 12 months ?	Yes 1 No 2	
251.	Have you ever been told by a doctor or health worker that you have diabetes ?	Yes 1 No 2	If No, go to 253
252.	Are you currently receiving any of the following treatments/advice for diabetes prescribed by a doctor or other health worker as well as any advice ?		
	Insulin	Yes 1 No 2	
	Oral drug (medication that you have taken in the last 2 weeks).	Yes 1 No 2	
	Special Prescribed diet	Yes 1 No 2	
	Advice or treatment to lose weight	Yes 1 No 2	
	Advise to start or do more exercise	Yes 1 No 2	
253.	During the past 12 months have you visited/ seen an AYUSH Practitioner for diabetes?	Yes 1 No 2	If No, go to 301
254.	Are you currently taking any treatment/medicine from an AYUSH Practitioner for your diabetes?	Yes 1 No 2	

STEP 2. Physical Measurement			
Questions		Response	Skip
301.	Technician / Interviewer ID		
302.	Device ID for height and weight	Height..... <input type="text"/> <input type="text"/> Weight..... <input type="text"/> <input type="text"/>	
303.	Height	In Centimeter (cm)... <input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/>	
304.	Weight	In Kilograms (kg).... <input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/>	
305.	(For Women) Are you pregnant?	Yes 1 No 2	If Yes, go to 309
Waist Measurement			
306.	Device ID for waist	<input type="text"/> <input type="text"/>	
307.	Waist circumference Reading 1	In Centimeter (cm)... <input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/>	
308.	Waist circumference Reading 2	In Centimeter (cm)... <input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/>	
Blood Pressure and Pulse Rate			
309.	Technician ID	<input type="text"/> <input type="text"/>	
310.	Device ID for Blood Pressure	<input type="text"/> <input type="text"/>	
311.	Cuff Size Used	Small 1 Medium 2 Large 3	
312.	B.P. Reading 1	Systolic (mmHg) <input type="text"/> <input type="text"/> <input type="text"/> Diastolic (mmHg) <input type="text"/> <input type="text"/> <input type="text"/>	
313.	Pulse Rate Reading 1	<input type="text"/> <input type="text"/> <input type="text"/>	
314.	B.P. Reading 2	Systolic (mmHg) <input type="text"/> <input type="text"/> <input type="text"/> Diastolic (mmHg) <input type="text"/> <input type="text"/> <input type="text"/>	
315.	Pulse Rate Reading 2	<input type="text"/> <input type="text"/> <input type="text"/>	
316.	B. P. Reading 3	Systolic (mmHg) <input type="text"/> <input type="text"/> <input type="text"/> Diastolic (mmHg) <input type="text"/> <input type="text"/> <input type="text"/>	
317.	Pulse Rate Reading 3	<input type="text"/> <input type="text"/> <input type="text"/>	

Appendix - C

NATIONAL TECHNICAL ADVISORY COMMITTEE

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Dr. K.R. Sunderam Professor & Head, Depart. of Biostatistics, Amrita Institute of Medical Sciences & Research Centre, Kochi, Kerala	Member
Prof. Arvind Pandey Director, National Institute of Medical Statistics, ICMR, New Delhi	Member
Dr. K. Anand Associate Professor, Centre for Community Medicine, AIIMS, New Delhi	Member
Dr. V. Mohan Director, Madras Diabetes Research Foundation, Chennai	Member
Dr. Bela Shah Scientist 'G' & Head - Division of Non-Communicable Diseases, ICMR, New Delhi	Member-Secretary

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Dr. S.K. Bhattacharya Addl. Director General, ICMR, New Delhi	Member
National Project Officer - IDSP, NICD, DGHS, MOHFW, New Delhi	Member
Dr. Bela Shah Scientist 'G' & Head - Division of Non-Communicable Diseases, ICMR, New Delhi	Member
Smt. Nirmala Kutty Under Secretary-Finance	Member
Dr. Shah Hossain CSU-IDSP, NICD, New Delhi	Member-Secretary

ICMR-PROJECT REVIEW GROUP

<p>Dr. L.M. Nath Consultant, New Delhi</p>	Chair-person
<p>Dr. Bela Shah Scientist 'G' & Head-Division of NCD, ICMR, New Delhi</p>	Member
<p>Prof. Arvind Pandey Director, NIMS, ICMR, New Delhi</p>	Member
<p>Dr. K. Anand Associate Professor, Centre for Community Medicine, AIIMS, New Delhi</p>	Member
<p>Dr. D. K. Shukla Scientist 'F', ICMR, New Delhi</p>	Member
<p>Dr. Prashant Mathur Scientist 'D', ICMR, New Delhi</p>	Member
<p>Dr. H. K. Chaturvedi Scientist 'E', NIMS, ICMR, New Delhi</p>	Member

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(IDSP -NCD RISK FACTOR SURVEY)

Dr. G. Ramana
Mr. G.J. Sastry, Consultant

NATIONAL INSTITUTE OF COMMUNICABLE DISEASES, NEW DELHI
(CENTRAL SURVEILLANCE UNIT)

Dr. Shiv Lal
Spl. Director General, DGHS &
Project Director (IDSP)

Dr. D. Bachani
Dr. R.L. Ichhpujani
Dr. A. C. Dhariwal,
Dr. Shah Hossain
Dr. Pradeep Khasnobis

DIVISION OF NON-COMMUNICABLE DISEASES
INDIAN COUNCIL OF MEDICAL RESEARCH, NEW DELHI
PROJECT IMPLEMENTING AGENCY

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Dr. D. K. Shukla, Scientist 'F'
Dr. Prashant Mathur, Scientist 'D'

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