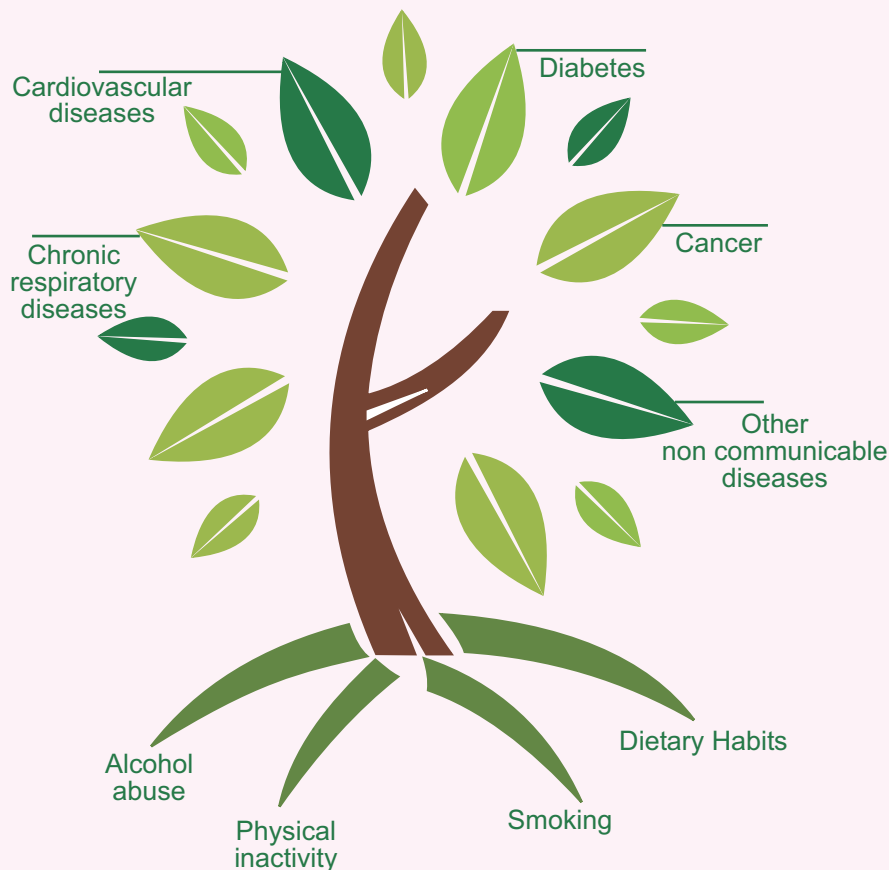




# Non Communicable Diseases

## Risk Factors:

### STEPS Survey Nepal 2013



Government of Nepal  
Ministry of Health and Population



Nepal Health Research Council



World Health Organization  
Country Office for Nepal

# Non Communicable Diseases Risk Factors: STEPS Survey Nepal 2013

## Authors

Krishna Kumar Aryal, Sushhama Neupane, Suresh Mehata, Abhinav Vaidya, Sunil Singh, Frank Paulin, Renu Garg Madanlal, Leanne Margaret Riley, Melanie Cowan, Regina Guthold, Shanker Pratap Singh, Chop Lal Bhusal, Guna Raj Lohani

## Recommended Citation

Aryal, KK; Neupane, S; Mehata, S; Vaidya, A; Singh, S; Paulin, F; Madanlal, RG; Riley, LM; Cowan, M; Guthold, R; Singh, SP; Bhusal, CL; Lohani, GR; (2014) *Non communicable diseases risk factors: STEPS Survey Nepal 2013*. Kathmandu: Nepal Health Research Council

## Contents

List of Tables .....	iv
List of Figures.....	v
List of Annex Tables .....	vi
Acronyms.....	x
Foreword: Khagraj Adhikari, Minister, Ministry of Health and Population .....	xi
Foreword: Dr Praveen Mishra, Secretary, Ministry of Health and Population .....	xiii
Foreword: Dr Lin Aung, WHO Representative to Federal Democratic Republic of Nepal.....	xv
Acknowledgements .....	xvii
Factsheet .....	xviii
Executive Summary .....	xx
<b>Chapter 1.</b> Introduction.....	1
Background.....	1
Objectives.....	2
<b>Chapter 2.</b> Methodology .....	3
Study population .....	3
Sample design .....	3
Survey instruments.....	5
Data collection procedure .....	10
Data processing and analysis.....	12
Ethical considerations.....	13
<b>Chapter 3.</b> Background Characteristics .....	14
Age group and sex .....	14
Education.....	14
Ethnicity.....	15
Marital status .....	15
Employment status.....	16
<b>Chapter 4.</b> Tobacco Use.....	17
Current smokers and daily smokers .....	17
Age of initiation of smoking .....	18
Types of tobacco products used .....	18
Quantity of cigarettes smoked daily .....	19
Years since cessation of smoking.....	19
Former daily smokers .....	20
Past attempts or advice by doctor to quit smoking.....	20
Users of smokeless tobacco .....	20
Types of smokeless tobacco used.....	21
Users of smoke and smokeless tobacco .....	21

Exposure to second-hand smoke.....	21
<b>Chapter 5. Alcohol Consumption .....</b>	<b>22</b>
Current drinkers .....	22
Frequency of alcohol consumption .....	22
Drinking pattern .....	24
Drinking with or without meals.....	24
Drinking in past seven days .....	24
<b>Chapter 6. Dietary Habits.....</b>	<b>26</b>
Fruit and vegetable consumption.....	26
Type of oil used .....	27
Eating outside home.....	27
<b>Chapter 7. Physical Activity .....</b>	<b>28</b>
Level of physical activity .....	28
Time spent on physical activity.....	29
Types of activity.....	30
<b>Chapter 8. Dietary Salt .....</b>	<b>31</b>
Dietary salt intake.....	31
Awareness of need to lower salt intake .....	32
Control of salt intake .....	32
<b>Chapter 9. Oral Health .....</b>	<b>33</b>
State of teeth and gums .....	33
Dentures.....	33
Oral pain or discomfort .....	33
Dental care .....	34
Dental hygiene.....	34
Difficulty chewing or speaking.....	36
Dental caries.....	36
<b>Chapter 10. Housing and Energy.....</b>	<b>37</b>
House construction materials.....	37
Cooking fuel.....	37
Source of lighting.....	37
<b>Chapter 11. Overweight and Obesity .....</b>	<b>38</b>
Body mass index.....	38
Waist hip ratio .....	39
<b>Chapter 12. Blood Pressure.....</b>	<b>40</b>
History of raised blood pressure (hypertension).....	40
Blood pressure treatment .....	40
Lifestyle advice .....	40
Traditional healers and remedies.....	40
Blood pressure measurement .....	40

Pulse rate.....	42
<b>Chapter 13. Blood Glucose.....</b>	<b>43</b>
History of raised blood glucose (diabetes mellitus) .....	43
Diabetes treatment .....	43
Lifestyle advice .....	43
Traditional healers and remedies .....	43
Blood glucose measurement.....	43
<b>Chapter 14. Abnormal Lipids.....</b>	<b>45</b>
Total cholesterol .....	45
High density lipoproteins .....	46
Triglycerides.....	46
Low density lipoproteins .....	47
<b>Chapter 15. Combined risk factors and cardiovascular disease risk prediction .....</b>	<b>49</b>
Combined risk factors.....	49
Cardiovascular disease risk prediction .....	50
<b>Chapter 16. Conclusion and Recommendations .....</b>	<b>51</b>
Conclusion .....	51
Recommendations.....	51
References.....	54
<b>Annex I. Data Tables.....</b>	<b>I</b>
Background characteristics.....	I
Tobacco use .....	II
Alcohol consumption.....	XI
Fruit and vegetable consumption.....	XVI
Physical activity .....	XVIII
Dietary salt .....	XXVII
Oral health.....	XXV
Housing and energy.....	XXX
Overweight and obesity .....	XXXII
Blood pressure .....	XXXV
Blood glucose .....	XXXIX
Abnormal lipids .....	XLII
Combined risks factors .....	XLIV
<b>Annex II. List of Steering Committee Members, Study Team and Data Collection Team .....</b>	<b>XLV</b>
<b>Annex III. Survey Instruments .....</b>	<b>XLVII</b>
<b>Annex IV. Caste Classification Card .....</b>	<b>LXVIII</b>
<b>Annex V. Show Cards.....</b>	<b>LXIX</b>
<b>Annex VI: Reference Laboratories.....</b>	<b>LXXIV</b>

## List of Tables

Table 1 Age group and sex of respondents.....	14
Table 2 Ethnic group of respondents.....	15
Table 3 Marital status of respondents .....	15
Table 4 Employment status of respondents .....	16
Table 5 Current smokers among all respondents and current daily smokers among current smokers .....	17
Table 6 Mean age of starting smoking.....	18
Table 7 Quantity of cigarettes smoked per day by current daily smokers .....	19
Table 8 Mean years since cessation of smoking .....	19
Table 9 Current users of smokeless tobacco .....	20
Table 10 Current (daily and non-daily) tobacco users (smoke and smokeless) .....	21
Table 11 Number of servings of fruit and vegetables per day.....	26
Table 12 Percentage of respondents consuming less than 5 servings of fruit and vegetables per day.....	27
Table 13 Level of total physical activity (low, moderate, high) .....	29
Table 14 Percentage of respondents who think they consume far too much or too much salt.....	31
Table 15 Percentage of respondents who think that consuming too much salt could cause serious health problems.....	32
Table 16 Percentage of respondents with oral pain or discomfort.....	33
Table 17 Percentage of respondents using various tools to clean teeth .....	35
Table 18 Percentage of respondents with dental caries.....	36
Table 19 Main fuel used for cooking .....	37
Table 20 BMI for respondents of both sexes (excluding pregnant women) .....	38
Table 21 Prevalence of high LDL .....	47
Table 22 Percentage of respondents with a 10-year CVD risk $\geq 30\%$ .....	50

## List of Figures

Figure 1 Education (number of completed years) by age group and sex .....	14
Figure 2 Percentage of current drinkers (drank at least 1 drink in past 30 days) .....	22
Figure 3 Mean number of drinking occasions (consumed at least one drink) in the past 30 days.....	23
Figure 4 Mean standard drinks per drinking occasion among current drinkers .....	23
Figure 5 Percentage not meeting WHO recommendations for physical activity for health .....	28
Figure 6 Prevalence of raised blood pressure (including those on medication).....	41
Figure 7 Proportion of respondents with raised blood pressure not on medication .....	41
Figure 8 Prevalence of diabetes mellitus.....	44
Figure 9 Prevalence of raised total cholesterol .....	45
Figure 10 Prevalence of low HDL.....	46
Figure 11 Prevalence of raised triglycerides.....	47
Figure 12 Percentage of respondents with 3–5 risk factors .....	49

## List of Annex Tables

### Background characteristics

Table B1: Mean number of years of education .....	I
Table B2: Highest level of education .....	I
Table B3: Unpaid work and unemployment .....	II

### Tobacco use

Table T1: Smoking status .....	II
Table T2: Mean duration of smoking among current daily smokers .....	III
Table T3: Manufactured cigarette smoking .....	III
Table T4: Mean amount of tobacco used by daily smokers by type .....	IV
Table T5: Current smokers and tobacco product smoked .....	V
Table T6: Former daily smokers (who do not currently smoke), among all respondents and ever daily smokers .....	VI
Table T7: Current smokers who have attempted to stop or been advised by a doctor to stop smoking ....	VI
Table T8: Smokeless tobacco use .....	VII
Table T9: Former daily smokeless tobacco users (who don't currently use tobacco), among all respondents and ever daily users .....	VII
Table T10: Mean times of smokeless tobacco use by type, among daily smokeless tobacco users .....	VIII
Table T11: Current users of smokeless tobacco and product used .....	IX
Table T12: Exposure to second-hand smoke during past 30 days .....	X

### Alcohol consumption

Table A1: Alcohol consumption among all respondents .....	XI
Table A2: Frequency of alcohol consumption in past 12 months .....	XI
Table A3: Mean number of drinking occasions in past 30 days, among current drinkers (i.e., those who drank in last 30 days) .....	XII
Table A4: Mean number of standard drinks per drinking occasion, among current drinkers (i.e., those who drank in last 30 days) .....	XII
Table A5: Category I, II and III drinking, among current drinkers (i.e., those who drank in last 30 days) .....	XII
Table A6: Category III and II drinking, among all respondents .....	XIII
Table A7: Mean maximum number of drinks consumed on one occasion in past 30 days, among current drinkers .....	XIII



Table A8: Consumption of 4/5 or more drinks on a single occasion at least once during the past 30 days, among total respondents.....	XIII
Table A9: Mean number of times consumed 4/5 or more drinks on a single occasion in past 30 days, among current drinkers .....	XIV
Table A10: Drinking with meals among current drinkers .....	XIV
Table A11: Frequency and quantity of drinks consumed in past 7 days, among current drinkers .....	XV
<b>Fruit and vegetable consumption</b>	
Table D1: Mean number of days fruit consumed in a typical week.....	XVI
Table D2: Mean number of days vegetables consumed in a typical week .....	XVI
Table D3: Mean number of servings of fruit on average per day .....	XVI
Table D4: Mean number of servings of vegetables on average per day .....	XVI
Table D5: Mean number of servings of fruit or vegetables on average per day.....	XVII
Table D6: Type of oil or fat most often used for household meal preparation .....	XVII
Table D7: Mean number of meals eaten outside home in a week .....	XVII
<b>Physical activity</b>	
Table P1: Mean minutes of total physical activity per day .....	XVIII
Table P2: Median minutes of total physical activity per day .....	XVIII
Table P3: Mean minutes spent in physical activity (work-, transport- and recreation-related) on average per day.....	XVIII
Table P4: Median minutes spent in physical activity (work-, transport- and recreation-related) on average per day.....	XIX
Table P5: Percentage of respondents not doing minimum recommended (at least 10 minutes) physical activity (work-, transport- and recreation-related).....	XIX
Table P6: Contribution of work-, transport- and recreation-related physical activity to total activity .....	XX
Table P7: Percentage of respondents not engaging in vigorous physical activity.....	XX
Table P8: Minutes spent in sedentary activity on a typical day.....	XXI
<b>Dietary salt</b>	
Table DS1: Types of dietary salt used .....	XXII
Table DS2: Salt consumption habits .....	XXII
Table DS3: Self-reported quantity of salt consumed .....	XXIII
Table DS4: Percentage of respondents who agree with the importance of lowering salt in diet.....	XXIII
Table DS5: Techniques used on a regular basis to control salt intake .....	XXIV

## Oral health

Table O1: Percentage of respondents with natural teeth.....	XXV
Table O2: Percentage of respondents with poor or very poor state of teeth and gums, among those with natural teeth.....	XXV
Table O3: Percentage of respondents with removable dentures .....	XXVI
Table O4: Percentage of respondents who have seen a dentist in the past 12 months.....	XXVI
Table O5: Percentage of respondents who have never received dental care.....	XXVII
Table O6: Main reason for last visit to dentist, among those who ever visited a dentist.....	XXVII
Table O7: Percentage of respondents who clean their teeth at least once and at least twice a day ....	XXVII
Table O8: Percentage of respondents who use toothpaste, among those who clean their teeth .....	XXVIII
Table O9: Percentage of respondents who use toothpaste containing fluoride, among those who use toothpaste.....	XXVIII
Table O10: Percentage of respondents who have had problems resulting from poor oral status during past 12 months.....	XXVIII

## Housing and energy

Table X1: Roof materials of house .....	XXX
Table X2: Wall materials of house .....	XXX
Table X3: Floor materials of house .....	XXX
Table X4: Percentage of respondents with a separate kitchen in their house.....	XXX
Table X5: Types of stoves used for cooking .....	XXXI
Table X6: Main source of lighting .....	XXXI

## Overweight and obesity

Table M1: Mean height and weight among all respondents .....	XXXII
Table M2: Mean BMI (kg/m <sup>2</sup> ) among all respondents .....	XXXII
Table M3: Percentage of respondents (excluding pregnant women) in each BMI category .....	XXXII
Table M4: Percentage of respondents classified as overweight (BMI≥25) .....	XXXIII
Table M5: Mean waist and hip circumference among all respondents (excluding pregnant women) ..	XXXIII
Table M6: Mean waist-to-hip ratio among all respondents (excluding pregnant women).....	XXXIV

## Blood pressure

Table H1: Blood pressure measurement and diagnosis of hypertension .....	XXXIV
Table H2: Percentage of respondents currently taking blood pressure drugs prescribed by doctor or health worker, among those diagnosed .....	XXXV

Table H3: Percentage of previously diagnosed hypertensive respondents who have received lifestyle advice from a doctor or health worker .....	XXXV
Table H4: Percentage of previously diagnosed hypertensive respondents who have visited or received treatment from a traditional healer .....	XXXVI
Table M7: Mean systolic and diastolic blood pressure (mmHg) .....	XXXVI
Table M8: Percentage of respondents with raised blood pressure .....	XXXVII
Table M9: Percentage of respondents with treated or controlled raised blood pressure, among those with raised blood pressure (SBP $\geq$ 140 and/or DBP $\geq$ 90 mmHg) or currently on medication for raised blood pressure .....	XXXVIII
Table M10: Mean heart rate (beats per minute).....	XXXVIII
<b>Blood glucose</b>	
Table H5: Blood glucose measurement and diagnosis of diabetes mellitus.....	XXXIX
Table H6: Percentage of respondents currently taking insulin and oral medication, among those previously diagnosed.....	XXXIX
Table H7: Percentage of respondents who have received diabetes lifestyle advice from a doctor or health worker, among those previously diagnosed .....	XL
Table H8: Percentage of respondents who have sought advice or treatment for diabetes from a traditional healer, among those previously diagnosed.....	XL
Table M11: Percentage of respondents currently on medication for diabetes .....	XLI
Table M12: Mean fasting blood glucose (mg/dl) among all respondents .....	XLI
Table M13: Impaired fasting glycaemia among all respondents .....	XLI
Table M14: Raised blood glucose (plasma venous value $\geq$ 126 mg/dl) or currently on medication for diabetes.....	XLI
<b>Abnormal lipids</b>	
Table M15: Mean total cholesterol among all respondents including those currently on medication for raised cholesterol.....	XLII
Table M16: Percentage of respondents with raised total cholesterol or on medication for raised cholesterol .....	XLII
Table M17: Mean HDL among all respondents .....	XLII
Table M18: Percentage of respondents with low HDL .....	XLIII
Table M19: Mean fasting triglycerides among all respondents.....	XLIII
Table M20: Percentage of respondents with raised fasting triglycerides.....	XLIII
Table M21: Mean LDL among all respondents .....	XLIII
<b>Combined risk factors</b>	
Table S1: Summary of combined risk factors.....	XLV

## Acronyms

BMI	body mass index
BP	blood pressure
CBS	Central Bureau of Statistics
CI	confidence interval
CVD	cardiovascular disease
DBP	diastolic blood pressure
dl	decilitre
HDL	high density lipoproteins
Hg	mercury
IFG	impaired fasting glycaemia
LDL	low-density lipoproteins
LPG	liquefied petroleum gas
MET	metabolic equivalents of task
MoHP	Ministry of Health and Population
NCD	non communicable disease
NHRC	Nepal Health Research Council
PDA	personal digital assistant
PPS	probability proportionate to size
PSU	primary sampling unit
SBP	systolic blood pressure
SEARO	South East Asia Regional Office
SOLID	Society for Local Integrated Development Nepal
SPSS	Statistical Package for the Social Sciences
SSU	secondary sampling unit
VDC	village development committee
WHO	World Health Organization



Phone : 4-262534, Fax : 4-262565

Government of Nepal  
**Ministry Of Health & Population**

Ramshahpath, Kathmandu, Nepal

Ref :

**Hon'ble Khaga Raj Adhikari**  
Minister for Health and Population  
Date : .....

**20th April 2014**

### **Foreword**

Non Communicable Diseases (NCDs) pose a growing burden in Nepal, while the burden of communicable diseases also remains persistently high. The Non Communicable Diseases Risk Factors: STEPS Survey Nepal 2013 comes as one of the major contributions to the pool of primary evidences in this country. Nepal Health Research Council, as an apex body to support evidence informed policy making, should lead on the generation of evidence required for the health of the population. The survey was conducted by the Nepal Health Research Council (NHRC), with the primary support of the Ministry of Health and Population (MoHP), and technical assistance and partial financial support from the World Health Organization (WHO).

This survey was conducted to provide key information on the prevalence and changing profile of non communicable disease risk factors in Nepal. The survey provides essential baseline information to develop strategies to prevent and control the growing burden of Non Communicable Diseases in Nepal. It thus gives me immense pleasure to see this report come under the stewardship of the Ministry of Health and Population and the leadership of the Nepal Health Research Council.

  
-----  
**Khagraj Adhikari**  
Minister





Government of Nepal

# Ministry of Health & Population

Phone : 4.

262987  
262590  
262802  
262706  
262935  
262862

Ref: .....

Ramshahpath, Kathmandu  
Nepal

Date : .....

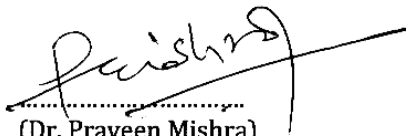
20th April 2014

## Foreword

The Non Communicable Diseases Risk Factors: STEPS Survey Nepal 2013 was led by the Nepal Health Research Council (NHRC) with the primary support of Ministry of Health and Population (MoHP), and conducted with the technical assistance from the World Health Organization (WHO) along with their partial financial support. The survey was implemented by the NHRC and overseen by a steering committee including representatives from the NHRC, government, and academic and private institutions. The design of the survey was informed by the WHO STEPwise approach to Surveillance of NCD Risk Factors (STEPS).

This survey was conducted to provide key information on the changing profile of noncommunicable disease risk factors in Nepal, and in particular baseline information on biological risk factor prevalence in Nepal. Nepal is increasingly facing double burden of communicable and noncommunicable diseases and an understanding of risk factor prevalence of NCDs is an essential first step in addressing this challenge.

This survey provides essential information to monitor and confront the challenge of the growing burden of NCDs in Nepal in the global context. I would like to thank all those contributed for successfully conducting the NCD survey and completing this report.

  
.....  
(Dr. Praveen Mishra)  
Secretary





## Foreword

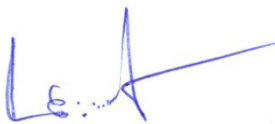
Non-communicable diseases (NCDs) are major causes of preventable deaths and disabilities in Nepal. With technical assistance from the World Health Organization the first nationally representative NCD STEPS survey was conducted by the Nepal Health Research Council (NHRC) under the supervision of the Ministry of Health and Population (MOHP) in order to establish the rational and evidence base for the development of a Multisectoral NCD Action Plan. The survey followed the WHO STEPS Manual guidance and implemented WHO STEP wise approach to chronic disease risk factor surveillance. Evidence driven initiatives have a high probability of bringing about a positive impact in any action taken thereof.

I am particularly pleased to note that the survey was done in a paperless environment. Instead of printed questionnaires and data sheets, PDAs were used for direct data recording, which made the data cleansing and primary analysis easier and less time consuming. This highlights the commitment of MOHP and NHRC to harvest the benefits of modern IT technologies into its processes and actions.

The primary objective of this survey was to provide relevant and up to date evidence on the magnitude and distribution of prevalence of conditions like Diabetes Mellitus and Hypertension, key NCD risk factors and oral health status. Understanding the risk populations demography, behavioural pattern and risk factor prevalence is essential for designing the effective response. Current STEPS survey provides essential baseline information on biological risk factors associated with NCDs in Nepal.

I am confident that the survey findings will support the MOHP to address the growing burden of NCDs in Nepal.

I would like to congratulate NHRC and the Ministry of Health and Population to have come out with this report and findings of “Non Communicable Diseases Risk Factors: STEPS Survey Nepal 2013” which I think will contribute a great deal to the National Health Sector Programme planning, designing effective interventions, both promotive and preventive as well as early diagnosis, treatment and control of NCDs in the country through regular monitoring of the trend and prevalence of NCDs.



Dr Lin Aung

WHO Representative to Federal Democratic Republic of Nepal

20 April 2014

## Acknowledgements

I would like to express my gratitude to everyone involved in this research project. I am indebted to the investigators of the project: Dr Krishna Kumar Aryal and Ms Sushhama Neupane of the Nepal Health Research Council (NHRC), Dr Suresh Mehata of the Nepal Health Sector Support Programme, Dr Abhinav Vaidya of the Kathmandu Medical College and Dr Sunil Singh of the Nepal Army Institute of Health Sciences for conceptualising the study, proposal development, data analysis and production of this report. I would like to acknowledge the support of Dr Praveen Mishra, Secretary of the Ministry of Health and Population. I express my sincere gratitude to Prof Dr Chop Lal Bhusal, the then Executive Chairman of NHRC, who was the guiding force behind this survey. I would also like to thank Dr Shanker Pratap Singh, the then Member Secretary of NHRC and Dr Babu Ram Marasini, Director of the Epidemiology and Disease Control Division, Department of Health Services, for their contribution to completing the survey. I also acknowledge the support of Mr Purushottam Dhakal of NHRC in completing the survey. I would like to acknowledge Dr Sangeeta Rana of NHRC for her contribution to finalization of the report. I express my sincere gratitude to Dr Leanne Margaret Riley, Dr Regina Guthold and Ms Melanie Cowan from the World Health Organization (WHO) headquarters, Geneva, for their technical support. Similarly, I thank Dr Frank Paulin of the WHO Country Office Nepal and Dr Renu Garg Madanlal of WHO South East Asia Regional Office (SEARO) for their support. I also appreciate the support of Dr Shailesh Upadhyaya of the WHO Country Office Nepal, Badri Bahadur Khadka, Chief of the Tobacco and NCD Control Section, National Health Education Information and Communication Center, Prof Dr Shaili Pradhan of the National Academy for Medical Sciences and Dr Krishnan Anand of WHO SEARO.

Appreciation is due to all the members of the Steering Committee for this survey. I would also like to thank the field supervisors, Baivab Shrestha and Anurag Singh Ghimire of NHRC, and the medical laboratory technologists, laboratory technicians and enumerators of the survey for completing the data collection smoothly. I am also thankful to Bijay Kumar Jha of NHRC for ensuring the smooth implementation of the survey.

I am especially thankful to all of those who participated in the survey and to the community leaders, female community health volunteers and chiefs of the district public health offices of the selected districts for their help in implementing the study. I would like to acknowledge Nirbhay Kumar Sharma and Subodh Kumar Karna and all the staff of NHRC who assisted us to complete the report on time. I also acknowledge the support of Pradeep Belbase. I am grateful to the Nepali-German Health Sector Support Programme for its support in the copyediting of this report and to Susan Sellars-Shrestha for the actual copyediting. I am also grateful to the WHO Country Office Nepal for their financial support, which complemented the regular budget of the Government of Nepal and made it possible to complete this survey.

Dr Guna Raj Lohani

Executive Chief

Nepal Health Research Council

# Non Communicable Diseases Risk Factors: STEPS Survey Nepal 2013



## Factsheet

The STEPS survey of chronic disease (non communicable diseases) risk factors in Nepal was carried out from July 2012 to June 2013. Nepal carried out STEPS I, II and III: Socio demographic and behavioural information was collected in STEP I; physical measurements such as height, weight and blood pressure were collected in STEP II; and biochemical measurements were collected to assess blood glucose and cholesterol levels in STEP III. The STEPS survey in Nepal was a population-based survey of adults aged 15–69 years. A multistage sample design was used to produce representative data for that age range in Nepal. A total of 4,143 adults participated in the Nepal STEPS survey. The overall response rate was 98.6% for STEP I, 98.3% for STEP II and 89.8% for STEP III. A repeat survey is planned for 2017/18.

Results for adults aged 15–69 years (including 95% CI)	Both sexes	Men	Women
<b>STEP I Tobacco use</b>			
Percentage who currently smoke tobacco	18.5 (16.5–20.5)	27.0 (23.7–30.4)	10.3 (8.7–11.9)
Percentage who currently smoke tobacco daily	15.8 (13.8–17.7)	22.1 (18.9–25.4)	9.6 (8.1–11.2)
<i>For those who smoke tobacco daily</i>			
Average age started smoking (years)	18.2 (17.7–18.7)	18.5 (17.8–19.1)	17.6 (16.9–18.4)
Percentage of daily smokers smoking manufactured cigarettes	84.8 (80.2–89.4)	89.9 (85.0–94.9)	73.5 (66.3–80.6)
Mean number of manufactured cigarettes smoked per day (by smokers of manufactured cigarettes)	6.2 (5.5–6.8)	6.6 (5.8–7.4)	5.1 (4.4–5.8)
<b>STEP I Alcohol consumption</b>			
Percentage who are lifetime abstainers	73.5 (70.7–76.3)	58.0 (53.5–62.6)	88.3 (85.9–90.7)
Percentage who are past 12 months abstainers	4.5 (3.6–5.4)	6.8 (5.2–8.5)	2.3 (1.6–3.0)
Percentage who currently drink (drank alcohol in the past 30 days)	17.4 (15.0–19.7)	28.0 (24.3–31.8)	7.1 (5.2–9.0)
Percentage who engage in heavy episodic drinking (men who had 5 or more / women who had 4 or more drinks on any day in the past 30 days)		18.6 (15.3–21.9)	2.9 (2.0–3.8)
<b>STEP I Fruit and vegetable consumption (in a typical week)</b>			
Mean number of days fruit consumed	1.9 (1.8–2.1)	1.9 (1.8–2.2)	1.9 (1.7–2.1)
Mean number of servings of fruit consumed on average per day	0.5 (0.4–0.5)	0.5 (0.4–0.6)	0.5 (0.4–0.5)
Mean number of days vegetables consumed	4.8 (4.6–4.9)	4.8 (4.6–5.0)	4.8 (4.6–4.9)
Mean number of servings of vegetables consumed on average per day	1.4 (1.3–1.4)	1.4 (1.3–1.5)	1.3 (1.3–1.4)
Percentage who ate less than 5 servings of fruit and/or vegetables on average per day	98.9 (98.4–99.4)	98.9 (98.1–99.6)	98.9 (98.3–99.5)
<b>STEP I Physical activity</b>			
Percentage with low levels of activity (defined as < 600 MET-minutes per week)*	3.5 (2.6–4.3)	4.5 (3.1–5.9)	2.4 (1.8–3.0)
Percentage with high levels of activity (defined as ≥ 3000 MET-minutes per week)*	85.0 (83.0–87.0)	83.6 (80.7–86.4)	86.3 (84.2–88.4)
Median time spent on physical activity on average per day (minutes) (presented with inter-quartile range)	240.0 (143.65–360.0)	242.1 (135.0–381.4)	240.0 (150.0–360.0)
Percentage not engaging in vigorous activity	53.6 (50.1–57.1)	43.5 (39.1–47.9)	63.3 (59.4–67.2)

\* For complete definitions of low and high levels of physical activity see the GPAQ Analysis Guide at: <http://www.who.int/chp/Steps/GPAQ/en/index.html>.

# Non Communicable Diseases Risk Factors: STEPS Survey Nepal 2013



## Factsheet

Results for adults aged 15–69 years (including 95% CI)	Both sexes	Men	Women
<b>STEP II Physical measurements</b>			
Mean body mass index – BMI (kg/m <sup>2</sup> )	22.4 (22.2–22.6)	22.4 (22.1–22.7)	22.4 (22.2–22.7)
Percentage who are overweight (BMI ≥ 25 kg/m <sup>2</sup> )	21.6 (19.5–23.8)	21.2 (18.1–24.2)	22.1 (19.8–24.4)
Percentage who are obese (BMI ≥ 30 kg/m <sup>2</sup> )	4.0 (3.1–4.8)	3.1 (2.0–4.3)	4.8 (3.7–5.9)
Average waist circumference (cm)		79.8 (79.0–80.7)	76.7 (76.0–77.5)
Mean systolic blood pressure – SBP (mmHg), including those currently on medication for raised blood pressure – BP	127.4 (126.5–128.3)	131.1 (129.9–132.3)	123.9 (122.8–124.9)
Mean diastolic blood pressure – DBP (mmHg), including those currently on medication for raised BP	79.8 (79.2–80.4)	81.2 (80.2–82.2)	78.5 (77.8–79.1)
Percentage with raised BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg or who are currently on medication for raised BP)	25.7 (23.5–27.9)	31.1 (27.7–34.5)	20.6 (18.5–22.7)
Percentage with raised BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg) who are not currently on medication for raised BP	88.3 (85.9–90.7)	89.1 (85.9–92.3)	87.1 (83.8–90.5)
<b>STEP III Biochemical measurements</b>			
Mean fasting blood glucose, including those currently on medication for raised blood glucose (mg/dl)	91.5 (90.0–92.9)	93.4 (91.2–95.6)	89.7 (88.3–91.0)
Percentage with impaired fasting glycaemia (plasma venous value ≥110 mg/dl and < 126 mg/dl)	4.1 (3.0–5.2)	5.0 (3.4–6.7)	3.2 (2.2–4.1)
Percentage with raised fasting blood glucose (plasma venous value ≥126 mg/dl or currently on medication for raised blood glucose)	3.6 (2.9–4.4)	4.6 (3.4–5.7)	2.7 (1.9–3.6)
Mean total blood cholesterol, including those currently on medication for raised cholesterol (mg/dl)	162.3 (159.7–164.9)	163.4 (159.7–167.0)	161.2 (158.6–163.8)
Percentage with raised total cholesterol (≥ 190 mg/dl or currently on medication for raised cholesterol)	22.7 (20.5–24.9)	24.5 (21.3–27.7)	21.0 (18.7–23.3)
<b>Summary of combined risk factors</b>			
<ul style="list-style-type: none"> <li>current daily smokers</li> <li>less than 5 servings of fruit and vegetables per day</li> <li>low level of activity</li> </ul>		<ul style="list-style-type: none"> <li>overweight (BMI ≥ 25 kg/m<sup>2</sup>)</li> <li>raised BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg or currently on medication for raised BP)</li> </ul>	
Percentage with none of the above risk factors	0.4 (0.1–0.7)	0.1 (0.0–0.2)	0.7 (0.2–1.2)
Percentage with three or more of the above risk factors, aged 15–44 years	9.8 (8.2–11.5)	13.5 (10.7–16.3)	6.3 (5.0–7.6)
Percentage with three or more of the above risk factors, aged 45–69 years	29.5 (26.4–32.7)	33.5 (29.1–37.9)	25.5 (21.8–29.2)
Percentage with three or more of the above risk factors, aged 15–69 years (total age group)	15.1 (13.5–16.8)	19.0 (16.5–21.5)	11.4 (9.8–13.0)

For additional information, please contact:

STEPS country focal point

Nepal Health Research Council

Dr Krishna Kumar Aryal, krish.aryal@nhrc.org.np, krish.aryal@gmail.com

Ms Sushhama Neupane, neupanesushhama@gmail.com

## Executive Summary

The emerging pandemic of non communicable diseases (NCDs) is creating major health challenges globally. The burden of non communicable diseases is also increasingly affecting developing countries such as Nepal. Similar to other low and middle income countries, Nepal is facing a triple burden of diseases: communicable diseases, re-emerging diseases and an escalation of non communicable diseases. Cardiovascular diseases, cancer, chronic obstructive pulmonary diseases and diabetes have been identified by the World Health Organization (WHO) as the four major NCDs worldwide. These diseases are driven by various forces including ageing, rapid unplanned urbanisation and the globalisation of unhealthy lifestyles. The World Health Report 2002 states the eight major risk factors (four behavioural and four biological) that contribute most to the development of NCDs (WHO 2002). To reduce NCDs it is important to focus on decreasing the risk factors associated with these diseases and mapping the epidemic of NCDs and their risk factors.

In Nepal, the first national-level NCD risk factor survey was conducted in 2007/08 to determine the prevalence of modifiable behavioural risk factors; however, this survey did not cover biological risk factors. Against this backdrop, the current study was conducted in 2012/13 (five years later) to collect baseline data on biological risk factors and determine the distribution of modifiable behavioural risk factors (NCD risk factors) among the Nepalese population.

## Method

This national NCD risk factor survey was conducted as a cross sectional study from July 2012 to June 2013 with data collection spread from January to June 2013. Prior to data collection, ethical approval was sought from the independent ethical review board of the Nepal Health Research Council. The main objective of the survey was to estimate the national prevalence of major NCD risk factors among different population strata in Nepal. A sample size of 4,200 was used to represent the target population (15–69 year old adults) in Nepal. Multi-stage cluster sampling using a mix of probability proportionate to size (PPS) and systematic random sampling was applied using the sampling framework from the Nepal Census 2011 (CBS 2011) to select the participants. The primary sampling unit (PSU) of this survey was the Ilaka (an administrative unit at the sub-district level). Out of the 921 Ilakas in Nepal, 70 were selected, which were proportionately distributed across Nepal's three ecological zones based on population proportion, as per the latest Census (CBS 2011). Individual wards in a village development committee (VDC) or municipality were considered as clusters and these clusters were taken as the secondary sampling unit (SSU). Three clusters were selected from each of the sampled Ilakas using the PPS sampling method, leading to the selection of 210 wards. Twenty households were selected from each cluster using systematic sampling. One participant out of the eligible candidates (15–69 years) in each selected household was selected to take part in the survey using the Kish method.

The survey was conducted using the WHO NCD STEPS instrument version 2.2, which consists of three Steps for measuring NCD risk factors. Socio demographic and behavioural information were collected in STEP I. Behavioural information included tobacco use, harmful alcohol consumption, low fruit and vegetable consumption, history of raised blood pressure and blood glucose levels, oral health, dietary salt consumption, and housing and energy (indoor air pollution). Physical measurements such as height, weight and blood pressure were collected in STEP II. Biochemical measurements were collected in STEP III using the wet method to assess blood glucose and cholesterol levels. Data was collected digitally using personal digital assistants (PDAs)

from which data were transferred to Microsoft Excel on personal computers. Data cleaning was done using SPSS 16.0 and analysis undertaken using Epi Info 3.5.1 using prior developed analysis commands. Descriptive weighted analysis was also undertaken along with complex sample analysis.

## Response rate

Out of 4,200 targeted respondents, 4,143 (98.6%) participated in STEP I and 4,130 (98.3%) in STEP II, but only 3,772 (89.8%) participated in STEP III.

## Background characteristics

Among the 4,143 respondents who participated in the survey 1,336 (32.2%) were men and 2,807 (67.8%) were women. The median number of years schooling was 4.6 (men 7.0 years, women 3.5 years). The majority (43.3%) of respondents were from upper caste groups followed by disadvantaged janajatis (31.3%). Around 86.1% of respondents were married at the time of the survey. Regarding employment status, 66.7% of respondents were involved in unpaid work, 26.8% were self employed, 4.2% were non government employees and 2.3% were government employees.

## Tobacco use

The prevalence of smoking among respondents was 18.5% (men 27.0%, women 10.3%). This proportion increased with age among both sexes. Likewise, the prevalence of current daily smoking was 15.8% overall (men 22.1%, women 9.6%). On average, respondents started to smoke at 18.2 years of age (men 18.5 years, women 17.6 years). About 84.8% of current daily smokers smoked manufactured cigarettes; this proportion was higher among men (89.9%) than women (73.5%).

The prevalence of smokeless tobacco use was 17.8% (men 31.3%, women 4.8%). Around 77.6% of current users took snuff by mouth (*khaini*), 23.1% used chewing tobacco and 7.8% used betel or quid. The prevalence of tobacco use, both smoke and smokeless combined, was 30.8%. Nearly one in every two men aged 15–69 years (48.1%) were found to be using either form of tobacco; however, among women this proportion was much less at 14.1%. More than one-third of respondents (36.1%) had been exposed to second-hand smoke at home and 37.2% in the workplace during the past 30 days.

## Alcohol consumption

The prevalence of alcohol consumption (current drinkers, i.e., drank in the past 30 days) was 17.4% (men 28.0%, women 7.1%). Among those who drank in the past 12 months, 17.8% (men 17.9%, women 17.5%) drank daily. Current drinkers on average had taken at least one alcoholic drink on 12.3 occasions in the past 30 days and consumed 4.4 standard drinks on a single drinking occasion. More than one-tenth (men 11.1%, women 13.2%) of current drinkers were binge (heavy) drinkers ( $\geq 60$  g of pure alcohol for men,  $\geq 40$  g for women on a single occasion).

Current drinkers reported consuming 6.5 standard drinks (men 7 standard drinks, women 4.6 standard drinks) as the largest number of drinks on a single occasion. Male current drinkers reported consuming 5 or more drinks on 6 occasions and female current drinkers 4 or more drinks on 2.9 occasions within the past 30 days.

## **Fruit and vegetable consumption**

The surveyed population ate fruit on average on 1.9 days in a typical week. Vegetable consumption was relatively better than fruit consumption with vegetables being eaten on average on 4.8 days in a typical week. The quantity of intake was measured by servings: one serving of fruit was defined as equal to a medium sized banana or apple or equivalent and one serving of vegetables equal to one cup of green leafy vegetables or half a cup of cooked vegetables). The minimum requirement for an adult is five or more servings of fruit or vegetables a day. The overall daily per capita consumption of fruit and vegetables was 1.8 servings in an average day (fruit 0.5 servings and vegetables 1.4 servings). Comparing this to the minimum recommended intake, 98.9% of respondents did not consume an adequate amount of fruit and vegetables on an average day.

## **Physical activity**

Physical activity related to work, transportation and recreational activities was assessed in terms of minutes that caused the respondent to feel breathless or experience increased heart rate. However, continuous activity for at least 10 minutes for vigorous activity and 30 minutes for moderate activity was taken into account in calculating the total activity for the day. The total duration of activity was then converted into metabolic equivalents (MET minutes/week). Based on MET minutes/week, 3.5% of respondents engaged in low physical activity (<600 MET minutes/week), 11.6% undertook moderate physical activity (600–3,000 MET minutes/week) and 85.0% high physical activity (>3,000 MET minutes/week). Around 2.3% of respondents did not meet the WHO recommendations for physical activity for health (150 minutes of moderate-intensity physical activity per week, or equivalent).

## **Dietary salt and oil**

Among the surveyed population, 91.0% consumed powdered salt from the packet with two children on its logo. Around 4.7% of respondents always or often added salt before eating or while eating. Similarly, 11.5% of respondents always or often consumed processed food containing high amounts of salt. Around 10.9% thought that they consumed far too much or too much salt. More than three-quarters of respondents (78.5%) thought that consuming too much salt could cause serious health problems.

Various techniques were used by respondents on a regular basis to control salt intake: Around 15.2% of respondents avoided or minimised their consumption of processed food, 7.5% looked at the salt or sodium levels on food labels, 42.2% ate meals without adding salt at the table and 13.5% bought low salt or low sodium alternatives to control salt intake. Regarding oil consumption, almost four-fifths (79.1%) of respondents most often used mustard oil for meal preparation.

## **Oral health**

Around 95% of respondents were found to have 20 or more natural teeth. Among those with natural teeth, 9.5% had teeth in a poor or very poor state and 7.0% had gums in a poor or very poor state. During the past 12 months, 23.7% of respondents were found to have had pain or discomfort caused by their teeth or gums. Around 6.2% were seen by a dentist, but 83.9% had never received any dental care. The main reason cited for

the last visit to the dentist, among those who had ever visited a dentist, was pain or trouble with teeth and gums (72.9%).

Around 94.9% of respondents cleaned their teeth at least once a day. Among those cleaning their teeth, 88.2% used a toothbrush and 87.1% used toothpaste. During the past 12 months, 16.2% of respondents had difficulty chewing foods and 5.8% had difficulty with speech or trouble pronouncing words due to dental problems. The self-reported prevalence of dental caries was 35.9%.

## **Housing and energy**

Around 62.7% of respondents lived in a house with mud floors. Many lived in houses where the roof (15.2%) and walls (34.4%) were made of mud. More than one-tenth (15.1%) of respondents had no separate kitchen in their house. Nearly, three-quarters (71.4%) of respondents used wood as the main fuel for cooking, while one-quarter (24.4%) used liquefied petroleum gas (LPG). Nearly two-thirds (60.2%) used mud stoves, 26.9% used gas stoves and 6.7% used an open fire for cooking. More than four-fifths of respondents (82.9%) used electricity as the main source of lighting in their house.

## **Overweight and obesity**

Based on body mass index (BMI), one-tenth of respondents (10.4%) were found to be underweight, 67.9% were normal weight, 17.7% were overweight and 4% were obese. Mean waist circumference was 79.8 cm for men and 76.7 cm for women. Mean hip circumference was 88.1 cm for men and 87.5 for women. Mean waist and hip circumference ratio was 0.9 for both sexes and across all age groups.

## **Raised blood pressure (hypertension)**

Around 42.7% of the study population had never had their blood pressure measured. The prevalence of raised blood pressure or hypertension (SBP $\geq$ 140 and/or DBP $\geq$ 90), excluding those on medication, was 23.4% (men 28.7%, women 18.5%) and this figure rose to 25.7% (men 31.1%, women 20.6%) when those currently using medication were included. Among those with raised blood pressure (SBP $\geq$ 140 and/or DBP $\geq$ 90), 3.8% had normal blood pressure with medication, 7.9% were hypertensive with medication and 88.3% were hypertensive without medication.

## **Raised blood glucose (diabetes mellitus)**

Around 89.2% of respondents had never measured their blood glucose. The prevalence of self reported diabetes was 1.9% (men 2.4%, women 1.4%). Among those with diabetes, 9.4% were receiving insulin and 63.4% were taking oral drugs for diabetes. The prevalence of impaired fasting glycaemia (IFG), defined as a plasma venous value of blood glucose  $\geq$ 110 mg/dl to  $<$ 126mg/dl, was 4.1% (men 5.1%, women 3.2%). The prevalence of diabetes mellitus, based on plasma venous value of blood glucose  $\geq$ 126 mg/dl and including those on medication, was 3.6% (men 4.6%, women 2.7%). This proportion was found to increase with age.



## Abnormal lipids

The prevalence of raised total cholesterol (plasma venous value  $\geq 190$  mg/dl) including those currently on medication was 22.7% (men 24.5%, women 21.0%). The prevalence of low HDL (plasma venous value  $< 40$  mg/dl in men and  $< 50$  mg/dl in women) was higher among women (79.3%) than men (61.2%). The prevalence of raised triglycerides (plasma venous value  $\geq 150$  mg/dl) was 25.2% (men 31.4%, women 19.4%).

## Combined risk factors

The prevalence of combined risk factors was calculated using five risk factors: current daily smoking, intake of less than five servings of fruit and vegetables per day, a low level of physical activity, overweight (BMI  $\geq 25$  kg/m<sup>2</sup>) and raised blood pressure (BP) (SBP  $\geq 140$  and/or DBP  $\geq 90$  mmHg or currently on medication for raised BP). Only 0.4% of respondents did not have any of these risk factors, 84.5% had one to two risk factors and 15.1% had three to five risk factors. The proportion of respondents in the age group 40–69 years with a 10-year CVD risk of  $\geq 30\%$  was found to be 3.2% (men 2.6%, women 3.7%). In both sexes this proportion was higher for the 55–69 year age group at 6.1% (men 7.3% , women 4.9%).

## Conclusion

It can be inferred from these results that NCD risk factors are highly prevalent among the Nepalese population, which is a serious public health problem. Unless urgent and targeted interventions are made to prevent, treat and control non communicable diseases and their risk factors, the burden of NCDs could become unbearable in Nepal. There is an urgent need for concerned agencies to plan interventions to prevent and control these risk factors.



## CHAPTER 1. INTRODUCTION

### Background

Non communicable diseases (NCDs) cause 63% of deaths globally and nearly 80% of deaths in low and middle income countries (WHO 2010). In Nepal, 42% of deaths are caused by NCDs and nearly 35% of deaths are caused by four particular NCDs – cardiovascular diseases (CVDs), cancer, chronic obstructive pulmonary diseases and diabetes mellitus (Subedi 2007).

In 2002, the World Health Organization (WHO) identified the eight major behavioural and biological risk factors for NCDs (WHO 2002): tobacco use, harmful alcohol consumption, unhealthy diet (low fruit and vegetable consumption), physical inactivity, overweight and obesity, raised blood pressure, raised blood glucose, and abnormal blood lipids and its subset raised total cholesterol. These behavioural and biological risk factors contribute to chronic diseases such as CVD, cancer, chronic obstructive pulmonary diseases and diabetes mellitus. Additional risk factors such as indoor air pollution (housing and energy), poor oral health and high salt consumption are also closely linked to the development of these chronic diseases (WHO 2009; CDC 2011; Asaria 2007).

Some initial steps were taken in Nepal in the 1980s to assess risk factors for NCDs (dietary salt consumption and hypertension) (Pandey 1987). The Nepal Demographic Health Survey 2011 (MoHP 2012) indicated a high prevalence of tobacco use in Nepal (52% men, 13% women). The Nepal Living Standard Survey 2011 (CBS 2011) revealed that 64.4% of Nepal's households use firewood and 17.7% use liquefied petroleum gas (LPG), indicating a high incidence of indoor air pollution in Nepal.

Previous rounds of WHO STEPS risk factor surveillance were carried out in Nepal in three stages. The first assessment, which was conducted in 2003, was confined to Kathmandu Metropolitan City (WHO 2003). The second covered three districts (Lalitpur, Tanahun and Ilam) and included both urban and rural areas (Shrestha 2006). The third assessment was conducted at the national level (Shrestha 2008). These three studies included only STEP I and STEP II. STEP I covers socio demographic and behavioural variables, while STEP II covers physical measurements such as height, weight, waist and hip circumference, and blood pressure. STEP III covers blood glucose and lipid profile measurement in order to assess biological risk factors. A survey was recently (2011/12) conducted in Kathmandu Metropolitan City that included biological risk factors in addition to some behavioural risk factors (Dhakal 2012); however, this survey did not follow the complete protocol for the STEP-wise surveillance of NCD risk factors.

In 2012/13, this national survey, covering all three STEPS, was carried out to determine the national prevalence of biological and behavioural risk factors. This study is expected to reveal the national burden of NCD risk factors. The evidence generated from the current study will better equip policy makers and programme managers to develop a national action plan for the prevention and control of NCDs in Nepal.

## Objectives

The general objective of this study was to assess the prevalence of NCD risk factors among different population strata in Nepal.

The specific objectives were to:

- determine the prevalence of behavioural risk factors (tobacco use, alcohol consumption, low fruit and vegetable consumption, and physical inactivity);
- measure the prevalence of biological risk factors (raised blood pressure, overweight and obesity, raised blood glucose and abnormal blood lipids); and
- assess the status of additional risk factors (indoor air pollution, oral health and dietary salt intake).

## CHAPTER 2. METHODOLOGY

This study was designed as a cross sectional study to determine the burden of risk factors for NCDs in Nepal.

### Study population

The surveyed population included men and women aged 15–69 years who had been living at their place of residence for at least six months. People with the following characteristics were not included:

- Those visiting Nepal (e.g., tourists)
- Those whose primary place of residence was in a military base or group quarters
- Those residing in hospitals, prisons, nursing homes and other institutions
- Those aged less than 15 years or more than 69 years
- Those too frail and mentally unfit to participate in the study
- Those with any physical disability
- Those unable or unwilling to give informed consent

### Sample design

#### Sample size calculation

The sample size was calculated to represent the entire target population in Nepal. In order to achieve this statistical inference, the sample size calculator by WHO (*sample\_size\_calculator STEPS*) was used to derive a sample size of 4,200. The WHO STEPS NCD survey conducted in Nepal in 2007/08 was taken as the reference proportion (Shrestha 2008). The 2007/08 study had measured the burden of six risk factors (tobacco use, alcohol consumption, low fruit and vegetable consumption, physical inactivity, overweight/obesity and raised blood pressure). The sample size for the present study was calculated using the prevalence of low fruit and vegetable consumption (61.9%). The details of the sample size calculation are given below:

Step 1: Initial calculation

$$n = \frac{Z^2 \cdot P(1-P)}{d^2}$$

Where:

Z = level of confidence measure and represents the number of standard errors away from the mean. This describes the uncertainty in the sample mean or prevalence as an estimate of the population mean (normal deviate if alpha equals 0.05, Z = 1.96, for 95% confidence level).

P = baseline level of indicators. For example, the baseline prevalence of low fruit and vegetable consumption is taken as 61.9%, as found in the WHO NCD STEPS survey 2007/08.

d = margin of error. This is the expected half width of the confidence interval and is taken as 0.05 for this study.

$$n = \frac{1.96 * 1.96 \{0.619 * (1-0.619)\}}{0.05 * 0.05}$$

$$n = 362.3996$$

Step 2: Multiply by design effect (1.5) and number of domains (6). The number of domains was decided by considering three age ranges (15–29, 30–44, 45–69 years) and two sex groups (men and women). This sample size allowed the findings to be stratified into six age-sex estimates.

$$n = 362.3996 * 1.5 * 6 = 3261.5968$$

Step 3: This sample size was adjusted for the expected non response to obtain the final sample size. An 80% response rate was assumed for the study. To adjust for non response, the above sample size was divided by the expected response rate.

$$n = 3261.5968 / 0.8 = 4076.996 \sim 4,200$$

This gave the sample size of 4,200 individuals from the population in the 15–69 year age range.

## Sampling technique

Probability proportionate to size (PPS) was applied in the sampling strategy to improve the precision of the survey estimates. The distribution of population characteristics in Nepal varies across eco-development regions and in urban and rural areas of the country. Topographically, the country is divided into three ecological belts that run from north to south: mountains, hills and Terai (plains). Administratively, the country is divided into 75 districts and these districts are further divided into Ilakas. The Ilakas are divided into rural areas called village development committees (VDCs) and urban municipalities. VDCs and municipalities contain smaller wards – each VDC has 9 wards and the number of wards in each municipality varies according to population distribution, ranging from 10 to 35.

## Ilaka selection

Household information from each Ilaka was taken from the 2011 Census conducted by the Central Bureau of Statistics (CBS 2011). Data was also used from the Health Management Information System of the Department of Health Services Nepal, as the CBS data did not give complete information on the Ilakas. For this survey, the Ilaka was taken as the primary sampling unit (PSU). Out of the 921 Ilakas in Nepal, 159 are in the mountains, 467 in the hills and 295 in the Terai. The Steering Committee and the WHO NCD STEPS team at WHO headquarters in Geneva predetermined the number of PSUs to be taken in the study as 70. Thus, 70 Ilakas were sampled. Considering the varied distribution of the population across the ecological belts and to

avoid the risk of under selection of the sample from the sparsely populated mountain belt, the distribution of Ilakas across ecological belts was determined on the basis of the population distribution pattern in the ecological belts (mountains 7%, hills 43% and Terai 50%). Hence, 30 Ilakas were selected from the hills, 5 from the mountains and 35 from the Terai using PPS. 'STEPS sampling enlarged 1500 PSUs' (Microsoft Excel software) was used to select the Ilakas from all three ecological belts by considering the total number of households in each Ilaka. All of the Ilakas were listed in alphabetical order along with the number of households and categorised into ecological belts. This list was then populated in the aforementioned software and the required number of Ilakas selected from each ecological belt following the instructions in the software.

## Selection of clusters

For the survey, wards (sub-units of VDCs and municipalities) were considered as clusters and taken as the secondary sampling unit (SSU). Three clusters were selected from each of the sampled Ilakas using PPS. All wards for each of the selected Ilakas were listed in order according to their numeric code, then 210 wards were selected (3 wards from each of the 70 Ilakas). To select the three wards from the list, all of the wards in the Ilaka were given a unique identification number, listed in ascending order along with household size and populated in the software. The software then selected the wards randomly on the basis of PPS.

## Selection of households

Twenty households were selected from each cluster using systematic sampling. Thus, a total of 4,200 households were selected from the 210 clusters (20 households per cluster or ward). The sampling interval was determined by dividing the total number of households in the selected wards by 20. Prior to sampling, supervisors visited the selected wards and conducted a detailed social mapping exercise in consultation with local health workers and other key informants in the ward. Key informants consisted of female community health volunteers, local health workers such as the health facility in-charge, village health workers, the secretary of the VDC or ward committee, school teachers and any other active member who had a good understanding of the local context.

In municipalities, one ward covers a large number of households and each ward has more than 5 and sometimes up to 100 streets (*margs* or *toles*). Two margs or toles were selected and ten households were selected from each of the two margs or toles using systematic random sampling. If two or more families were found living in a house, one family was selected randomly. Eligible candidates (15–69 years) from the selected household were listed according to age and sex (males first and then females, in descending order), which was then fed into the Kish program in the personal digital assistants (PDAs), which automatically randomly selected one eligible candidate from each house.

## Survey instruments

The survey was conducted using the WHO NCD STEPS instrument version 2.2. The questionnaire consisted of three STEPS for measuring the NCD risk factors. STEP I includes questionnaires, STEP II includes physical measurements and STEP III includes biochemical measurements. Each step consists of a number of core, expanded and optional questions.

## STEP I

Core	Expanded	Optional
Basic demographic information including age, sex and level of education	Years at school, ethnicity, marital status, employment status, household income	Mental health, intentional and unintentional injury and violence, oral health and sexual behaviours
Tobacco use	Smokeless tobacco use	
Alcohol consumption	Past 7 days drinking	
Fruit and vegetable consumption	Oil and fat consumption	
Physical activity		Objective measure of physical activity behaviour
History of blood pressure	Treatment for raised blood pressure	
History of diabetes	Treatment for diabetes	

## STEP II

Core	Expanded	Optional
Weight and height	Hip circumference	Skin fold thickness, assessment of physical fitness
Waist circumference		
Blood pressure		

## STEP III

Core	Expanded	Optional
Fasting blood glucose		Oral glucose tolerance test, urine examination, salivary cotinine
Total cholesterol	High density lipoproteins (HDL) cholesterol and fasting triglycerides	

The present study included the core and expanded questionnaire along with some of the optional modules (oral health) and additional questionnaires regarding dietary salt consumption and indoor air pollution (housing and energy) for STEP I. For STEP II and III, all of the core and expanded options in the STEPS instrument were used.

The WHO NCD STEPS questionnaire was translated into Nepali and validated through a pilot study and in expert meetings. A pilot study was carried out in a community among 20 households for all three steps. Necessary changes were made to the questionnaires following the pilot study. The pilot study mainly focused on identifying issues with the questions, their coherency and consistency. The total number of questions was not changed after the pilot study. Physical measurements in STEP II were taken using the validated equipment listed in the data collection process section of





the WHO STEPS Surveillance Manual (WHO 2005). Height, weight, waist and hip circumference, blood pressure and heart rate were measured in STEP II. In STEP III, biochemical examination was carried out using the wet method. Blood glucose and lipid profile were examined after 12 hours of fasting.

In this survey, PDAs were used as a data collection tool. The PDAs had eSTEPS software installed to record the information given by the respondents and the biochemical measurements taken in STEP III. Following the completion of data collection, a final master dataset was created.

## Preparation of PDAs with STEPS instrument

Before programming the instrument in the PDAs, the English version of the STEPS instrument version 2.2 was finalised for the local context by adding some additional questions. All of the core modules from this particular version along with optional modules on dietary salt, oral health, and housing and energy (indoor air pollution) were included for this survey. The translation was carried out by the technical working group of the survey and then finalised through several meetings of the technical working group and Steering Committee. The Steering Committee consisted of local experts working with NCDs and their risk factors. Once the Nepalese version of the STEPS instrument was finalised, the file was sent for qml preparation (a program required for the question to be fed into the PDAs through software). The STEPS team at WHO headquarters in Geneva prepared all the qmls for every section of the instrument and, before it was finally set into the PDAs, the prepared qmls were discussed with the technical working group in Nepal. After the qmls were finalised, the STEPS team fed the instrument into the PDAs. The PDAs were then ready with the Nepalese version of the questionnaires to be used in the field. The software installed in the PDAs allowed double data storage: one copy on the machine and another on the memory card.

## Questionnaire

The survey questionnaire covered the demographics and health behaviour of respondents. Demographic information included date of birth (age), sex, ethnicity, marital status, years at school and primary occupation. The health behaviour covered in the questionnaire included tobacco use, alcohol consumption, fruit and vegetable consumption, physical activity, history of raised blood pressure and raised blood glucose, oral health, dietary salt consumption, and housing and energy.

**Tobacco use:** Information on both forms of tobacco use – smoking and smokeless – was collected. Questions were asked to identify current users (those who had smoked or used smokeless tobacco in the past 30 days), daily users and past users. Detailed information was taken from daily users regarding their age at starting tobacco use, frequency of use of tobacco products in a day or week, types of tobacco products used and so on. Information such as age at which the respondent stopped smoking was taken from past users. Information on passive smokers was also gathered. Pictorial cards showing different tobacco products were shown during data collection.

**Alcohol consumption:** Questions were asked to determine the percentage of lifetime abstainers, past 12 months abstainers and current users of alcohol. Detailed information, such as the number of standard drinks consumed and frequency of consuming standard drinks in the last 30 days, was obtained from current users. Pictorial cards showing different kinds of glasses and bowls most commonly used in Nepal were used to help

the participants recall the amount of alcohol consumed. The amount, as identified by the respondent, was then used to calculate the number of standard drinks of alcohol consumed (one standard drink contains 10 grams of ethanol).

**Diet:** Information was taken from respondents on the number of days that they consumed fruit and vegetables in a typical week and the number of servings of fruit and vegetables consumed on average per day. Measurement of the amount of fruit and vegetables was aided by pictorial show cards and measuring cups (one standard serving of fruit or vegetables equals 80 grams).

**Physical activity:** Physical activity related to work was categorised into vigorous, moderate and low levels of activity. Vigorous physical activity was defined as any activity that causes a significant rise in heart rate and breathing rate, for example digging or ploughing fields, lifting heavy weights, etc. Continuous engagement in such activity for at least 10 minutes was considered as involvement in vigorous activity. Moderate physical activity was defined as any activity that causes a moderate increment in heart rate and breathing rate (examples include domestic chores, gardening, lifting light weights, etc.). Continuously engaging in such activity for at least 30 minutes was considered involvement in moderate activity.

Physical activity related to transport and recreation and time spent in sedentary behaviour were also assessed. Physical activity related to transport included travel to work or market by walking or using a bicycle. Recreational activity included two types of activities based on severity, i.e., vigorous and moderate. Vigorous recreational activity was defined as any recreational activity that causes a large increase in heart rate and breathing; for example, games such as football, fast swimming and rapid cycling. Ten minutes of such activity was considered as involvement in vigorous recreational activity. Moderate recreational activity was defined as any kind of recreational activity that causes a moderate increase in heart rate and breathing; examples include yoga and playing basketball. Sedentary behaviour was defined as a behaviour where an individual spends time sitting at a desk, sitting with friends, travelling in a car, bus or train, reading a book, and so on.

**History of raised blood pressure and blood glucose:** Participants were asked about their history of raised blood pressure or blood glucose and advice prescribed by a doctor to control raised blood pressure or blood glucose (such as medicines prescribed or any special diet to be followed, or advice to reduce salt intake, lose weight, stop smoking, or do more exercise).

**Dietary salt:** Information was obtained on knowledge, attitudes and behaviour towards dietary salt. Dietary salt includes ordinary table salt, unrefined salt such as sea salt, salty sauces and so on. Participants were also asked about the addition of salt to food just before eating and during food preparation at home, the frequency of consumption of high salt processed foods and attempts to control salt intake.

**Oral health:** Participants were asked about the health status of their teeth and gums and reasons for visiting a dentist, if they had. They were also asked how frequently they brushed their teeth, materials used for brushing, use of toothpaste and physical, psychological and social problems associated with oral health problems.

**Housing and energy:** Information related to housing and energy (indoor air pollution) was collected by the enumerators by observing different aspects of house construction, such as the materials used for the roof, walls and floors, as well as the kitchen of the house. Questions were also asked about the fuel used for cooking, types of stoves used and source of lighting.

**Physical measurements:** Height and weight were measured and body mass index (BMI) calculated. Waist and hip circumference was also measured in order to determine the waist-hip ratio. Height was measured with a portable standard stature scale. For the height measurement, respondents were asked to remove footwear (shoes, slippers, sandals) and any hat or hair ties. Respondents stood on a flat surface facing the interviewer with their feet together and heels against the backboard with knees straight. They were asked to look straight ahead and not tilt their head up, making sure that their eyes were at the same level as their ears. Height was recorded in centimetres.

Weight was measured with a portable digital weighing scale (Seca, Germany). The instrument was placed on a firm, flat surface. Participants were requested to remove their footwear and socks, wear light clothes, stand on the scale with one foot on each side of the scale, face forward, place arms at their side and wait until asked to step off. Weight was recorded in kilograms.

Waist and hip circumference were measured using a constant tension tape (Seca, Germany). A private area, such as a separate room within the house, was used and the measurement was taken over light clothing. Waist circumference was taken at the end of a normal expiration with the arms relaxed at the sides at the midpoint between the lower margin of the last palpable rib and the top of the iliac crest (hip bone). Hip circumference was taken at the maximum circumference over the buttocks. Participants were requested to wrap the tape around themselves. The measurement was read at the level of the tape to the nearest 0.1 cm, making sure to keep the measuring tape snug.

**Blood pressure measurement:** Blood pressure was measured with a digital, automated blood pressure monitor (OMRON digital device) with appropriate sized cuffs. Before taking the measurements, participants were asked to sit quietly and rest for 15 minutes with legs uncrossed. Three readings of the systolic and diastolic blood pressure were obtained. Participants rested for three minutes between each reading. The mean of the second and third readings was calculated. A medium cuff size was used for all participants. The sphygmomanometer cuff was placed on the left arm while the participant rested their forearm on a table with the palm facing upward. Participants were requested to remove or roll up clothing on the arm. The cuff was kept above the elbow aligning the mark for artery (ART) on the cuff with the brachial artery and making sure the lower edge of the cuff was placed 1.2 to 2.5 cm above the inner side of the elbow joint and with the level of the cuff at the same level as the heart. Hypertension was defined as having systolic blood pressure  $\geq 140$  mm Hg and/or diastolic blood pressure  $\geq 90$  mm Hg during the study, or being previously diagnosed as having hypertension determined by sighting documentation such as a treatment record book or by the history of the participant taking medicine for high blood pressure.

**Biochemical measurements:** A separate mobile laboratory setting was used by both of the data collection teams. The mobile laboratory contained all of the logistics and human resources required for the set up including a semi auto analyser and all of the chemicals required for blood glucose testing and lipid profile measurement. To ensure that the cold chain was maintained for the collected samples and for the preservation of the chemicals used for the tests, continuous electricity was ensured with an electric generator and refrigerator. Furthermore, to ensure external quality control, reference laboratories were enlisted by the technical working group prior to starting the survey. The criterion for selecting the reference laboratory was a bio scientific laboratory with a fully automatic analyser. The laboratories chosen are listed in Annex VI.

Fasting samples were taken to measure blood glucose and the wet (liquid) method was used to measure blood lipids. Participants were instructed to fast overnight for 12 hours and diabetic patients on medication were reminded to bring their medicine/insulin with them and take their medicine after providing the blood sample. A venous blood sample (4 ml of blood) was taken using a flashback needle with an aseptic technique and kept in plain and fluoride treated tubes. Those samples were kept in an ice pack carrier and brought to the mobile laboratory within one hour. Biochemical measurements of blood glucose and lipids were done using semi-automated procedures (Bioanalyzer, Analyticon, Germany) and commercially available kits (Analyticon, Germany). Plasma glucose was estimated using the GOD-PAP (glucose oxidase/peroxidase – phenol-4-aminophenazone) method. Serum total cholesterol was determined by an enzymatic endpoint method using the CHOD-PAP (cholesterol oxidase/peroxidase – 4-phenol-aminoantipyrine) method. Serum triglycerides were estimated using the GPO-PAP (glycerol-3-phosphate oxidase/peroxidase-4-chlorophenol and 4-aminophenazone) method. For the determination of HDL cholesterol, low-density lipoproteins and the chylomicron fraction from the serum samples were first precipitated out. The clear supernatant was then analysed using the method described above for cholesterol. External quality control of these biochemical investigations was performed by sending 10% of the samples to the nearest reference laboratory with standardised fully-automated procedures for biochemical measurement.

## **Data collection procedure**

### **Training of data collection team**

A week-long training was organised in the two weeks prior to the beginning of data collection. The training was led by a STEPS team from WHO headquarters, Geneva and WHO SEARO, New Delhi. The local investigator team also joined the STEPS team as trainers. Prior to the training, the enumerators were oriented on the tools to be used to collect the data. Training focused on interview techniques, sampling process, household and individual selection, the use of the different kinds of templates and forms in the survey, the use and care of PDAs, a detailed explanation of the questionnaire and the technique to be used for physical measurements. The supervisors were also trained on downloading data from the PDAs as well as the management of minor issues with the PDAs.

### **Data collection technique**

Data were collected using the WHO STEPS instruments by trained data collectors. Prior to data collection, each data collector developed a sampling frame for the SSU (ward/cluster) by obtaining an updated list of the households and/or performing clear social mapping with proper identification of households. Selected households were followed up at least twice in case of unavailability of the respondent on the first visit. A respondent who could not be contacted even after the second attempt was counted as a non-response. In the case of more than one household (family) living in a single house, one was randomly selected and the Kish method adapted to select one eligible participant from that household.

Data collection was spread over three phases, namely, initial contact with the participant, completing the questionnaire and taking physical measurements, and collecting blood samples for biochemical measurement. The participants were requested to give 45–60 minutes of their time for completion of STEPS I and STEP II and an additional 5 minutes for collecting the blood sample.

In most instances, data collection from a selected participant was completed in 2–3 days. On the first day, all eligible participants in the selected household were listed and one participant selected using the Kish method. An interview tracking form was completed to record brief information about the respondent. If a selected participant was present on that visit, s/he was requested to participate in the study and asked for consent. Once the consent was obtained, the STEP I and II questionnaire was completed. If s/he was not at home, a second visit was made. After completing STEPS I and II, participants were given a feedback form. This form included information on their height, weight, hip and waist circumferences, blood pressure (third reading) and heart rate (third reading). A clinic card was also given to every participant for biochemical measurement containing fasting instruction. This card also contained the appointment date, time and place for blood sample collection. On the given date and time, the laboratory technician/enumerators drew blood samples from the participants and biochemical measurements were done in the mobile laboratory.

## Field management

The field manpower for data collection comprised 26 individuals divided into 2 teams. Each team consisted of one field supervisor, one medical laboratory technologist, one laboratory technician and ten enumerators. Enumerators had an academic background either in nursing, general medicine or public health. Their major responsibility was to fill out the questionnaires, carry out physical measurements and collect blood samples. The laboratory technicians were appointed for cold chain maintenance, sample processing, and the recording and reporting of biochemical measurements. Medical laboratory technologists were responsible for examining and verifying glucose levels and the value of the lipid profile and sending a 10% blood sample to the reference laboratory for external quality control. A field supervisor was appointed as a team leader for overall field management and to coordinate with respective authorities at the field level, ensure completion of sampling frames, and select 20 households from each cluster as per the sample design. Furthermore, field supervisors also carried out on-the-spot checks of information collected by enumerators to ensure the quality of data. The field supervisors were responsible for aggregating the data from individual PDAs to their laptop and forwarding them to the centre via email or by handing them over to the investigators.

## Quality control

This study adopted the validated WHO STEPS instrument version 2.2. The English version of the instrument was translated into Nepali and survey results translated back into English. Before finalisation of the Nepali version, a pilot study was conducted in the Kirtipur Municipality with 20 people with a wide range of socio-demographic backgrounds. At the end of data collection, participants' feedback was obtained and all the comments compiled into a single report and used to refine the instrument. The revised instrument in Nepali was endorsed by the Steering Committee prior to use in the field.

Physical measurement was done using validated equipment, strictly following the WHO procedure for performing the various measurements. Blood pressure was measured using digital, automatic blood pressure monitors (OMRON) with appropriate sized cuffs. Height was measured using a portable standard stature scale and waist and hip circumference were measured with a constant tension tape (Seca, Germany).

Regarding biochemical measurements, blood glucose and blood lipids were measured by the wet method for which a semi autoanalyser from Analyticon company, Germany was used. The device was calibrated by

standard and quality control sera prior to testing the blood sample to ensure consistency and accuracy. Prior to taking participant samples, a control sample was run daily to determine the reliability of the result. For external quality control, 10% of the tested samples were randomly selected and sent to the nearest reference laboratory for re-testing. The Executive Chairman of the NHRC, the consultant pathologist of the study team, investigators, and representatives from WHO and the Ministry of Health and Population visited the field to monitor the data collection to ensure that standard quality procedures were followed.

## **Data processing and analysis**

eSTEPS software was used to design and program the data collection tools in the PDAs. The use of the software and PDAs to collect the data helped to generate the final dataset quickly following the completion of data collection. The collected datasets were stored in the device as well as the memory card in rml format. The rml files from the PDAs were transferred to personal computers via the Windows Mobile Device Center. The files were then transferred to a central computer, the format changed to Microsoft Excel and the files stored. The datasets from every individual PDA were then transferred to SPSS 16.0 and merged into a single SPSS file. Data cleaning and editing was done in the SPSS file. Analysis was done with Epi Info version 3.5.1 using prior developed analysis commands. From the data download until the final analysis, continuous technical support was received from the STEPS team at WHO headquarters, Geneva via email as well as teleconference. Once the final dataset with complete and thoroughly cleaned data from all the study sites was ready, a team of investigators analysed the data under the guidance of the STEPS team at WHO Western Pacific Regional Office, Manila in a week-long data analysis workshop. Following the analysis, a data book was produced for the survey and, based on that data book, report writing was undertaken including interpretation.

## **Individual weight**

To calculate the sampling weight of each of the sampling levels the probability of selection of each of the sampling units was calculated (see sections below). The individual probability of each sampling level was calculated and the inverse of the individual probability was considered as the weight of the individual household. The probability of selection was calculated using the sampling software designed for NCD risk factor STEPS survey by WHO headquarters, Geneva.

## **Probability of selection of primary sampling units**

The probability of selection of each of the PSUs (Ilakas) from the mountains, hills and Terai was used from separate files, as Ilakas were selected from these three different strata. The probability of selection was obtained from a separate frame of Ilakas for each of the ecological belts. The total household size of each Ilaka within each ecological belt was considered to calculate the probability of selection of each of the selected Ilakas. The probability thus obtained for selection of PSUs was denominated as P1.

## **Probability of selection of secondary sampling units**

Within each of the 70 selected Ilakas the total list of wards (SSUs) with their household size was used to obtain the desired number of SSUs (3 wards each), as discussed in the sampling technique; this also gave us the probability of selection of each of the selected SSUs. The total list of SSUs of the selected Ilakas from each ecological belt was populated in the Excel sheet with the total number of households within that SSU. Follow-

ing that, the required number of SSUs was chosen from the abovementioned software from each of the Ilakas (PSUs), which also gave us the probability of selection of each of the SSUs. The probability thus obtained for selection of SSUs was denominated as P2.

## Households

Within each of the selected SSUs (clusters/wards) the probability of selection of each individual household was obtained by dividing the number of households selected for the study by the total number of households within that selected ward. In this case the number of households selected from each ward was 20. The probability thus obtained for selection of households was denominated as P3.

## Calculating the total probability

The product of P1 to P3 gave us the total probability, i.e., the probability up to the level of household. The inverse of the total probability thus gave us the weight up to the household level.

Finally, to calculate the weight for correcting the age sex proportion, the proportion of the population in the six age sex groups (15–29, 30–44, 45–69 for men and women) was taken from the 2011 Census. The proportion of these six age sex groups in the sample was also taken and divided by the census proportion, which gave the weight for each of the six age sex groups and was applied to every individual. The final product of the weight calculated above was then multiplied with this weight for each age sex group to obtain the final weight, which was applied for the weighted analysis.

In addition to the use of this weighted variable, complex sample analysis was done using the PSU and stratum variable. The PSU variable was the 210 wards and the stratum variable was the ecological belt (mountains, hills and Terai). The weighted analysis was done using the individual weight using the prior developed weighted analysis commands in the Epi Info 3.5.1.

## Ethical considerations

This study was approved by the ethical review board of the Nepal Health Research Council. Formal permission was taken from the concerned authorities in the selected districts, VDCs and municipalities. An informed written consent was obtained from all the participants. The objectives of the research were explained in simple language and participants were also provided with an information sheet containing the research objectives, data collection method, role of participants, and personal and community benefits, as well as any possible harm to the participant. A participant feedback form was also provided to all participants after taking their physical and biochemical measurements. The confidentiality of the information gathered was maintained. Any waste generated during the laboratory procedures was properly disinfected using aseptic techniques and safely disposed of. All blood samples were discarded after completing the biochemical measurements.

## CHAPTER 3. BACKGROUND CHARACTERISTICS

This section provides information on the age and sex of the respondents and their education level, employment status, marital status and ethnicity.

### Age group and sex

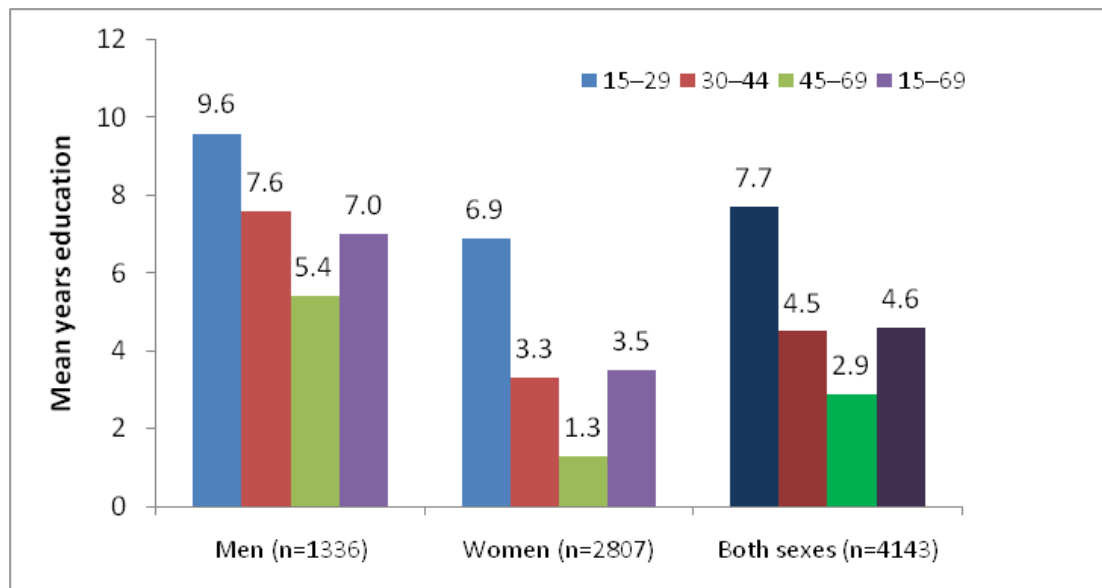
**Table 1 Age group and sex of respondents**

Age group (years)	Men		Women		Both sexes	
	n	%	n	%	n	%
15–29	289	29.7	683	70.3	972	23.5
30–44	417	26.8	1,141	73.2	1,558	37.6
45–69	630	39.1	983	60.9	1,613	38.9
<b>15–69</b>	<b>1,336</b>	<b>32.2</b>	<b>2,807</b>	<b>67.8</b>	<b>4,143</b>	<b>100</b>

Table 1 shows the distribution of respondents by age group and sex. Slightly more than two-thirds (67.8%) of the respondents were women and just under one-third were men. Nearly one-quarter of respondents were in the first age group (15–29 years), with the remaining distributed almost equally between the other two age groups.

### Education

**Figure 1 Education (number of completed years) by age group and sex**



The mean number of years of education was 4.6 years (men 7.0 years, women 3.5 years). The mean number of years of education was higher for the younger age group for both sexes (Figure 1 and Table B1, Annex I). About 44.7% of respondents did not have any formal schooling, while nearly one-fifth (18.7%) had completed secondary level education. Among men, the majority (26.4%) of respondents had completed secondary school, one-fifth had completed primary school and another one-fifth did not have any formal schooling. The



proportion of female respondents with no formal schooling was much higher at more than half (55.3%) with 14.8% having completed secondary school (Table B2, Annex I).

## Ethnicity

**Table 2 Ethnic group of respondents**

Age group (years)	n	% Dalits	% Disadvantaged janajatis	% Disadvantaged non-Dalit Terai caste groups	% Religious minorities	% Relatively advantaged janajatis	% Upper caste groups
15–29	972	8.8	34.2	8.8	0.9	6.7	40.5
30–44	1,558	9.6	31.5	7.8	0.9	6.6	43.7
45–69	1,613	8.0	29.4	7.3	1.8	8.9	44.6
<b>15–69</b>	<b>4,143</b>	<b>8.8</b>	<b>31.3</b>	<b>7.8</b>	<b>1.3</b>	<b>7.5</b>	<b>43.3</b>

The majority (43.3%) of respondents were from upper caste groups, followed by disadvantaged janajatis, who constituted nearly one-third (31.3%) of respondents. About 8.8% of respondents were Dalits, another 7.8% disadvantaged non-Dalit Terai caste groups and 7.5% relatively advantaged janajatis.

## Marital status

**Table 3 Marital status of respondents**

Age group (years)	n	% Never married	% Currently married	% Separated	% Divorced	% Widowed	% Cohabiting
<b>Men</b>							
15–29	289	50.9	49.1	0.0	0.0	0.0	0.0
30–44	415	2.7	94.7	1.0	0.2	1.4	0.0
45–69	630	1.1	92.2	0.6	0.2	5.9	0.0
<b>15–69</b>	<b>1,334</b>	<b>12.4</b>	<b>83.7</b>	<b>0.6</b>	<b>0.1</b>	<b>3.2</b>	<b>0.0</b>
<b>Women</b>							
15–29	683	20.2	79.4	0.0	0.0	0.4	0.0
30–44	1,141	1.8	95.6	0.2	0.3	2.1	0.1
45–69	983	1.3	83.2	0.5	0.2	14.8	0.0
<b>15–69</b>	<b>2,807</b>	<b>6.1</b>	<b>87.3</b>	<b>0.2</b>	<b>0.2</b>	<b>6.1</b>	<b>0.0</b>
<b>Both sexes</b>							
15–29	972	29.3	70.4	0.0	0.0	0.3	0.0
30–44	1,556	2.0	95.4	0.4	0.3	1.9	0.1
45–69	1,613	1.2	86.7	0.6	0.2	11.3	0.0
<b>15–69</b>	<b>4,141</b>	<b>8.1</b>	<b>86.1</b>	<b>0.4</b>	<b>0.2</b>	<b>5.2</b>	<b>0.0</b>

More than four-fifths (men 83.7%, women 87.3%) of respondents were married at the time of the survey. About 12.4% of men and 6.1% of women were not married. About 5.2% of respondents were widowed.

## Employment status

Table 4 Employment status of respondents

Age group (years)	n	% Government employee	% Non-government employee	% Self-employed	% Unpaid
<b>Men</b>					
15–29	289	2.8	10.7	40.5	46.0
30–44	417	7.2	14.4	64.0	14.4
45–69	630	5.6	5.1	56.2	33.2
<b>15–69</b>	<b>1,336</b>	<b>5.5</b>	<b>9.2</b>	<b>55.2</b>	<b>30.1</b>
<b>Women</b>					
15–29	683	0.3	4.0	12.6	83.2
30–44	1,141	1.6	1.3	17.4	79.7
45–69	983	0.4	0.9	8.7	89.9
<b>15–69</b>	<b>2,807</b>	<b>0.9</b>	<b>1.8</b>	<b>13.2</b>	<b>84.1</b>
<b>Both sexes</b>					
15–29	972	1.0	6.0	20.9	72.1
30–44	1,558	3.1	4.8	29.9	62.2
45–69	1,613	2.4	2.5	27.3	67.8
<b>15–69</b>	<b>4,143</b>	<b>2.3</b>	<b>4.2</b>	<b>26.8</b>	<b>66.7</b>

Just over half of male respondents (55.2%) were self employed in comparison to 13% of female respondents, with an overall proportion of around one-quarter (26.8%) of respondents being self employed. The vast majority (84.1%) of women were involved in either unpaid work or were unemployed; this percentage was lower among men (30.1%) and overall was about two-thirds (66.7%) for both sexes.

Among those who were unemployed and in unpaid work, nearly half (47.0%) of the men were homemakers, followed by one-quarter (25.6%) students and nearly one-sixths (15.2%) retired. Among the women, 92.5% were homemakers and about 5.3% were students (Table B3, Annex I).

## CHAPTER 4. TOBACCO USE

Separate sets of questions were asked to gather information on smoke and smokeless tobacco use. This section contains information on current users and current daily users of smoke and smokeless tobacco. Details on the types of tobacco and amount are also presented.

### Current smokers and daily smokers

**Table 5 Current smokers among all respondents and current daily smokers among current smokers**

Current smokers									
Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
15–29	289	20.7	15.4–26.1	683	2.4	0.9–3.9	972	11.4	8.6–14.3
30–44	417	30.5	24.7–36.4	1,141	11.8	9.3–14.2	1,558	20.7	17.4–24.0
45–69	630	34.5	30.0–38.9	983	22.7	19.2–26.2	1,613	28.6	25.7–31.5
<b>15–69</b>	<b>1,336</b>	<b>27.0</b>	<b>23.7–30.4</b>	<b>2,807</b>	<b>10.3</b>	<b>8.7–11.9</b>	<b>4,143</b>	<b>18.5</b>	<b>16.5–20.5</b>
Current daily smokers among current smokers									
Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
15–29	64	71.9	58.5–85.3	14	88.4	71.5–100.0	78	73.6	61.2–86.1
30–44	133	84.9	77.3–92.6	120	91.5	86.4–96.7	253	86.9	81.2–92.6
45–69	213	89.9	85.2–94.6	221	96.3	93.8–98.9	434	92.5	89.5–95.4
<b>15–69</b>	<b>410</b>	<b>82.0</b>	<b>76.2–87.9</b>	<b>355</b>	<b>94.0</b>	<b>91.2–96.7</b>	<b>765</b>	<b>85.4</b>	<b>81.0–89.8</b>

The overall prevalence of current smoking was 18.5% (men 27.0%, women 10.3%). Among men, the proportion of current smokers was highest (34.5%) among the oldest age group (45–69 years) and lowest (20.7%) among the younger age group (15–29 years). Among women it was 22.7% among the 45–69 year age group and 2.4% among 15–29 year olds.

Of the total respondents, the proportion of current daily smokers was 15.8%; however, among the current smokers, 85.4% were daily smokers. About 22.2% of male respondents were current daily smokers (82.0% of the current smokers). Among female respondents, 9.6% were current daily smokers (94% of current smokers). Among the non-smokers, 5.6% (men 8.4%, women 2.9%) were former smokers (Table T1, Annex I).

## Age of initiation of smoking

Table 6 Mean age of starting smoking

Age group (years)	Men			Women			Both sexes		
	n	Mean age	95% CI	n	Mean age	95% CI	n	Mean age	95% CI
15–29	47	16.5	15.3–17.6	12	15.2	13.5–16.9	59	16.3	15.3–17.3
30–44	111	19.3	18.4–20.3	110	18.6	17.3–19.9	221	19.1	18.4–19.8
45–69	193	19.4	18.3–20.6	212	17.5	16.6–18.5	405	18.7	17.8–19.5
<b>15–69</b>	<b>351</b>	<b>18.5</b>	<b>17.8–19.1</b>	<b>334</b>	<b>17.6</b>	<b>16.9–18.4</b>	<b>685</b>	<b>18.2</b>	<b>17.7–18.7</b>

The mean age of initiation of smoking was 18.2 years of age (men 18.5 years, women 17.6 years). Age-wise, smoking was taken up at a higher average age in the upper two age groups of men (19.3 years and 19.4 years) than the youngest age group (16.5 years). The age at initiation of smoking for 15–29 year old women was 15.2 years, 18.6 years for women of 30–44 years and 17.5 years for women of 45–69 years. The mean duration of smoking was 36.6 years, 18.6 years and 7.8 years for respondents belonging to the age groups 45–69 years, 30–44 years and 15–29 years, respectively (Table T2, Annex I).

## Types of tobacco products used

About 84.8% of current daily smokers smoked manufactured cigarettes. The proportion was higher among men (89.9%) than women (73.5%) (Table T3, Annex I). Among the daily smokers, the mean number of manufactured cigarettes smoked per day was 6.2 and the mean number of hand rolled cigarettes was 1.8. Among men, the mean number of manufactured cigarettes per day was 6.6 and was highest (7.3) among 45–69 year olds, followed by 15–29 year olds (6.5). The mean number of hand rolled cigarettes consumed per day by men was 1.7. Among women, the mean number of manufactured cigarettes smoked per day was 5.1, with the highest mean (5.8) among women aged 30–44 years. The average number of hand rolled cigarettes consumed per day among women was 2.1 (Table T4, Annex I).

Manufactured cigarettes were the most common form of tobacco smoke followed by hand rolled cigarettes. Among currently smoking respondents, 86.1% used manufactured cigarettes and 22.1% used hand rolled cigarettes, with a small proportion (about 2.4%) using tobacco pipes and cigars. Among currently smoking men, 90.7% used manufactured cigarettes and 18.5% hand rolled cigarettes. Among currently smoking women, about three-quarters (74.3%) used manufactured cigarettes and 31.2% used hand rolled cigarettes. Hence, hand rolled cigarette use was more common among currently smoking women than men (Table T5, Annex I).

## Quantity of cigarettes smoked daily

Table 7 Quantity of cigarettes smoked per day by current daily smokers

Age group (years)	n	Cigarettes smoked per day									
		% <5 Cigarettes	95% CI	% 5–9 Cigarettes	95% CI	% 10–14 Cigarettes	95% CI	% 15–24 Cigarettes	95% CI	% ≥ 25 Cigarettes	95% CI
<b>Men</b>											
15–29	47	38.9	23.5–54.4	37.4	21.1–53.6	14.7	4.7–24.7	9.0	0.0–19.8	0.0	0.0–0.0
30–44	111	27.2	16.0–38.4	36.7	27.2–46.3	20.3	11.2–29.5	12.7	5.9–19.5	3.1	0.0–6.9
45–69	193	25.6	18.1–33.1	31.1	23.5–38.6	17.7	11.2–24.1	23.2	15.4–31.1	2.4	0.0–4.9
<b>15–69</b>	<b>351</b>	<b>30.3</b>	<b>23.5–37.0</b>	<b>34.8</b>	<b>28.5–41.1</b>	<b>17.6</b>	<b>12.6–22.5</b>	<b>15.6</b>	<b>10.6–20.5</b>	<b>1.9</b>	<b>0.3–3.4</b>
<b>Women</b>											
15–29	12	40.4	13.0–67.8	51.8	21.4–82.2	7.8	0.0–22.7	0.0	0.0–0.0	0.0	0.0–0.0
30–44	107	24.4	15.1–33.8	44.9	34.5–55.2	17.2	10.4–23.9	13.5	5.5–21.6	0.0	0.0–0.0
45–69	208	23.0	17.1–28.9	52.7	45.3–60.0	15.9	10.4–21.4	7.7	3.9–11.4	0.7	0.0–1.8
<b>15–69</b>	<b>327</b>	<b>25.2</b>	<b>19.7–30.8</b>	<b>50.2</b>	<b>43.3–57.1</b>	<b>15.5</b>	<b>10.8–20.1</b>	<b>8.7</b>	<b>5.1–12.3</b>	<b>0.4</b>	<b>0.0–1.1</b>
<b>Both sexes</b>											
15–29	59	39.1	24.8–53.4	39.2	23.7–54.7	13.8	4.4–23.2	7.9	0.0–17.4	0.0	0.0–0.0
30–44	218	26.3	17.8–34.8	39.2	32.1–46.4	19.4	12.9–25.8	12.9	7.7–18.2	2.1	0.0–4.8
45–69	401	24.6	19.3–29.8	39.8	33.9–45.7	17.0	12.4–21.5	16.9	11.8–22.0	1.7	0.2–3.3
<b>15–69</b>	<b>678</b>	<b>28.7</b>	<b>23.4–34.0</b>	<b>39.5</b>	<b>34.3–44.7</b>	<b>16.9</b>	<b>12.9–20.9</b>	<b>13.5</b>	<b>9.7–17.2</b>	<b>1.4</b>	<b>0.3–2.5</b>

Among the current daily smokers in both sexes, 39.5% consumed 5 to 9 cigarettes per day and more than a quarter (28.7%) consumed less than 5 cigarettes per day. Among the current daily smoking men, about 34.8% consumed 5 to 9 cigarettes a day and 30.3% consumed less than 5 cigarettes per day. A significant proportion also smoked more heavily with 17.6% of current daily smoking men consuming 10 to 14 cigarettes a day and 15.6% consuming 15 to 24 cigarettes a day. About half (50.2%) of the women smoking daily consumed 5 to 9 cigarettes per day, while another quarter (25.2%) consumed less than 5 cigarettes per day (Table 7).

## Years since cessation of smoking

Table 8 Mean years since cessation of smoking

Age group (years)	Men			Women			Both sexes		
	n	Mean years	95% CI	n	Mean years	95% CI	n	Mean years	95% CI
15–29	10	4.1	2.6–5.5	5	3.8	1.3–6.2	15	4.0	2.7–5.3
30–44	28	5.6	4.2–7.0	23	10.5	6.8–14.2	51	6.6	5.3–7.9
45–69	108	14.4	11.8–17.1	85	12.5	10.3–14.8	193	13.8	11.8–15.8
<b>15–69</b>	<b>146</b>	<b>10.5</b>	<b>8.6–12.5</b>	<b>113</b>	<b>11.2</b>	<b>9.2–13.3</b>	<b>259</b>	<b>10.7</b>	<b>9.2–12.3</b>

The mean years since cessation of smoking among former smoking men aged 15–29 years was 4.1 years, followed by 5.6 years for 30–44 year olds and 14.4 years for 45–69 year olds. For women, the mean years since

cessation was 3.8 years for the youngest group of women (15–29 years), followed by 10.5 and 12.5 years for women aged 30–44 years and 45–69 years, respectively.

## Former daily smokers

The overall percentage of former daily smokers among total respondents was 4.1% and among ever daily smokers it was 20.2%. Among men, 6.2% were former daily smokers and the proportion of former daily smokers was highest (15.8%) among the 45–69 year age group. Among women, only 2.2% were former daily smokers, with the highest proportion (6.9%) among the 45–69 year age group (Table T6, Annex I).

## Past attempts or advice by doctor to quit smoking

Among the currently smoking respondents, 26.0% (men 27.4%, women 22.5%) reported having tried to stop smoking in the past. Similarly, 22.3% of currently smoking respondents (men 23.0%, women 20.5%) were advised by their doctor or health worker to stop smoking during a visit during the past 12 months (Table T7, Annex I).

## Users of smokeless tobacco

**Table 9 Current users of smokeless tobacco**

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
15–29	289	22.3	16.2–28.4	683	1.4	0.4–2.4	972	11.7	8.7–14.7
30–44	417	39.9	34.2–45.6	1,141	6.2	4.5–7.8	1,558	22.2	19.2–25.3
45–69	630	38.6	33.7–43.6	983	9.4	6.9–12.0	1,613	24.1	21.0–27.2
<b>15–69</b>	<b>1,336</b>	<b>31.3</b>	<b>27.4–35.2</b>	<b>2,807</b>	<b>4.8</b>	<b>3.7–5.9</b>	<b>4,143</b>	<b>17.8</b>	<b>15.8–19.8</b>

The overall prevalence of smokeless tobacco use was 17.8% (men 31.3%, women 4.8%) (Table 9). Overall, 80.4% of total respondents had never consumed smokeless tobacco, while about 16.3% were daily users. Among men, 28.5% used smokeless tobacco daily, about 2.8% used it less frequently than daily and 3.3% said they had used it at same time in the past. Two-thirds of men were found to have never used smokeless tobacco. Among women, 94.9% had never used smokeless tobacco (Table T8, Annex I).

About 1.3% of respondents (men 2.5%, women 0.2%) were former daily users of smokeless tobacco. Among those who had ever been daily users of smokeless tobacco, about 7.3% (men 7.7%, women 4.6%) were former daily users of smokeless tobacco (Table T9, Annex I).

Among the daily smokeless tobacco users, the mean frequency of taking snuff by mouth (*khaini*) was found to be 5.4 times a day among both sexes (men 5.5, women 5.1). The mean use of chewing tobacco was 1.2 times a day for both sexes (men 1.3, women 0.7) (Table T10, Annex I).

## Types of smokeless tobacco used

Regarding the types of smokeless tobacco products used by current users, the most commonly used form was snuff by mouth (*khaini*). More than three-quarters (77.6%) of the total daily smokeless tobacco users used snuff by mouth, 23.1% used chewing tobacco and 7.8% used betel or quid. Among men, 76.6% used snuff by mouth and about a quarter (24.3%) used chewing tobacco. Among women, about 83.3% used snuff by mouth (*khaini*) and about 15.7% used chewing tobacco (Table T11, Annex I).

## Users of smoke and smokeless tobacco

**Table 10 Current (daily and non-daily) tobacco users (smoke and smokeless)**

Age group (years)	Men			Women			Both sexes		
	n	% Current users	95% CI	n	% Current users	95% CI	n	% Current users	95% CI
<b>Current users</b>									
15–29	289	35.3	28.4–42.2	683	3.8	2.0–5.6	972	19.3	15.7–22.9
30–44	417	56.6	50.3–62.8	1,141	16.5	13.6–19.4	1,558	35.6	32.0–39.2
45–69	630	61.8	57.1–66.4	983	29.8	26.0–33.6	1,613	45.9	42.5–49.2
<b>15–69</b>	<b>1,336</b>	<b>48.1</b>	<b>43.7–52.4</b>	<b>2,807</b>	<b>14.1</b>	<b>12.3–15.9</b>	<b>4,143</b>	<b>30.8</b>	<b>28.3–33.2</b>
<b>Daily users</b>									
15–29	289	27.2	20.9–33.5	683	3.5	1.8–5.3	972	15.2	11.9–18.5
30–44	417	53.4	47.0–59.7	1,141	15.1	12.5–17.8	1,558	33.3	29.7–37.0
45–69	630	59.1	54.4–63.9	983	28.4	24.7–32.2	1,613	43.9	40.5–47.2
<b>15–69</b>	<b>1,336</b>	<b>42.7</b>	<b>38.5–47.0</b>	<b>2,807</b>	<b>13.2</b>	<b>11.5–14.9</b>	<b>4,143</b>	<b>27.7</b>	<b>25.3–30.1</b>

The prevalence of tobacco use (either smoke or smokeless) was 30.8% among total respondents. Nearly half (48.1%) of the men consumed either smoke or smokeless tobacco. Among men, this proportion was highest (61.8%) among 45–69 year age group, followed by 30–44 year olds (56.6%) and 15–29 year olds (35.3%). Among women, the overall percentage of current use of tobacco was 14.1%; this proportion was highest (29.8%) among 45–69 year olds, followed by 30–44 year olds (16.5%); it was less (3.8%) among 15–29 year olds. Similarly, 27.7% of total respondents were daily users of tobacco (men 42.7%, women 13.2%). The age wise distribution of daily use of tobacco among the three age groups was similar to that among current users.

## Exposure to second-hand smoke

About 36.1% of total respondents (men 37.3%, women 35.0%) reported being exposed to second-hand smoke at home during the past 30 days. The proportion of men exposed to second-hand smoke in the work place was 43.4%, women 31.3% and both sexes 37.2% (Table T12, Annex I).

## CHAPTER 5. ALCOHOL CONSUMPTION

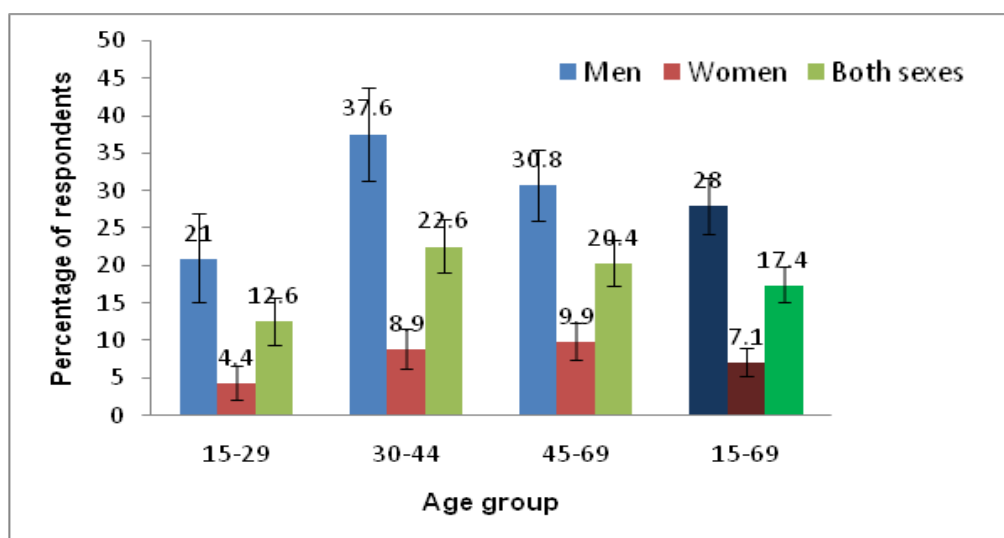
The prevalence of alcohol consumption was assessed by consumption status and consumption behaviour. Heavy drinking (consumption behaviour) was assessed because of its association with cardiovascular diseases.

### Current drinkers

Among the survey population, 17.4% (men 28%, women 7.1%) were found to be current drinkers (i.e., had consumed a drink containing alcohol in the previous 30 days) (Figure 2), while 73.5% (men 58%, women 88.3%) were lifetime abstainers. Among men, the proportion of current drinkers was highest (37.6%) among 30–44 year olds, followed by 45–69 year olds (30.8%), and the lowest (21%) was among 15–29 year olds. Among women, the proportion of current drinkers was 8.9% for 30–44 year olds, 9.9% for 45–69 year olds and 4.4% for 15–29 year olds. Among both sexes, about one-fifth of respondents in the age range 30–44 years (22.6%) and 45–69 years (20.4%) were current drinkers, dropping to 12.6% among 15–29 year old respondents (Table A1, Annex I).

The survey found that 4.7% of the respondents who drank in the past 12 months were not current drinkers. Another 4.5% did not have a drink in the past 12 months, but had consumed alcohol at sometime in the past (Table A1, Annex I).

**Figure 2 Percentage of current drinkers (drank at least 1 drink in past 30 days)**

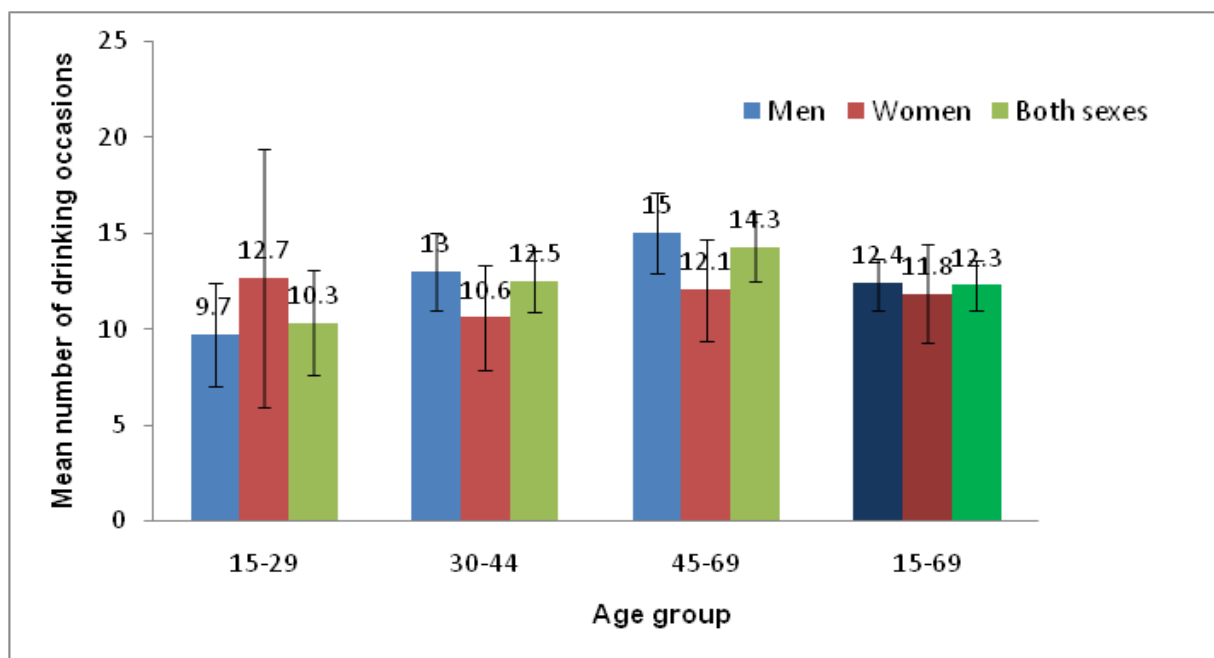


### Frequency of alcohol consumption

Among those who drank in the past 12 months, 17.8% (men 17.9%, women 17.5%) drank daily. This proportion of daily drinking among men was highest (29.1%) in the 45–69 year age group followed by the 30–44 year age group (19.4%), dropping to 8.1% among 15–29 year olds. Among women who drank in the past 12 months, the age group-wise proportion was similar in all three age groups ranging from 16.0 to 18.5%. Among both sexes, the percentage was found to be the highest (26.5%) among 45–69 year olds, followed by 30–44 year olds (18.6%), and lowest (9.9%) among 15–29 year olds (Table A2, Annex I).

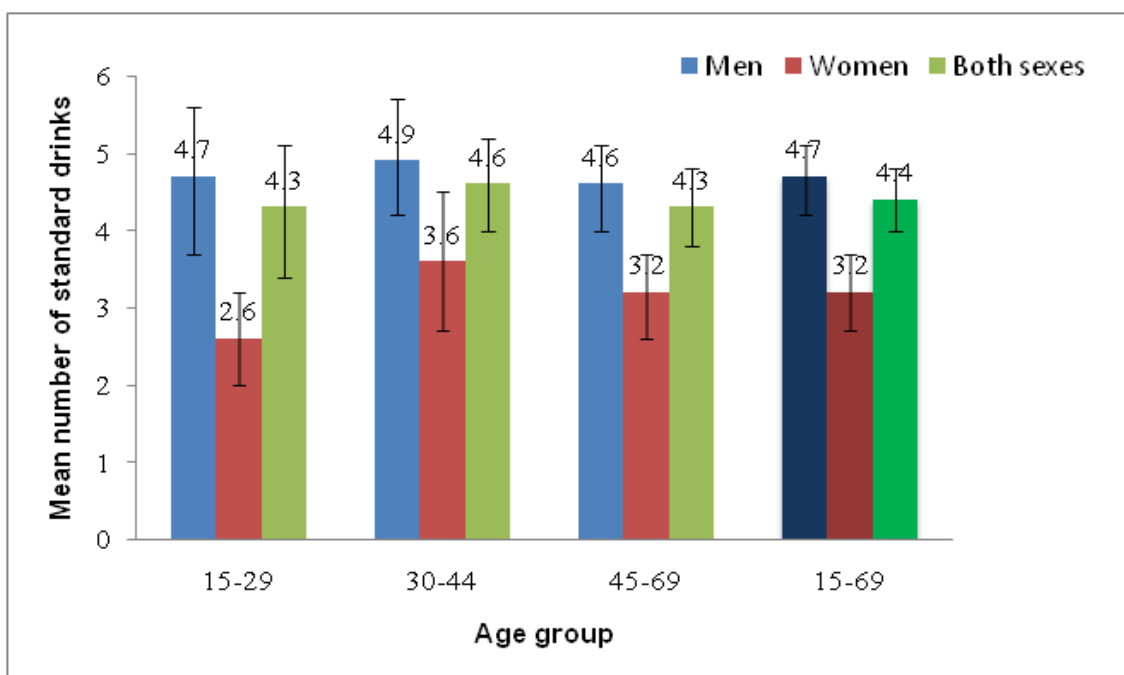


**Figure 3 Mean number of drinking occasions (consumed at least one drink) in the past 30 days**



Current drinkers were found to have had at least one alcoholic drink on 12.3 occasions on average within the past 30 days. This average was more or less similar for both men and women. The age group-wise mean number of occasions was found to be higher among older age groups for currently drinking men. For currently drinking women, the mean number of drinks was highest among 15–29 year olds (12.7%) (Table A3, Annex I and Figure 3).

**Figure 4 Mean standard drinks per drinking occasion among current drinkers**



Among current drinkers, the mean number of standard drinks per drinking occasion was 4.4; this figure was higher for men (4.7) than for women (3.2). The mean number of drinks for men among the three age groups was found to be similar, while for the 15–29 year old women, it was 2.6 standard drinks followed by 3.6 standard drinks for women aged 30–44 years (Table A4, Annex I and Figure 4).

## Drinking pattern

More than one-tenth (men 11.1%, women 13.2%) of current drinkers were heavy drinkers (i.e., drank  $\geq 60$ g of pure alcohol on average per day for men and  $\geq 40$ g for women – defined as Category III). The percentage of heavy drinkers among men was found to be highest (13.4%) among the 30–44 year age group, dropping to 11.3% for 45–69 year olds and 8.7% for 15–29 year olds. For women, the percentage of heavy drinkers was the highest (19%) among 45–69 year olds, followed by 11.3% for 30–44 year olds. Just above four-fifths (81.2%) of men and nearly three-quarters (73.9%) of women were found to be in Category I (drank  $< 40$ g of pure alcohol on average per day for men and  $< 20$ g for women) (Table A5, Annex I). Among the survey population only 2.0% (men 3.1%, women 0.9%) were in Category III (Table A6, Annex I).

Current drinkers consumed 6.5 standard drinks (men 7.0, women 4.6) as the largest number of drinks on a single occasion. According to age group, the youngest age group among men had the highest mean maximum number of drinks (7.5), followed by 30–44 year olds (7.0). Among currently drinking women, the highest average maximum number of drinks (5.2) was among 45–69 year olds (Table A7, Annex I).

Among currently drinking men, 18.6% consumed five or more drinks and, among currently drinking women, 2.9% consumed four or more drinks on a single occasion at least once during the last 30 days. Among men, this proportion was the highest (25.1%) for the 30–44 year age group, followed by the 45–69 year age group (19.5%) (Table A8, Annex I). Among women, this proportion was 4.8% for the 45–69 year age group, followed by 4.2% for 30–44 year olds. Among current drinkers, men had consumed five or more drinks on 6 occasions and women four or more drinks on 2.9 occasions on average within the past 30 days (Table A9, Annex I).

## Drinking with or without meals

Nearly half of the current drinkers (46.8%) usually drank with a meal (men 49.1%, women 37.9%), although about one-fifth (18.2%) never had a meal with their drinks. The proportions were similar for men and women (Table A10, Annex I).

## Drinking in past seven days

Among current drinkers, the overall proportion among both sexes who had consumed alcohol on more than four days in the past seven was almost two-fifths (39.3%), with the highest proportion (47.5%) from the 45–69 year age group. Among men, about two-fifths (40.7%) drank on more than 4 days with the highest proportion (50.1%) observed for the 45–69 year age group. A similar proportion drank more than five drinks on any one of the past seven days; the age group-wise proportion was the highest (47.2%) among 30–44 year olds, followed by 45–69 year olds (41.5%). Similarly, just over one-quarter (28.5%) of currently drinking men were found to have drunk more than 20 drinks in the past 7 days with the highest (36.1%) proportion being in the 45–69 year age group.

One-third of the currently drinking women (33.9%) reported drinking on more than four days in the last seven, with the highest proportion (39.5%) being in the 45–69 year age group, followed by 33.9% among 15–29 year olds. Almost one-third (31.2%) of currently drinking women were found to have drunk more than 4 drinks on one of the past 7 days and just over one-fifth (21.6%) of currently drinking women were found to have drunk more than 15 drinks in total in the past 7 days (Table A11, Annex I).

## CHAPTER 6. DIETARY HABITS

### Fruit and vegetable consumption

The fruit and vegetable consumption pattern of the study population was assessed by asking about the frequency and quantity of fruit and vegetables consumed. In a typical week, the study population ate fruit on 1.9 days per week (men 2.0 days, women 1.9 days) (Table D1, Annex I). The findings clearly show that fruit consumption is low among the study population. Vegetable consumption was relatively better, with respondents consuming vegetables on 4.8 days on average in a typical week, with the same average for men and women (Table D2, Annex I).

The average daily fruit intake was also low in both men (0.5 servings per day) and women (0.5 servings per day) (Table D3, Annex I). The average daily vegetable intake was better than the fruit intake in both men (1.4 servings per day) and women (1.3 servings per day) (Table D4, Annex I), with an overall average of 1.4 servings per day for both sexes. When fruit and vegetable consumption is combined, the average consumption was only 1.8 servings of fruit and vegetables on a typical day (Table D5, Annex I).

**Table 11 Number of servings of fruit and vegetables per day**

Age group (years)	n	% No fruit or vegetables	95% CI	% 1–2 Servings	95% CI	% 3–4 Servings	95% CI	% ≥5 Servings	95% CI
<b>Men</b>									
15–29	289	23.7	18.1–29.3	60.4	54.2–66.5	15.1	10.4–19.7	0.8	0.0–2.1
30–44	417	19.9	15.0–24.7	59.2	53.6–64.7	19.8	14.8–24.8	1.2	0.0–2.4
45–69	630	20.2	16.1–24.3	65.1	60.3–69.8	13.1	9.8–16.4	1.6	0.6–2.7
<b>15–69</b>	<b>1,336</b>	<b>21.8</b>	<b>18.1–25.4</b>	<b>61.3</b>	<b>57.6–65.1</b>	<b>15.8</b>	<b>12.7–18.8</b>	<b>1.1</b>	<b>0.4–1.9</b>
<b>Women</b>									
15–29	683	22.2	17.2–27.1	65.6	60.9–70.2	11.1	8.1–14.0	1.2	0.1–2.3
30–44	1,141	20.6	17.3–23.8	66.8	63.5–70.2	11.7	9.2–14.1	0.9	0.3–1.6
45–69	983	23.3	19.5–27.1	62.5	58.5–66.5	13.1	10.1–16.1	1.1	0.1–2.0
<b>15–69</b>	<b>2,807</b>	<b>22.0</b>	<b>18.8–25.2</b>	<b>65.1</b>	<b>62.1–68.1</b>	<b>11.8</b>	<b>9.7–13.9</b>	<b>1.1</b>	<b>0.5–1.7</b>
<b>Both sexes</b>									
15–29	972	22.9	18.8–27.0	63.0	58.8–67.2	13.1	10.2–15.9	1.0	0.2–1.8
30–44	1,558	20.2	17.0–23.4	63.2	59.7–66.7	15.5	12.4–18.6	1.0	0.3–1.8
45–69	1,613	21.7	18.5–25.0	63.8	60.4–67.2	13.1	10.6–15.6	1.3	0.6–2.0
<b>15–69</b>	<b>4,143</b>	<b>21.9</b>	<b>19.0–24.8</b>	<b>63.3</b>	<b>60.5–66.1</b>	<b>13.7</b>	<b>11.6–15.9</b>	<b>1.1</b>	<b>0.6–1.6</b>

Adequate fruit and vegetable consumption reduces the risk of non communicable disease; however, the survey showed that most of the population consumed an inadequate quantity of fruit and vegetables (less than five servings a day). Only 1.1% of the survey population consumed the recommended five or more servings of fruit and vegetables per day. Just over one-fifth of the study population (21.9%) consumed fruit or vegetables

not equal to even one serving on an average day. The majority of respondents consumed one to two servings of fruit and vegetables; this proportion was slightly higher for women (65.1%) than men (61.3%). A similar pattern of fruit and vegetable consumption was found across almost all age groups and among both sexes.

**Table 12 Percentage of respondents consuming less than 5 servings of fruit and vegetables per day**

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
15–29	289	99.2	97.9–100.0	683	98.8	97.7–99.9	972	99.0	98.2–99.8
30–44	417	98.8	97.6–100.0	1141	99.1	98.4–99.7	1,558	99.0	98.2–99.7
45–69	630	98.4	97.3–99.4	983	98.9	98.0–99.9	1,613	98.7	98.0–99.4
<b>15–69</b>	<b>1,336</b>	<b>98.9</b>	<b>98.1–99.6</b>	<b>2,807</b>	<b>98.9</b>	<b>98.3–99.5</b>	<b>4,143</b>	<b>98.9</b>	<b>98.4–99.4</b>

The survey found that 98.9% of the population consumed less than five servings of fruit and vegetables on an average per day.

### Type of oil used

Oil or fat consumption was assessed by asking about the oil or fat most often used for meal preparation in the household. The study found that almost four-fifths (79.1%) of respondents most often used mustard oil for meal preparation (Table D6, Annex I).

### Eating outside home

Respondents were found to eat less than one meal outside the home on average per week (0.5 men, 0.1 women) (Table D7, Annex I).

## CHAPTER 7. PHYSICAL ACTIVITY

The physical activity of the survey population was assessed by measuring the level and duration of activities undertaken during work, travel and recreation.

### Level of physical activity

The level of physical activity was categorised as high, moderate or low according to the following criteria:

**High:** A person meeting any of the following criteria:

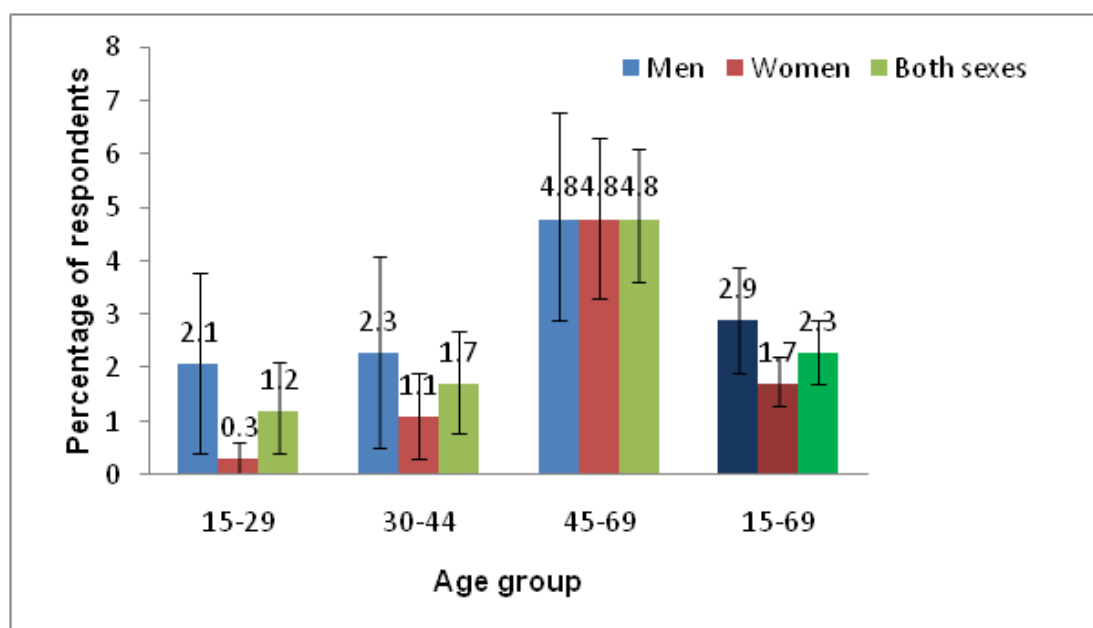
- Vigorous-intensity activity on at least 3 days achieving a minimum of at least 1,500 MET-minutes/week; or
- 7 or more days of any combination of walking, moderate- or vigorous-intensity activities achieving a minimum of at least 3,000 MET-minutes per week.

**Moderate:** A person not meeting the criteria for 'high' level of activity, but meeting any of the following criteria:

- 3 or more days of vigorous-intensity activity of at least 20 minutes per day; or
- 5 or more days of moderate-intensity activity or walking of at least 30 minutes per day; or
- 5 or more days of any combination of walking, moderate- or vigorous-intensity activity achieving a minimum of at least 600 MET-minutes per week.

**Low:** A person not meeting any of the abovementioned criteria for high or moderate activity.

Figure 5 Percentage not meeting WHO recommendations for physical activity for health



Around 2.3% (men 2.9%, women 1.7%) of respondents were found not to be meeting the WHO recommendations for physical activity for health (150 minutes of moderate-intensity physical activity per week, or equivalent). This proportion was higher (4.8%) among the 45–69 year age group for both men and women (Figure 5).

**Table 13 Level of total physical activity (low, moderate, high)**

Age group (years)	n	% Low	95% CI	% Moderate	95% CI	% High	95% CI
<b>Men</b>							
15–29	286	4.0	1.4–6.6	10.4	6.3–14.5	85.6	81.0–90.2
30–44	411	3.8	1.6–6.1	10.3	6.6–14.0	85.9	81.6–90.1
45–69	627	6.1	3.9–8.4	16.0	12.7–19.2	77.9	73.6–82.2
<b>15–69</b>	<b>1,324</b>	<b>4.5</b>	<b>3.1–5.9</b>	<b>11.9</b>	<b>9.4–14.4</b>	<b>83.6</b>	<b>80.7–86.4</b>
<b>Women</b>							
15–29	680	0.7	0.1–1.2	11.3	8.1–14.4	88.1	84.8–91.3
30–44	1,135	1.4	0.3–2.4	9.0	6.8–11.1	89.7	87.4–92.0
45–69	978	6.6	4.7–8.6	13.7	10.8–16.5	79.7	76.3–83.2
<b>15–69</b>	<b>2,793</b>	<b>2.4</b>	<b>1.8–3.0</b>	<b>11.3</b>	<b>9.3–13.2</b>	<b>86.3</b>	<b>84.2–88.4</b>
<b>Both sexes</b>							
15–29	966	2.3	1.0–3.6	10.8	8.0–13.6	86.9	83.9–89.9
30–44	1,546	2.5	1.3–3.8	9.6	7.5–11.7	87.9	85.5–90.2
45–69	1,605	6.4	4.9–7.9	14.8	12.4–17.2	78.8	75.8–81.8
<b>15–69</b>	<b>4,117</b>	<b>3.5</b>	<b>2.6–4.3</b>	<b>11.6</b>	<b>9.8–13.3</b>	<b>85.0</b>	<b>83.0–87.0</b>

Out of the total study population, 3.5% (men 4.5%, women 2.4%) engaged in a low level of physical activity. This proportion was slightly higher, around 6%, among the 45–69 year age group. Around 11.6% of respondents engaged in a moderate level of physical activity, with little variation across the age groups. A further 85% of respondents engaged in a high level of physical activity with the proportion being slightly higher for women (86.3%).

## Time spent on physical activity

The median minutes spent on total physical activity was 240 minutes for both sexes with similar figures for both men and women. This figure was slightly lower (210 minutes) among the 45–69 year age group and higher (264 minutes) among the 30–44 year age group (Table P2, Annex I).

The median time spent on work-related physical activity was 154.3 minutes (men 150 minutes, women 180 minutes) with the highest median among respondents aged 30–44 years (180 minutes). The median time spent on transport-related activity was 60 minutes and was the same across all age and sex groups. No time was spent on recreation-related activities by any age or sex group (Table P4, Annex I).

## Types of activity

Among total respondents, 9.3% (men 14.8%, women 4.0%) were found not to have done the minimum level (at least 10 minutes per day) of work-related activity. Among women this proportion was quite high (10.8%) in the 45–69 year age group, but there was not much difference according to age group generally. Similarly, 6.7% (men 6.1%, women 7.2%) of total respondents were found not to have the minimum level (at least 10 minutes per day) of transport-related activity. Finally, 87.9% (men 78.8%, women 96.6%) were found not to have done the minimum level (at least 10 minutes per day) of recreation-related physical activity (Table P5, Annex I).

The contribution of activity from work to total activity was found to be 62.7% (men 55.1%, women 69.9%), followed by 33.6% (men 37.9%, women 29.4%) for activity related to transport and 3.7% (men 6.9%, women 0.7%) for activity related to recreation (Table P6, Annex I).

More than half (53.6%) of respondents did not engage in vigorous physical activity (men 43.5%, women 63.3%). This proportion was higher among the older age groups compared to younger groups in the study population (Table P7, Annex I). The median time spent in sedentary activities was found to be 120 minutes for all respondents, as well as for men and women separately (Table P8, Annex I).



## CHAPTER 8. DIETARY SALT

### Dietary salt intake

The knowledge, attitudes and behaviour of the study population towards dietary salt were assessed using structured questions. Among the total respondents, 91.0% consumed powdered salt from the packet with two children on the logo, followed by crystal salt (6.7%) and powdered salt from a packet without the logo (2.3%) (Table DS1, Annex I).

Around 4.7% (men 4.0%, women 5.5%) of respondents always, or often, added salt before eating or while eating. This proportion was found to be highest among 15–29 year old women (6%). Otherwise, nearly all respondents (97.8%) added salt either always, or often, during cooking or while preparing food at home. This proportion was almost equal in all age groups and for both sexes. Similarly, 11.5% of respondents always or often consumed processed food containing high amounts of salt. This proportion was higher among men (13.6%) than women (9.4%) and highest among 15–29 year olds at 16.3% (men 18.5%, women 14.1%) (Table DS2, Annex I).

**Table 14 Percentage of respondents who think they consume far too much or too much salt**

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
15–29	288	9.5	6.3–12.8	683	11.0	8.1–13.8	971	10.3	8.0–12.5
30–44	417	9.6	6.6–12.7	1,140	14.1	11.3–16.9	1,557	12.0	9.9–14.1
45–69	629	11.3	8.0–14.6	981	10.9	8.6–13.2	1,610	11.1	9.0–13.2
<b>15–69</b>	<b>1,334</b>	<b>10.0</b>	<b>7.8–12.2</b>	<b>2,804</b>	<b>11.8</b>	<b>10.1–13.6</b>	<b>4,138</b>	<b>10.9</b>	<b>9.4–12.4</b>

The self reported quantity of salt consumed in relative measures was assessed. Around 10.9% (men 10.0% women 11.8%) thought that they consumed far too much or too much salt. This proportion was almost equal in all age groups. However, the proportion of respondents who thought that they consumed far too much salt was significantly less (than those who thought they consumed too much salt). Less than 1% (0.3%) of respondents thought that they consumed far too much salt. Around 10.6% (men 10.0%, women 11.3%) thought that they consumed too much salt. On the other hand, more than three-quarters (78.6%) of respondents thought they consumed just the right amount of salt. This proportion was similar for both sexes (men 77.8%, women 79.3%) and was highest among the 15–29 year age group at 80.2% (men 78.9%, women 81.4%). Around 10.1% (men 11.7%, women 8.6%) thought they consumed too little salt. This proportion was highest among the 45–69 year age group at 12.4% (men 12.7%, women 12.1%). Very few respondents (0.4%) thought they consumed far too little salt; this percentage was similar in men and women (Table DS3, Annex I).

## Awareness of need to lower salt intake

**Table 15 Percentage of respondents who think that consuming too much salt could cause serious health problems**

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
15–29	280	82.5	76.6–88.3	604	76.5	72.5–80.5	884	79.6	75.8–83.3
30–44	390	84.7	80.9–88.5	987	74.5	70.6–78.3	1,377	79.6	76.6–82.5
45–69	566	78.6	74.3–82.9	829	72.0	67.8–76.1	1,395	75.4	72.0–78.8
<b>15–69</b>	<b>1,236</b>	<b>82.1</b>	<b>78.5–85.7</b>	<b>2,420</b>	<b>74.8</b>	<b>71.9–77.6</b>	<b>3,656</b>	<b>78.5</b>	<b>76.0–81.1</b>

More than three-quarters of respondents (78.5%) thought that consuming too much salt could cause serious health problems. This proportion was higher in men (82.1%) than women (74.8%) and similar across all age groups (Table 15). Around 34.7% (men 40.5%, women 28.7%) thought that lowering salt in their diet was very important. About half of the respondents (51.1%) thought it to be somewhat important. This proportion was higher among women (55.1%) than men (47.4%). Around 14.2% (men 12.1%, women 16.3%) thought lowering salt intake was not at all important. This proportion was highest among 45–69 year olds at 16.4% (men 14.8%, women 18.0%) (Table DS4, Annex I).

## Control of salt intake

Various techniques were followed on a regular basis by respondents to control salt intake. Around 15.2% of respondents avoided or minimised the consumption of processed food. This proportion was almost the same in both sexes and highest among the 45–69 year age group. Only 7.5% (men 8.7%, women 6.3%) looked at the salt or sodium information on food labels. Around 42.2% (men 43.9%, women 40.5%) ate meals without adding salt at the table and 13.5% (men 13.2%, women 13.7%) bought low salt/sodium alternatives to control salt intake. This proportion was similar across all age groups. An almost negligible proportion (0.2%) of respondents cooked meals without adding salt, 1.3% used other spices in place of salt when cooking, 0.2% avoided eating out and 0.1% adopted other methods to control their salt intake (Table DS5, Annex I).

## CHAPTER 9. ORAL HEALTH

### State of teeth and gums

The oral health status and health seeking behaviour of respondents with regards to oral health were assessed using a separate module of questions on oral health. Around 95.0% of respondents were found to have 20 or more natural teeth. This proportion was slightly higher among men (95.7%) than women (94.3%) and decreased with age. Another 4.0% of respondents (men 3.6%, women 4.5%) had 10–19 natural teeth; this proportion was higher among the senior age group of 45–69 year olds at 12.3% (men 11.1%, women 13.5%). Less than 1% of the population (0.7%) had 1–9 natural teeth and only 0.3% had no teeth (Table O1, Annex I).

The state of teeth and gums was measured solely by how respondents perceived their teeth and gums. Among respondents with natural teeth, around one-tenth (9.5%) had poor or very poor teeth. This proportion was higher in women (10.5%) than men (8.4%) and highest among 45–69 year olds at 18.5% (men 17.3%, women 19.6%). Similarly, around 7.0% (men 6.0%, women 8.0%) had poor or very poor gums. This proportion also increased with age and was highest among the 45–69 year age group at 13.5% (men 12.8%, women 14.3%) (Table O2, Annex I).

### Dentures

One per cent of respondents had removable dentures. This proportion was equal for men and women and highest among the 45–69 year age group (2.1%). Among those with removable dentures, 58.2% had upper jaw dentures. This proportion was almost equal for both sexes, increased with age and was highest among the 45–69 year age group at 79.4%. Around 35.5% (men 28.0%, women 42.9%) had lower jaw dentures. This proportion was highest among the 30–44 year age group at 56.1% (men 51.2%, women 59.8%). A total of 15.5% had both upper and lower jaw dentures. This proportion was higher in women (21.2%) than men (9.6%) and increased with age (Table O3, Annex I).

### Oral pain or discomfort

**Table 16 Percentage of respondents with oral pain or discomfort**

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
15–29	289	11.2	7.1–15.3	683	21.2	17.3–25.1	972	16.3	13.5–19.1
30–44	417	19.7	14.3–25.1	1,141	30.7	27.0–34.3	1,558	25.4	22.4–28.5
45–69	630	29.4	25.1–33.7	983	40.5	36.3–44.7	1,613	34.9	31.6–38.3
<b>15–69</b>	<b>1,336</b>	<b>18.4</b>	<b>15.5–21.3</b>	<b>2,807</b>	<b>28.8</b>	<b>26.1–31.6</b>	<b>4,143</b>	<b>23.7</b>	<b>21.6–25.8</b>

During the past 12 months, 23.7% of total respondents (men 18.4%, women 28.8%) were found to have had pain or discomfort in their mouth caused by their teeth or gums. However, this does not include all oral pathology. This proportion was highest among the 45–69 year age group at 34.9% (men 29.4%, women 40.5%) (Table 16).

## Dental care

Among the total respondents, 6.2% (men 5.5%, women 6.8%) had seen a dentist in the past 12 months. This proportion was highest among the 45–69 year age group (8.4%) (Table O4). Around 83.9% of respondents had never received any dental care in their lifetime. This proportion was almost equal for men and women (Table O5, Annex I).

Among those who had ever visited a dentist, 9.3% (men 14.9%, women 3.8%) visited last time for a consultation or advice with regards to their teeth or oral health. About three-quarters of respondents who had visited a dentist (72.9%) said they visited because of pain or trouble with their teeth and gums. This proportion was higher among women (78.5%) than men (67.2%) and was highest among 30–44 year olds at 80.2% (men 74.2%, women 84.3%). Around 15.5% visited a dentist for follow up treatment. This proportion was almost equal in men and women. Only 2.3% said they visited for a routine check-up. This proportion was equal for men and women (Table O6, Annex I).

## Dental hygiene

The study also assessed the teeth cleaning habits of respondents. Around 94.9% (men 95.8%, women 94.1%) were found to be cleaning their teeth at least once a day. This proportion was highest among the 15–29 year age group at 98.0% (men 98.4%, women 97.6%). Nearly 10% (9.9%) cleaned their teeth at least twice a day. This proportion was almost equal in both sexes and highest among the 15–29 year age group (13.1%) (Table O7, Annex I). Among those cleaning their teeth, 87.1% (men 88.0%, women 86.3%) used toothpaste (Table O8, Annex I). Similarly, among those using toothpaste, 81.6% (men 84.3%, women 78.8%) used toothpaste containing fluoride. This was assessed by observing the toothpaste used by respondents (Table O9, Annex I).

Table 17 Percentage of respondents using various tools to clean teeth

Age group (years)	n	% Tooth-brush	95% CI	% Wooden tooth-pick	95% CI	% Plastic tooth pick	95% CI	% Thread (dental floss)	95% CI	% Char-coal	95% CI	% Chew-stick/miswak	95% CI	% Other	95% CI
<b>Men</b>															
15-29	289	92.9	89.3-96.5	16.2	11.2-21.3	0.4	0.0-1.2	1.1	0.0-2.4	1.2	0.0-2.8	9.4	5.4-13.4	0.0	0.0-0.0
30-44	413	88.5	84.7-92.3	21.1	16.0-26.1	0.6	0.0-1.4	2.4	0.7-4.1	0.4	0.0-1.1	13.9	9.7-18.1	0.8	0.0-1.8
45-69	617	81.3	76.4-86.1	19.6	15.5-23.8	1.1	0.2-2.0	1.0	0.0-2.0	3.4	1.8-5.0	18.2	13.6-22.9	1.4	0.3-2.5
<b>15-69</b>	<b>1,319</b>	<b>88.6</b>	<b>85.7-91.5</b>	<b>18.4</b>	<b>15.0-21.8</b>	<b>0.7</b>	<b>0.2-1.1</b>	<b>1.4</b>	<b>0.6-2.2</b>	<b>1.6</b>	<b>0.7-2.5</b>	<b>13.0</b>	<b>9.9-16.1</b>	<b>0.6</b>	<b>0.2-1.0</b>
<b>Women</b>															
15-29	682	93.7	91.2-96.2	13.5	10.4-16.5	0.6	0.0-1.1	1.4	0.2-2.5	1.2	0.4-2.0	8.5	5.5-11.6	0.0	0.0-0.0
30-44	1,138	86.6	82.6-90.7	16.3	13.3-19.3	0.3	0.0-0.6	1.5	0.6-2.3	3.3	1.8-4.8	15.9	11.5-20.2	0.4	0.0-0.7
45-69	956	78.4	74.2-82.5	14.2	11.2-17.1	0.4	0.0-0.7	1.3	0.5-2.1	7.7	5.4-10.1	20.0	15.8-24.2	1.0	0.1-1.8
<b>15-69</b>	<b>2,776</b>	<b>87.8</b>	<b>85.2-90.4</b>	<b>14.4</b>	<b>12.4-16.5</b>	<b>0.4</b>	<b>0.1-0.7</b>	<b>1.4</b>	<b>0.7-2.1</b>	<b>3.5</b>	<b>2.5-4.4</b>	<b>13.5</b>	<b>10.5-16.5</b>	<b>0.4</b>	<b>0.1-0.6</b>
<b>Both sexes</b>															
15-29	971	93.3	90.8-95.8	14.8	11.7-18.0	0.5	0.0-1.0	1.9	0.9-2.9	1.2	0.3-2.1	9.0	6.1-11.9	0.0	0.0-0.0
30-44	1,551	87.5	84.2-90.8	18.6	15.6-21.6	0.4	0.0-0.8	1.1	0.4-1.9	1.9	1.1-2.8	14.9	11.3-18.5	0.6	0.1-1.1
45-69	1,573	79.8	75.9-83.8	16.9	14.2-19.7	0.7	0.2-1.3	1.4	0.8-1.9	5.5	4.0-7.1	19.1	15.2-23.0	1.2	0.5-1.9
<b>15-69</b>	<b>4,095</b>	<b>88.2</b>	<b>85.8-90.6</b>	<b>16.4</b>	<b>14.2-18.5</b>	<b>0.5</b>	<b>0.2-0.9</b>	<b>1.9</b>	<b>0.9-2.9</b>	<b>2.6</b>	<b>1.8-3.3</b>	<b>13.2</b>	<b>10.5-16.0</b>	<b>0.5</b>	<b>0.2-0.7</b>

Among those cleaning their teeth, 88.2% (men 88.6%, women 87.8%) used a toothbrush. This proportion was highest among the 15–29 year age group (93.3%). Around 16.4% (men 18.4%, women 14.4%) used wooden toothpicks to clean their teeth. Less than 1% (0.5%) used plastic toothpicks. Nearly 2% (1.9%) used thread (dental floss). These proportions were almost the same among men and women and across all age groups. Around 2.6% used charcoal; this proportion was twice as high in women (3.5%) than in men (1.6%) and increased with age. More than one-tenth (13.2%) of respondents used chewsticks or miswak. This proportion was almost equal for men and women and highest among the 45–69 year age group at 19.1% (men 18.2%, women 20.0%).

## Difficulty chewing or speaking

During the past 12 months, 16.2% of respondents reported having difficulty chewing food. This proportion was higher among women (19.9%) than men (12.4%) and highest (26.0%) among the 45–69 year age group. Around 5.8% of respondents (men 3.8%, women 7.6%) had difficulty with speech or trouble pronouncing words because of dental problems. Similarly, 2.8% of respondents (men 2.3%, women 3.3%) experienced stress because of problems with their teeth or mouth. Around 1.8% (men 1.3%, women 2.3%) felt embarrassed because of the appearance of their teeth. More than 2% (2.1%) avoided smiling because of their teeth. This proportion was nearly double in women (2.6%) compared to men (1.7%). Around 7% of respondents (men 4.6%, women 9.3%) often had interrupted sleep because of teeth or oral problems. Less than 1% (0.8%) missed days at work because of their teeth or oral problems. Another 4.3% (men 2.9%, women 5.7%) had difficulty doing their usual activities because of teeth or oral problems. Less than 1% (0.6%) had been less tolerant of their spouse or people close to them and 0.7% had reduced participation in social activities because of their teeth or oral problems. The abovementioned problems stemming from poor oral status were found to be higher in women than their male counterparts and were also highest among the 45–69 year age group (Table O10, Annex I).

## Dental caries

**Table 18 Percentage of respondents with dental caries**

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
15–29	289	22.6	17.7–27.6	683	32.2	27.8–36.6	972	27.5	24.0–31.0
30–44	417	27.2	21.9–32.6	1,141	45.0	40.9–49.1	1,558	36.5	33.2–39.9
45–69	630	44.0	39.4–48.7	983	55.9	51.9–59.9	1,613	49.9	46.7–53.2
<b>15–69</b>	<b>1,336</b>	<b>29.7</b>	<b>26.2–33.1</b>	<b>2,807</b>	<b>41.9</b>	<b>38.9–44.9</b>	<b>4,143</b>	<b>35.9</b>	<b>33.5–38.3</b>

Self reported dental caries was explored among the respondents at the time of the interview. Among the total respondents, 35.9% (men 29.7%, women 41.9%) reported having had dental carries. This proportion was highest among the 45–69 year age group at 49.9% (men 44.0%, women 55.9%) (Table 18).

## CHAPTER 10. HOUSING AND ENERGY

House construction materials, provision of a kitchen, fuel for cooking and source of lighting were assessed through direct observation and questions to assess indoor air pollution (housing and energy) for the study population.

### House construction materials

The highest proportion of roofs, i.e., two-fifths (38.5%), were made of corrugated iron, zinc or other metal sheets. The next most widely used materials were cement or concrete (25.8%) and grass leaves, reeds, thatch, wood, mud, bamboo or mixed materials (15.2%). A further 11.6% of respondents used tiles, slate or shingles, 5.3% used stone and 3.6% used bricks (Table X1, Annex I).

Just above one-third (34.4%) of respondents had house walls made of mud or dirt. The next most common materials used for building walls was cement or concrete (29.3%) and stone (14.0%). A further 11.1% used leaves, reeds, thatch, wood, mud, bamboo or mixed materials, 8.3% used fired bricks, 2.2% used unfired bricks and 0.7% used wood to make their walls (Table X2, Annex I). Almost two-thirds of respondents (62.7%) lived in a house where the floor was made of mud or dirt. A little more than one-third of respondents (35.5%) had cement floors (Table X3, Annex I). More than four-fifths (84.9%) of respondents had a separate kitchen in their house (Table X4, Annex I).

### Cooking fuel

**Table 19 Main fuel used for cooking**

Fuel type	% (n = 4,143)	95% CI
Wood/timber	71.4	66.7–76.2
LPG	24.4	19.8–29.0
Bio-gas	2.7	1.6–3.8
Cow dung	1.1	0.4–1.7
Kerosene	0.2	0.0–0.4
Straw and thatch	0.1	0.0–0.4
Other	0.0	0.0–0.1

Three-quarters (71.4%) of respondents used wood or timber as the main fuel for cooking and the other quarter (24.4%) used LPG. A much smaller proportion used bio-gas (2.7%), cow dung (1.1%), kerosene (0.2%), and straw and thatch (0.1%) as the main cooking fuel. Three-fifths (60.2%) of respondents used a mud stove for cooking and 26.9% used a gas stove. A much smaller proportion used an open fire (6.7%), a smokeless stove (6.0%) or a kerosene stove (0.1%) for cooking. (Table X5, Annex I)

### Source of lighting

More than four-fifths of respondents (82.9%) used electricity as the main source of lighting in their house and nearly one-tenth (9.8%) used solar as the main source of lighting (Table X6, Annex I).

## CHAPTER 11. OVERWEIGHT AND OBESITY

### Body mass index

Out of the 1,336 male respondents who took part in STEP I, 1,323 consented to physical measurement. Out of the 2,807 women who took part in STEP I, 51 were pregnant and the remaining 2,756 consented to physical measurement. Thus, a total of 4,079 respondents had their general obesity level assessed through the measurement of their BMI. The mean height for male respondents was 161.7 cm and 150.4 cm for women. This was slightly higher (163.0 cm) for 15–29 year old men, but was similar to the mean value among women. Similarly, the mean weight was higher in men (58.4 kg) compared to women (50.7 kg). Mean weight was highest in the 30–44 age group for both sexes (men 60.2 kg, women 53.1 kg) (Table M1, Annex I). Mean BMI was equal (22.4 kg/m<sup>2</sup>) for both sexes. It was also similar across all age groups, except in the youngest age group, for which mean BMI was lower (Table M2, Annex I).

**Table 20 BMI for respondents of both sexes (excluding pregnant women)**

Age group (years)	n	% Under-weight	95% CI	% Normal weight	95% CI	% Over-weight	95% CI	% Obese	95% CI
<b>Men</b>									
15–29	284	8.0	4.5–11.5	78.7	73.6–83.8	11.8	7.9–15.7	1.5	0.1–2.9
30–44	414	7.5	4.7–10.3	63.4	57.8–69.0	24.6	19.3–29.9	4.6	1.8–7.3
45–69	625	11.4	8.1–14.8	61.6	57.0–66.3	22.3	18.2–26.5	4.6	2.8–6.5
<b>15–69</b>	<b>1,323</b>	<b>8.8</b>	<b>6.6–11.0</b>	<b>70.0</b>	<b>66.6–73.5</b>	<b>18.0</b>	<b>15.2–20.8</b>	<b>3.1</b>	<b>2.0–4.3</b>
<b>Women</b>									
15–29	653	12.3	9.3–15.2	73.4	69.7–77.2	12.3	9.5–15.1	2.0	0.9–3.1
30–44	1,129	8.8	6.7–10.9	61.0	57.3–64.6	23.3	20.1–26.5	6.9	4.9–8.9
45–69	974	15.0	12.0–17.9	58.2	54.5–61.9	19.6	16.3–22.8	7.3	5.1–9.4
<b>15–69</b>	<b>2,756</b>	<b>12.0</b>	<b>10.1–13.9</b>	<b>65.9</b>	<b>63.5–68.3</b>	<b>17.3</b>	<b>15.4–19.2</b>	<b>4.8</b>	<b>3.7–5.9</b>
<b>Both sexes</b>									
15–29	937	10.1	7.8–12.5	76.1	72.8–79.3	12.0	9.7–14.4	1.7	0.9–2.6
30–44	1,543	8.2	6.4–9.9	62.1	58.7–65.6	23.9	20.7–27.1	5.8	4.1–7.5
45–69	1,599	13.2	10.9–15.5	59.9	56.7–63.1	21.0	18.2–23.7	6.0	4.5–7.4
<b>15–69</b>	<b>4,079</b>	<b>10.4</b>	<b>8.8–12.1</b>	<b>67.9</b>	<b>65.6–70.3</b>	<b>17.7</b>	<b>15.8–19.5</b>	<b>4.0</b>	<b>3.1–4.8</b>

One-tenth of all respondents (10.4%) were found to be underweight (BMI<18.5). This proportion was higher in women (12.0%) compared to men (8.8%) and highest in the 45–69 year age group at 13.2% (men 11.4%, women 15.0%). Around two-thirds (67.9%) of all respondents had normal BMI (BMI 18.5–24.9). This proportion was lower in women (65.9%) than men (70.0%). The proportion of overweight (BMI 25.0–29.9) respondents with BMI between 25 and 29.9 was 17.7% overall (men 18.0%, women 17.3%). The proportion of obesity (BMI ≥30.0) was 4.0% overall (men 3.1%, women 4.8%). Among the three age groups, obesity was highest in the 45–69 year age group (men 4.6%, women 7.3%) (Table 20 and Table M3, Annex I).



The proportion of respondents who were either overweight or obese was 21.6%. This combined figure was slightly higher in women (22.1%) than men (21.2%). Generalised overweight (BMI  $\geq 25.0$ ) was higher in the 30–44 year age group at 29.7% overall (men 29.1%, women 30.3%) (Table M4, Annex I).

### **Waist hip ratio**

The average mean waist circumference was 79.8 cm for men and 76.7 cm for women. The mean hip circumference was 88.1 for men and 87.5 for women (Table M5, Annex I). Among the study population, mean hip circumference was higher than waist circumference for both sexes and across all age groups. The mean waist to hip ratio was 0.9 for both sexes and across all age groups (Table 20 and Table M6, Annex I).

## CHAPTER 12. BLOOD PRESSURE

The health status and health seeking behaviour of the study population related to high blood pressure were assessed by looking at the respondents' blood pressure history and treatment.

### History of raised blood pressure (hypertension)

Around 42.7% of the study population had never had their blood pressure measured by a doctor or other health worker. This proportion was similar among both sexes (men 45.2%, women 40.3%). The prevalence of self-reported hypertension (diagnosed within the past 12 months) was 5.3%, and increased with age, with the highest percentage of diagnosed cases among the 45–69 year age group (men 14.3%, women 14.2%) (Table H1, Annex I).

### Blood pressure treatment

Among those with diagnosed hypertension, only 53% (men 56.8%, women 49.5%) were currently taking blood pressure drugs as prescribed by a doctor or other health worker. This proportion was highest among the 45–69 year age group (men 66.9%, women 60.5%) (Table H2, Annex I).

### Lifestyle advice

Three-quarters (75.5%) of the total diagnosed cases of hypertension received advice to reduce salt intake (men 78.2%, women 72.9%) with the highest proportion being the 45–69 year age group (81.3%) followed closely by the 30-44 year old age group (79.2%) for both sexes. Around 40.9% of respondents had received advice to lose weight. Among respondents who were hypertensive and current smokers, 62.1% (men 62.6%, women 61.5%) had received advice to stop smoking. One-third (35.6%) of those with diagnosed hypertension were found to have received advice to start, or do, more exercise (men 42.6%, 29.4% for women) (Table H3, Annex I).

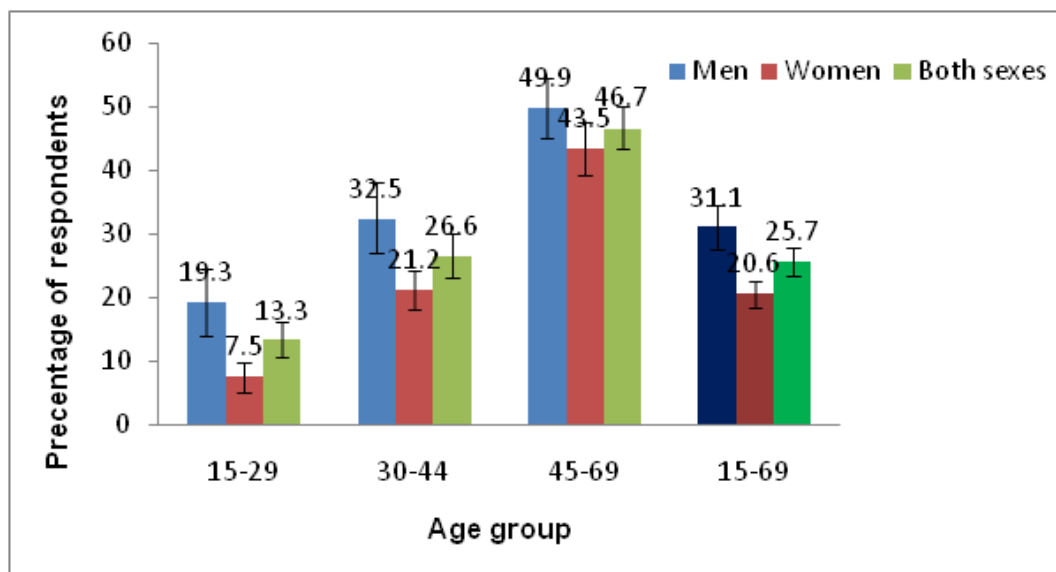
### Traditional healers and remedies

Among the previously diagnosed hypertensive population, 11.0% had visited traditional healers. This proportion was similar for both sexes. About 4.8% of respondents were taking herbal or traditional remedies for hypertension; this proportion was higher among women (6.2%) than men (3.2%) (Table H4, Annex I).

### Blood pressure measurement

The mean systolic blood pressure of the study population was 127.4 mmHg (men 131.1 mmHg, women 123.9 mmHg). Mean diastolic blood pressure was 79.8 mmHg (men 81.2 mmHg, women 78.5 mmHg). (Table M7, Annex I).

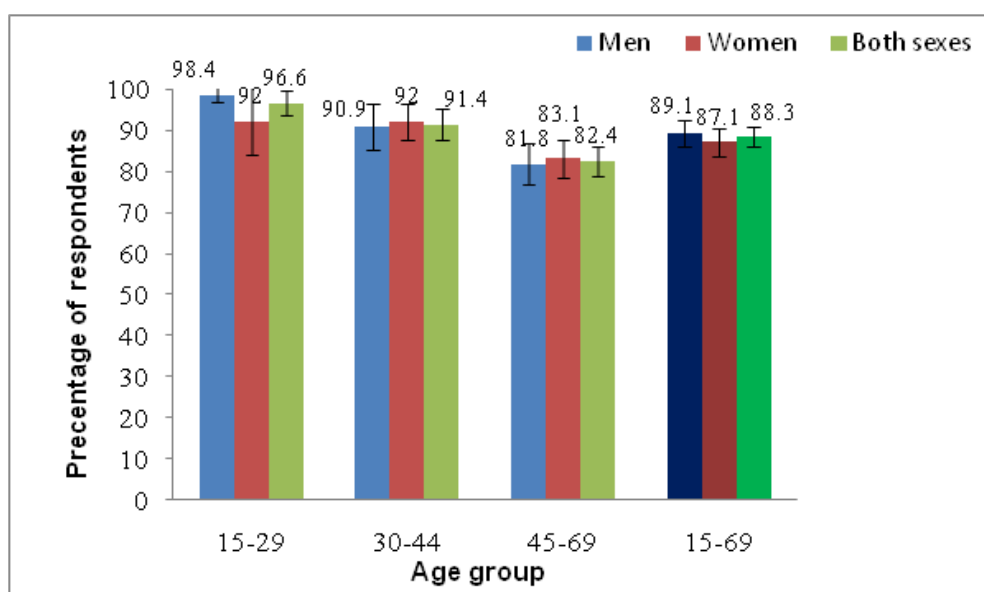
**Figure 6 Prevalence of raised blood pressure (including those on medication)**



The prevalence of raised blood pressure, using the criteria of SBP $\geq$ 140 or DBP $\geq$ 90 mmHg and excluding those on medication, was 23.4% (men 28.7%, women 18.5%). When those currently on medication were included, this prevalence rose to 25.7% (men 31.1%, women 20.6%) (Figure 6). The proportion of men with raised blood pressure including those currently on medication for hypertension was highest (49.9%) among the 45–69 year age group, followed by 30–44 year olds (32.5%). Among women, this proportion was highest among the oldest age group, at 43.5% among 45–69 year olds, and 21.2% among 30–44 year olds.

Using the criteria SBP  $\geq$ 160 and/or  $\geq$ 100 mmHg and excluding those on medication, 6.6% of the total respondents (men 7.4%, women 5.9%) were found to have raised blood pressure. This prevalence was higher (9.4%) when those currently on medication were included (men 10.5%, women 8.4%) (Table M8, Annex I).

**Figure 7 Proportion of respondents with raised blood pressure not on medication**



Among those with raised blood pressure (characterized as SBP $\geq$ 140 and/or DBP $\geq$ 90 mmHg), nearly 9 out of 10 were not on medication. This proportion was 89.1% for men and 87.1% for women (Figure 7 and Table M9, Annex I).

### **Pulse rate**

The mean heart rate of respondents was 78.3 beats per minute among men, 82.3 beats per minute among women and 80.4 beats per minute among total respondents. The heart rate of the study population was within the normal range (Table M10, Annex I).

## CHAPTER 13. BLOOD GLUCOSE

### History of raised blood glucose (diabetes mellitus)

The diabetes status of the survey population was identified by looking for any documented evidence of diabetic medication. Around 89.2% of the study population had never measured their blood glucose in their lifetime. This proportion was higher among women (91.7%) than men (86.6%) and higher among the 15–29 year age group (men 92.7%, women 94.6%). Among the study population, 8.7% (men 10.8%, women 6.7%) had measured their blood glucose level in the past, but had never been diagnosed with diabetes. This proportion was higher in the older age groups. The prevalence of self-reported diabetes (within the last 12 months) was 1.9% (men 2.4%, women 1.4%). This proportion was highest among the 45–69 year age group in both sexes (men 6.6%, women 4.6%) (Table H5, Annex I).

### Diabetes treatment

Among those respondents previously diagnosed with diabetes, 9.4% were taking insulin. This proportion was more than double (12.1%) among men when compared to women (5.2%). Around 63.4% (men 61.1%, women 67.0%) were taking oral drugs for diabetes. These results indicate that most of the diagnosed diabetic population is being treated with oral medication (Table H6, Annex I). Among total respondents, 1.4% (men 1.7%, women 1.1%) were found to be receiving treatment (oral medicine or insulin) for diabetes. This proportion was highest in the 45–69 year age group at 4.7% (men 5.8%, women 3.6%) (Tables M8 and M11, Annex I).

### Lifestyle advice

Two-thirds (69.1%) of respondents previously diagnosed with diabetes were found to have received advice from a doctor or health worker to eat a special prescribed diet. This proportion was higher among men (74.5%) than women (60.6%). Around 51.4% of respondents with diabetes had been advised to lose weight. Among those with diabetes who were current smokers, 41.4% were advised to quit smoking. Nearly two-thirds of respondents (61.2%) were advised to start, or do more, exercise. This proportion was higher among men (70.2%) than women (47.0%) (Table H7, Annex I).

### Traditional healers and remedies

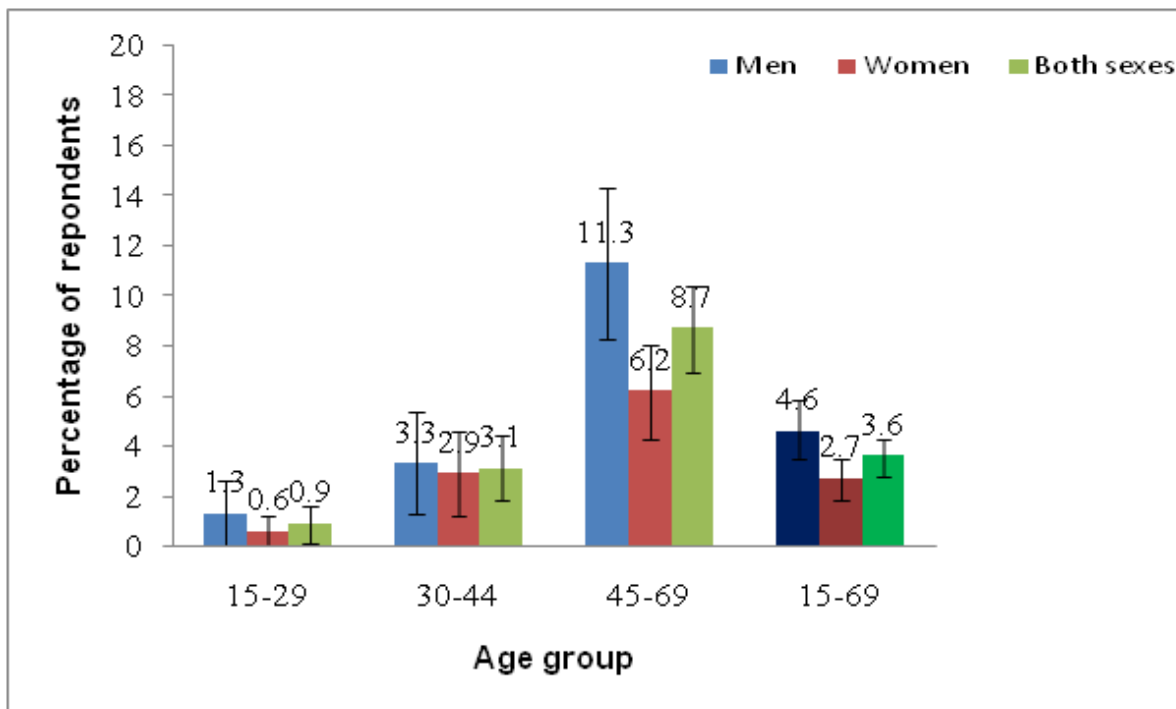
Around 8.8% of the known diabetic respondents had visited a traditional healer and 14.2% were taking herbal and traditional treatments for diabetes. This proportion was similar among both sexes (Table H8, Annex I).

### Blood glucose measurement

Blood glucose was measured as per STEP III following the guidelines and using the validated equipment mentioned in the data collection section. About 90% of respondents consented to biochemical measurement and the provision of blood samples to ascertain their biological risk factors. Among those who consented, the mean fasting blood glucose was 93.4 mg/dl for men, 89.7 mg/dl for women and 91.5 mg/dl for all respondents (Table M12, Annex I). The prevalence of impaired fasting glycaemia (IFG), defined as plasma venous value  $\geq 110$  mg/dl to  $< 126$  mg/dl, was 4.1% (men 5.1%, women 3.2%). Among men, the proportion

of IFG was highest among the 30–44 year age group (9.5%), followed by the 45–69 year age group (7.2%). Among women, IFG was found to increase with age and was highest among the 45–69 year age group (5.4%) (Table M13, Annex I).

**Figure 8 Prevalence of diabetes mellitus**



The prevalence of diabetes mellitus, based on plasma venous value  $\geq 126$  mg/dl and including those on medication, was 3.6% (men 4.6%, women 2.7%). The proportion was highest among the 45–69 year age group with 11.3% for men, 6.2% for women and 8.7% overall. The prevalence of diabetes mellitus was also found to increase with age (Figure 8 and Table M14, Annex I).

## CHAPTER 14. ABNORMAL LIPIDS

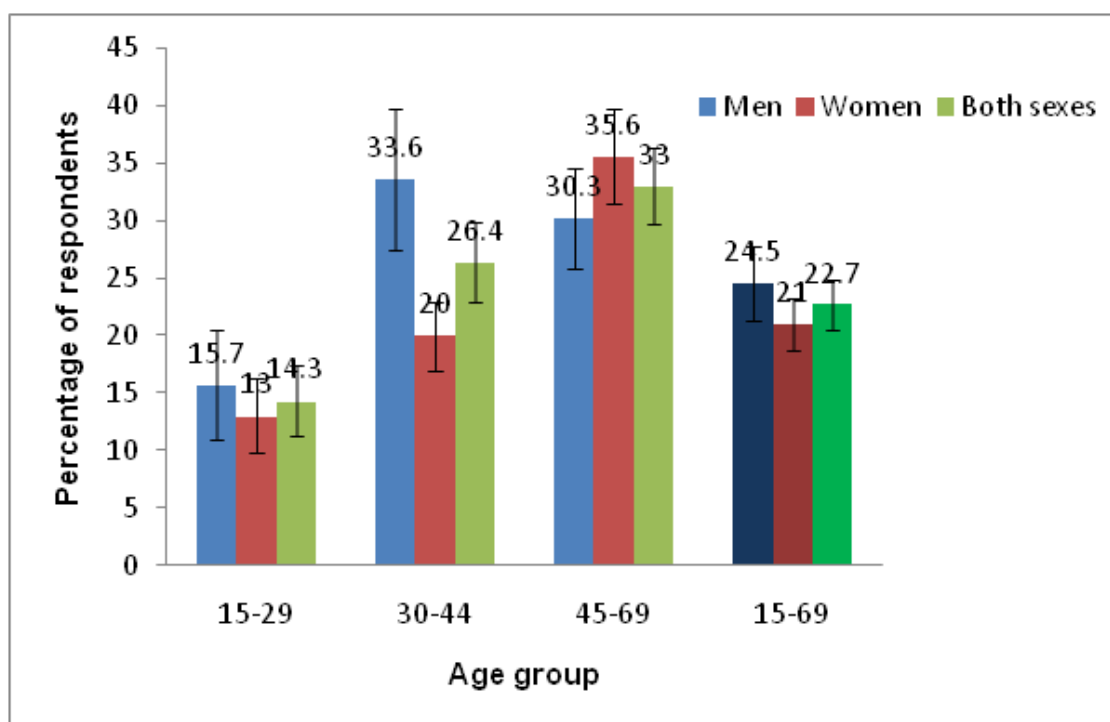
An abnormal lipid profile is known to be a major risk factor in cardiovascular disease. Total cholesterol, high density lipoproteins (HDL) and triglycerides were measured using the wet method to determine their levels in the fasting blood sample.

### Total cholesterol

Among the respondents, mean total cholesterol, including for those currently on medication was 162.3mg/dl (men 163.4 mg/dl, women 161.2mg/dl). Cholesterol was found to increase with age and was, thus, highest among 45–69 year olds at 175.1 mg/dl (men 172.7 mg/dl, women 177.5 mg/dl) (Table M15, Annex I).

The prevalence of raised cholesterol (total cholesterol  $\geq 190$  mg/dl or currently on medication for raised cholesterol) was 22.7% (men 24.5%, women 21.0%). Among men, the prevalence of raised cholesterol was highest among 30–44 year olds (33.6%), followed by 45–69 year olds (30.3%); whereas among women, it was highest among 45–69 year olds (35.6%), followed by 30–44 year olds (20.0%). Looking at both sexes combined, the prevalence of raised cholesterol increased with age and was highest among the 45–69 year age group at 33.0%. Looking at all respondents, including those currently on medication, around 4.0% (men 5.2%, women 3.0%) had raised cholesterol (total cholesterol  $\geq 240$ mg/dl). This proportion was also found to increase with age and was highest among 45–69 year olds at 6.8% (Figure 9 and Table M16, Annex I).

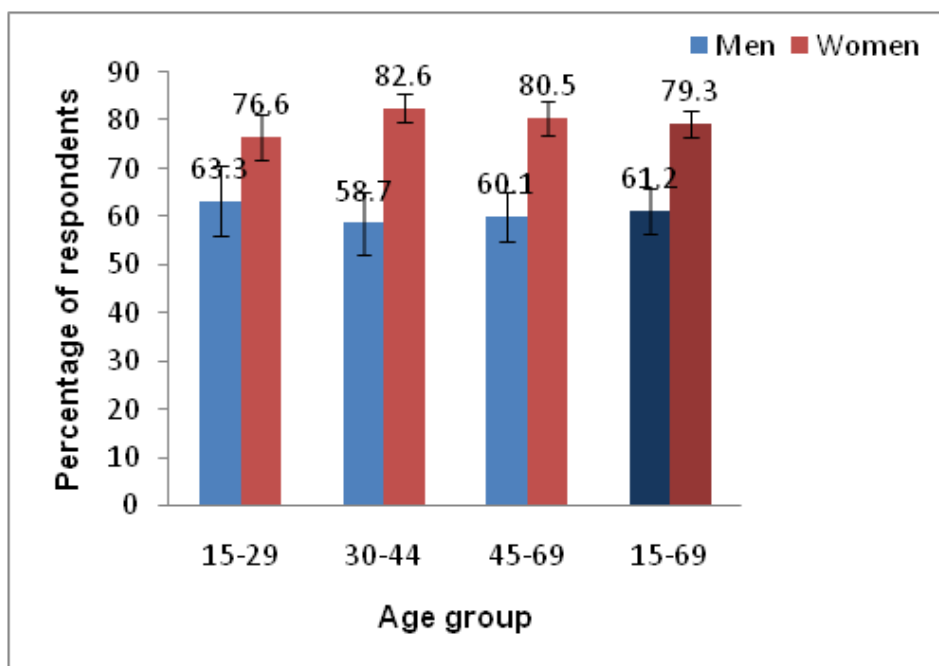
Figure 9 Prevalence of raised total cholesterol



## High density lipoproteins

Mean HDL was 40.4 mg/dl for all respondents (men 39.2 mg/dl, women 41.6 mg/dl) (Table M17, Annex I). The prevalence of low HDL (<40 mg/dl in men and <50 mg/dl in women) was higher among women (79.3%) compared to men (61.2%). Among men, low HDL was most prevalent among 15–29 year olds (63.3%), followed by 45–69 year olds (60.1%). Among women, it was most prevalent among 30–44 year olds (82.6%), followed by 45–69 year olds (80.5%) (Figure 10 and Table M18, Annex I).

Figure 10 Prevalence of low HDL

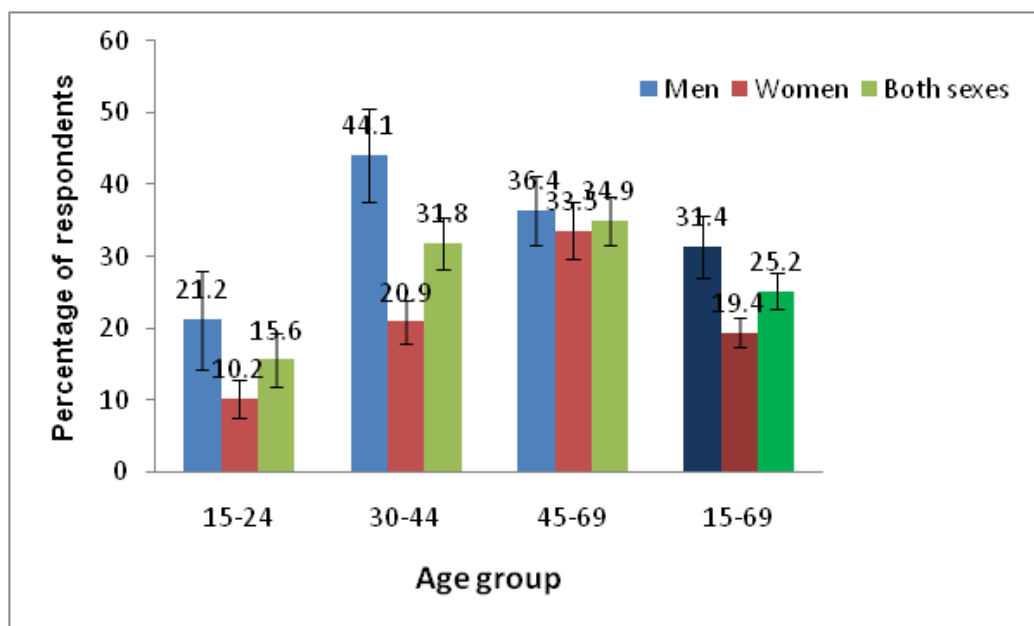


## Triglycerides

Mean fasting triglycerides were 124.1 mg/dl overall (men 134.7 mg/dl, women 114.1 mg/dl) (Table M19, Annex I). The prevalence of raised triglycerides ( $\geq 150$  mg/dl) was 25.2% overall and was higher in men (31.4%) than women (19.4%). Raised triglycerides were most prevalent among 45–69 year olds (34.9%), followed by 30–44 year olds (31.8%). Among men, raised triglycerides was most prevalent among 30–44 year olds (44.1%), followed by 45–69 year olds (36.4%). Among women, raised triglycerides were most prevalent among 45–69 year olds (33.5%), followed by 30–44 year olds (20.9%) (Figure 11).



**Figure 11 Prevalence of raised triglycerides**



Around 17.3% of the survey population had triglycerides  $\geq 180$ mg/dl. This proportion was nearly double among men (22.8%) compared to women (12.1%) and generally increased with age (Table M20, Annex I).

### Low density lipoproteins

The level of low density lipoproteins (LDL) was calculated using the values of total cholesterol, HDL and triglycerides using the formula  $\{LDL = \text{total cholesterol} - HDL - (\text{triglycerides} \div 5)\}$ . In certain cases where the value of triglycerides was very high, LDL was measured using the direct method, as was done with the measurement of other blood lipids.

**Table 21 Prevalence of high LDL**

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
<b>LDL <math>\geq 130</math> mg/dl</b>									
15-29	226	10.2	6.0-14.4	556	8.3	5.8-10.9	782	9.2	6.7-11.7
30-44	340	20.3	14.5-26.0	967	16.5	13.9-19.2	1307	18.3	15.2-21.3
45-69	527	23.0	18.4-27.5	854	25.2	21.7-28.8	1381	24.1	21.0-27.2
<b>15-69</b>	<b>1,093</b>	<b>16.4</b>	<b>13.5-19.3</b>	<b>2,377</b>	<b>15.1</b>	<b>13.1-17.1</b>	<b>3,470</b>	<b>15.8</b>	<b>13.8-17.7</b>
<b>LDL <math>\geq 160</math> mg/dl</b>									
15-29	226	3.1	0.8-5.4	556	1.9	0.6-3.2	782	2.5	1.1-3.9
30-44	340	5.8	2.8-8.9	967	3.4	2.0-4.7	1307	4.5	2.9-6.1
45-69	527	5.6	3.6-7.7	854	8.8	6.6-11.0	1381	7.3	5.5-9.0
<b>15-69</b>	<b>1,093</b>	<b>4.5</b>	<b>3.1-6.0</b>	<b>2,377</b>	<b>4.2</b>	<b>3.2-5.1</b>	<b>3,470</b>	<b>4.3</b>	<b>3.4-5.3</b>

Mean LDL among total respondents was found to be 99.3 mg/dl, with similar figures for men and women (Table M21, Annex I). The prevalence of raised LDL, using the criteria  $\geq 130$  mg/dl, was 15.8% (men 16.4%, women 15.1%). This was highest among 45–69 year olds at 24.1% followed by 30–44 year olds at 18.3%. The proportion with raised LDL was distributed in a similar pattern for the three age groups among both men and women. Only 4.3% of respondents had raised LDL  $\geq 160$  mg/dl (men 4.5%, women 4.2%) (Table 21).

## CHAPTER 15. COMBINED RISK FACTORS AND CARDIOVASCULAR DISEASE RISK PREDICTION

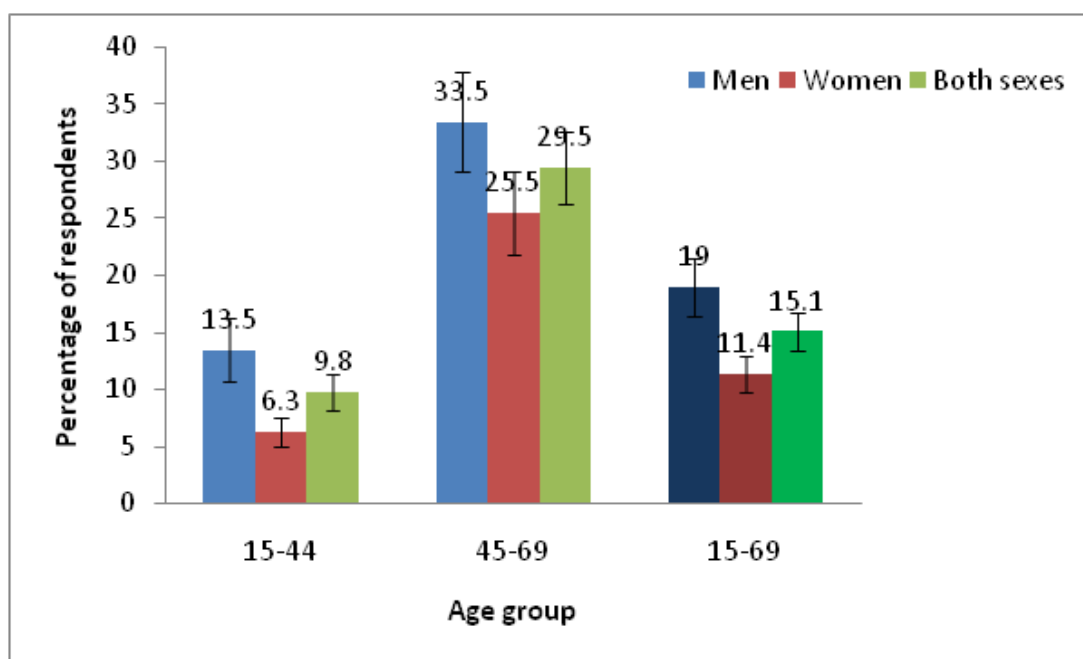
### Combined risk factors

For the purpose of exploring combined risk factors, responses were grouped into three categories according to the presence of the five major risk factors based on principal component analysis. The first category was 'no risk factors'; the second 'one or two risk factors', and the third 'three to five risk factors'. The five major risk factors were:

- current daily smokers
- less than 5 servings of fruit and vegetables per day
- low level of activity (<600 MET-minutes)
- overweight or obese (BMI  $\geq$  25 kg/m<sup>2</sup>)
- raised blood pressure (SBP  $\geq$  140 mmHg and/or DBP  $\geq$  90 mmHg or currently on medication for raised blood pressure)

Among total respondents, only 0.4% had no risk factors. This proportion was found to be a little bit higher among women (0.7%) in all age groups compared to men (0.1%). Around 84.5% of respondents (men 80.9%, women 87.9%) were found to have one to two risk factors. This proportion was highest among the younger age group (15–44) at 89.8% (men 86.4%, women 93.0%). Another 15.1% had three to five risk factors. This proportion was higher among men (19.0%) than women (11.4%) and highest among 45–69 year olds at 29.5% (men 33.5%, women 25.5%) (Figure 12 and Table S1, Annex1).

Figure 12 Percentage of respondents with 3–5 risk factors



## Cardiovascular disease risk prediction

A 10-year cardiovascular (CVD) risk of  $\geq 30\%$  is defined according to age, sex, blood pressure, smoking status (current smokers or those who quit smoking less than 1 year before the assessment), total cholesterol, and diabetes (previously diagnosed or a fasting plasma glucose concentration  $\geq 126$  mg/dl).

**Table 22 Percentage of respondents with a 10-year CVD risk  $\geq 30\%$  or existing CVD**

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
40–54	403	1.1	0.1–2.2	781	1.6	0.6–2.6	1,184	1.4	0.6–2.1
55–69	321	4.9	2.0–7.8	468	7.3	5.1–9.6	789	6.1	4.2–8.0
<b>40–69</b>	<b>724</b>	<b>2.6</b>	<b>1.3–4.0</b>	<b>1,249</b>	<b>3.7</b>	<b>2.7–4.8</b>	<b>1,973</b>	<b>3.2</b>	<b>2.3–4.1</b>

The proportion of respondents in the age group 40–69 years with a 10-year CVD risk of  $\geq 30\%$  was 3.2% (men 2.6%, women 3.7%). In both the sex groups this proportion was higher for the 55–69 year age group compared to the 40–54 year age group. Among men of 55–69 years it was 4.9% and for women in the same age group it was 7.3% (Table 22).

## CHAPTER 16. CONCLUSION AND RECOMMENDATIONS

### Conclusion

This national survey found the magnitude of the major NCD risk factors – both modifiable behavioural risk factors (tobacco use, alcohol consumption, low fruit and vegetable consumption, and physical inactivity) as well as biological risk factors (overweight, obesity, raised blood pressure, raised blood glucose and abnormal lipids) – to be remarkably high. Most of the risk factors, such as tobacco use, alcohol consumption, raised blood pressure, raised blood glucose, raised total cholesterol and raised triglycerides, were more prevalent among men than women. However, obesity and low HDL was more prevalent among women. Nearly one in every two men between 15 and 69 years was found to be consuming tobacco in either its smoke or smokeless form. Furthermore, a quarter of the population aged 15–69 years was found to have raised blood pressure. Even though the prevalence of raised blood pressure was low (13.3%) among 15–29 year olds, it was high among 30–44 year olds (26.6%) and even higher among 45–69 year olds (46.7%), with similar patterns among men and women. In addition, 9 out of 10 adults with raised blood pressure were not currently receiving treatment. Tobacco use, low level of physical activity, obesity, raised blood pressure, raised blood glucose and abnormal lipids were more prevalent among older respondents (aged 45–69 years) than the younger age groups. The prevalence of alcohol consumption was slightly higher among 30–44 year olds. The prevalence of raised total cholesterol is also alarming with more than one-fifths of the adult population having raised total cholesterol. As with raised blood pressure, the prevalence of raised total cholesterol was higher among the older age groups (30–44 years and 45–69 years).

Only 0.4% of the study population was found to be totally free of established NCD risk factors. Hence, a massive 99.6% had at least one risk factor. This indicates that the burden of NCDs is likely to become unbearable in future if the Government of Nepal does not address the issue in time. Based on a number of risk factors (age, sex, smoking status, raised blood pressure, raised blood glucose and raised total cholesterol), the proportion of 40–69 year old adults with a 10-year risk of cardiovascular disease  $\geq 30\%$  was also substantial at 3.2%, with the proportion being almost double (6.1%) among the 55–69 year age group. Preventing and controlling NCD risk factors is easier and less costly than treating NCDs. However, there has been negligible action taken to prevent and control NCDs and their risk factors in Nepal so far.

### Recommendations

This national NCD risk factor survey provides information on key indicators of NCD risk factors. The findings will be useful to policy makers, programme managers and researchers in the design and implementation of interventions for the prevention and control of NCD risk factors. The study shows that the use of tobacco, harmful alcohol consumption, inadequate intake of fruit and vegetables, obesity, raised blood pressure, raised blood glucose and abnormal lipids are common in Nepal. Almost all of the respondents to the survey in Nepal had at least one of these major risk factors.

In order to reduce the risks associated with NCDs, as well as to promote interventions to prevent and control them, a comprehensive approach is needed that involves all sectors, including health, finance, home affairs, education, agriculture, and planning, among others. The attention of external development partners is also required in this fight against NCDs in Nepal.

Based on the findings, the following specific recommendations are made:

### Policy makers

- Design and implement a prevention and control strategy immediately to address the burden of NCD risk factors in Nepal.
- In any actions under this prevention and control strategy, coordinate and collaborate with non-health sectors such as education, agriculture, industry, home affairs, finance, and information and communication and involve the various health sector stakeholders including the different divisions and centres within the Ministry of Health and Population.
- The upcoming new health policy should address the issue of NCDs and their risk factors, including ensuring access to primary health care services for the early detection of biological risk factors and the promotion of healthy behaviours.
- Planners involved in developing Nepal's new health sector implementation plan should incorporate a strong mechanism to promote healthy behaviour in order to reduce behavioural risk factors, as well as provisions for early diagnosis and the management of biological risk factors for NCDs.
- Establish a special unit at the policy level to oversee NCD prevention and control activities in Nepal.
- Effectively implement the Framework Convention on Tobacco Control (FCTC) as well as the Tobacco Control Act and policy together with strong monitoring mechanisms.
- Nepal's own traditional healing sciences such as yoga, naturopathy and ayurveda, which cover aspects of healthy lifestyle, behaviours and food habits, should be promoted and integrated into the primary health care system.
- Allocate sufficient budget funds to carry out prevention and control activities for NCDs and to ensure effective surveillance, monitoring and evaluation, as well as research.
- There should be an enhanced supportive mechanism from external development partners to tackle the current burden of NCD risk factors.

### Programme managers

- Re-orientate the primary health care system towards the early detection and treatment of hypertension and diabetes.
- Implement special tools such as the globally promoted Package of Essential Non Communicable (PEN) Disease Interventions for the diagnosis and treatment of NCDs.
- Design and implement special and innovative behaviour change communication strategies tailored to different demographic groups in order to promote healthy behaviours and reduce risk factors.
- Integrate NCD prevention programmes in community-based primary health care system with other health care programmes and ensure access to this by community people.

- Strengthen health education and promotion as well as counselling to promote healthy behaviours in primary care settings.
- Formulate strategies to promote the accessibility, availability and consumption of fruit and vegetables by all people all year round.
- Implement interventions at all levels with strong monitoring mechanisms.
- Ensure that an NCD surveillance system is in place (this is essential).
- Assess interventions to promote healthy behaviours and reduce the burden of NCD risk factors in order to provide locally-generated evidence for the implementation of NCD prevention and control activities by policy makers and programme managers.
- Evaluate the effectiveness of programmes implemented to prevent and control NCDs and NCD risk factors.

## References

- Asaria, P (2007) 'Chronic disease prevention: Health effects and financial cost of strategies to reduce salt intake and control tobacco use.' *Lancet* 370: 2044–53
- CBS (2011) *Nepal living standards survey 2010/2011*. Kathmandu: National Planning Commission Secretariat, Central Bureau of Statistics, Government of Nepal
- CDC (2011) *Oral health preventing cavities, gum disease, tooth loss, and oral cancer*. Oral Health Division, Centers for Disease Control and Prevention
- Dhakal, P (2012) *Burden of major biological risk factors of non communicable diseases: A case study of Kathmandu metropolitan city*. Nepal Health Research Council (unpublished)
- MoHP (2012) *Nepal demographic and health survey 2011*. Kathmandu: Population Division, MoHP, Government of Nepal
- Pandey, MR (1987) 'Hypertension in Nepal.' *Bibliotheca Cardio* 42: 68–76
- Shrestha, NM (2006) *Surveillance of risk factors for non communicable disease in Nepal*. Kathmandu: SOLID Nepal
- Shrestha, NM (2008) *Nepal non communicable disease risk factor survey*. Kathmandu: SOLID Nepal
- Subedi, BK (2007) 'Of what diseases are Nepalese people dying?' *Kathmandu University Medical Journal* 1(17): 121–123
- WHO (2002) *The world health report 2002, reducing risks, promoting healthy life*. Geneva: World Health Organization
- WHO (2003) *Research report on NCD risk factor surveillance in Nepal, 2003*. Geneva: World Health Organisation. Available at [www.who.int/chp/steps/NepalSTEPSReport2003Kathmandu.pdf](http://www.who.int/chp/steps/NepalSTEPSReport2003Kathmandu.pdf) (accessed 25 February 2014)
- WHO (2005) *WHO STEPS surveillance manual: The WHO STEPwise approach to chronic disease risk factor surveillance*. Geneva: World Health Organization
- WHO (2009) *Global health risks: Mortality and burden of disease attributable to selected major risks*. Geneva: World Health Organization
- WHO (2010) *Global status report on noncommunicable disease*. Geneva: World Health Organization



## Annex I. Data Tables

### Background characteristics

Table B1: Mean number of years of education

Age group (years)	Men		Women		Both sexes	
	n	Mean	n	Mean	n	Mean
15–29	289	9.6	683	6.9	972	7.7
30–44	417	7.6	1,141	3.3	1,558	4.5
45–69	630	5.4	983	1.3	1,613	2.9
<b>15–69</b>	<b>1,336</b>	<b>7.0</b>	<b>2,807</b>	<b>3.5</b>	<b>4,143</b>	<b>4.6</b>

Table B2: Highest level of education

Age group (years)	n	% No formal schooling	% Less than primary school	% Primary school completed	% Secondary school completed	% Higher secondary school completed	% College/university completed	% Post-graduate degree completed
<b>Men</b>								
15–29	289	4.5	4.8	19.0	36.3	24.2	10.7	0.3
30–44	417	16.5	8.9	23.0	28.5	15.1	5.0	2.9
45–69	630	34.4	12.4	19.4	21.3	6.5	3.3	2.7
<b>15–69</b>	<b>1,336</b>	<b>22.4</b>	<b>9.7</b>	<b>20.4</b>	<b>26.8</b>	<b>13.0</b>	<b>5.5</b>	<b>2.2</b>
<b>Women</b>								
15–29	683	24.9	9.4	15.5	29.6	13.6	6.6	0.4
30–44	1,141	53.3	12.9	13.7	14.5	3.9	1.6	0.1
45–69	983	78.7	10.3	4.6	4.8	1.1	0.1	0.4
<b>15–69</b>	<b>2,807</b>	<b>55.3</b>	<b>11.1</b>	<b>10.9</b>	<b>14.8</b>	<b>5.3</b>	<b>2.3</b>	<b>0.3</b>
<b>Both sexes</b>								
15–29	972	18.8	8.0	16.6	31.6	16.8	7.8	0.4
30–44	1,558	43.5	11.8	16.2	18.3	6.9	2.5	0.8
45–69	1,613	61.4	11.1	10.4	11.2	3.2	1.4	1.3
<b>15–69</b>	<b>4,143</b>	<b>44.7</b>	<b>10.6</b>	<b>14.0</b>	<b>18.7</b>	<b>7.8</b>	<b>3.3</b>	<b>0.9</b>

Table B3: Unpaid work and unemployment

Age group (years)	n	% Non-paid	% Student	% Homemaker	% Retired	Unemployed	
						% Able to work	% Not able to work
<b>Men</b>							
15–29	133	0.0	73.7	16.5	0.0	7.5	2.3
30–44	60	1.7	6.7	73.3	6.7	11.7	0.0
45–69	209	0.5	0.5	58.9	27.3	3.3	9.6
<b>15–69</b>	<b>402</b>	<b>0.5</b>	<b>25.6</b>	<b>47.0</b>	<b>15.2</b>	<b>6.0</b>	<b>5.7</b>
<b>Women</b>							
15–29	568	0.0	21.0	78.5	0.0	0.5	0.0
30–44	909	0.1	0.4	99.1	0.0	0.3	0.0
45–69	884	0.2	0.1	94.8	0.5	1.2	3.2
<b>15–69</b>	<b>2,361</b>	<b>0.1</b>	<b>5.3</b>	<b>92.5</b>	<b>0.2</b>	<b>0.7</b>	<b>1.2</b>
<b>Both sexes</b>							
15–29	701	0.0	31.0	66.8	0.0	1.9	0.4
30–44	969	0.2	0.8	97.5	0.4	1.0	0.0
45–69	1,093	0.3	0.2	87.9	5.6	1.6	4.4
<b>15–69</b>	<b>2,763</b>	<b>0.2</b>	<b>8.2</b>	<b>85.9</b>	<b>2.4</b>	<b>1.5</b>	<b>1.8</b>

## Tobacco use

Table T1: Smoking status

Age group (years)	n	Current smoker				Non-smokers				
		% Daily	95% CI	% Non-daily	95% CI	% Former smoker	95% CI	% Never smoked	95% CI	
<b>Men</b>										
15–29	289	14.9	10.2–19.6	5.8	2.7–9.0	3.3	1.1–5.5	75.9	70.2–81.7	
30–44	417	25.9	20.1–31.8	4.6	2.2–7.0	7.0	4.0–10.1	62.4	56.1–68.7	
45–69	630	31.0	26.6–35.4	3.5	1.8–5.1	18.4	14.7–22.1	47.2	42.4–51.9	
<b>15–69</b>	<b>1,336</b>	<b>22.2</b>	<b>18.9–25.4</b>	<b>4.9</b>	<b>3.2–6.5</b>	<b>8.4</b>	<b>6.7–10.1</b>	<b>64.6</b>	<b>61.0–68.1</b>	
<b>Women</b>										
15–29	683	2.1	0.6–3.6	0.3	0.0–0.7	0.7	0.0–1.4	96.9	95.2–98.6	
30–44	1,141	10.8	8.4–13.1	1.0	0.4–1.6	1.7	1.0–2.5	86.5	84.0–89.1	
45–69	983	21.9	18.4–25.3	0.8	0.2–1.4	8.2	6.1–10.2	69.2	65.3–73.0	
<b>15–69</b>	<b>2,807</b>	<b>9.6</b>	<b>8.1–11.2</b>	<b>0.6</b>	<b>0.3–0.9</b>	<b>2.9</b>	<b>2.2–3.6</b>	<b>86.8</b>	<b>85.1–88.6</b>	
<b>Both sexes</b>										
15–29	972	8.4	5.9–10.9	3.0	1.4–4.6	2.0	0.9–3.1	86.6	83.5–89.6	
30–44	1,558	18.0	14.7–21.2	2.7	1.5–3.9	4.2	2.6–5.9	75.0	71.5–78.6	
45–69	1,613	26.4	23.6–29.3	2.2	1.3–3.0	13.3	11.0–15.6	58.1	54.8–61.4	
<b>15–69</b>	<b>4,143</b>	<b>15.8</b>	<b>13.8–17.7</b>	<b>2.7</b>	<b>1.9–3.5</b>	<b>5.6</b>	<b>4.6–6.6</b>	<b>75.9</b>	<b>73.7–78.1</b>	

Table T2: Mean duration of smoking among current daily smokers

Age group (years)	Men			Women			Both sexes		
	n	Mean duration (years)	95% CI	n	Mean duration (years)	95% CI	n	Mean duration (years)	95% CI
15–29	47	7.3	5.9–8.6	12	11.4	9.0–13.9	59	7.8	6.4–9.2
30–44	111	18.1	16.7–19.4	110	19.7	18.3–21.2	221	18.6	17.6–19.6
45–69	193	35.9	34.2–37.7	212	37.5	35.9–39.2	405	36.6	35.3–37.9
<b>15–69</b>	<b>351</b>	<b>21.5</b>	<b>19.4–23.6</b>	<b>334</b>	<b>29.4</b>	<b>27.6–31.2</b>	<b>685</b>	<b>24.0</b>	<b>22.3–25.6</b>

Table T3: Manufactured cigarette smoking

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
<b>Among daily smokers</b>									
15–29	47	97.1	91.5–100.0	12	87.1	63.2–100.0	59	95.9	90.0–100.0
30–44	111	87.6	75.9–99.3	110	72.0	61.5–82.5	221	82.7	73.4–92.0
45–69	193	85.9	80.3–91.4	212	71.9	64.4–79.4	405	80.1	75.0–85.2
<b>15–69</b>	<b>351</b>	<b>89.9</b>	<b>85.0–94.9</b>	<b>334</b>	<b>73.5</b>	<b>66.3–80.6</b>	<b>685</b>	<b>84.8</b>	<b>80.2–89.4</b>
<b>Among current smokers</b>									
15–29	64	97.9	93.9–100.0	14	88.6	67.4–100.0	78	97.0	92.6–100.0
30–44	133	86.3	76.0–96.6	120	73.5	63.7–83.3	253	82.5	74.1–91.0
45–69	213	86.9	81.8–92.0	221	72.1	64.7–79.4	434	81.0	76.3–85.8
<b>15–69</b>	<b>410</b>	<b>90.7</b>	<b>86.4–95.0</b>	<b>355</b>	<b>74.3</b>	<b>67.5–81.1</b>	<b>765</b>	<b>86.1</b>	<b>81.9–90.2</b>

Table T4: Mean amount of tobacco used by daily smokers by type

Age group (years)	n	Mean number of manufactured cigarettes	95% CI	Mean number of hand-rolled cigarettes	95% CI	Mean number of pipes of tobacco	95% CI	Mean number of cigars, cheroots, cigarillos	95% CI	Mean number of shisha sessions	95% CI	Mean number of other types of tobacco	95% CI
<b>Men</b>													
15-29	47	6.5	4.8-8.2	0.5	0.0-1.0	0.1	0.0-0.2	0.0	0.0-0.2	-	0.0	-	0.0
30-44	111	5.9	4.7-7.2	2.4	0.6-4.2	0.0	0.0-0.1	0.0	0.0-0.1	-	0.0	-	0.0
45-69	193	7.3	6.3-8.3	2.1	1.2-3.1	0.0	0.0-0.1	0.0	0.0-0.1	-	0.0	-	0.0
<b>15-69</b>	<b>351</b>	<b>6.6</b>	<b>5.8-7.4</b>	<b>1.7</b>	<b>0.8-2.5</b>	<b>0.0</b>	<b>0.0-0.1</b>	<b>0.0</b>	<b>0.0-0.1</b>	-	<b>0.0</b>	-	<b>0.0</b>
<b>Women</b>													
15-29	12	4.0	2.4-5.6	1.2	0.0-3.1	0.0	-	0.0	-	0.0	-	0.0	-
30-44	110	5.8	4.2-7.4	2.0	1.3-2.7	0.4	0.1-0.8	0.0	0.1-0.8	-	0.0	-	0.0
45-69	212	5.0	4.2-5.7	2.3	1.7-3.0	0.4	0.0-0.7	0.0	0.0-0.7	-	0.0	-	0.0
<b>15-69</b>	<b>334</b>	<b>5.1</b>	<b>4.4-5.8</b>	<b>2.1</b>	<b>1.6-2.7</b>	<b>0.4</b>	<b>0.1-0.6</b>	<b>0.0</b>	<b>0.1-0.6</b>	-	<b>0.0</b>	-	<b>0.0</b>
<b>Both Sexes</b>													
15-29	59	6.2	4.6-7.7	0.6	0.1-1.1	0.1	0.0-0.2	0.0	0.0-0.2	-	0.0	-	0.0
30-44	221	5.9	4.9-6.9	2.3	0.9-3.6	0.1	0.0-0.3	0.0	0.0-0.3	-	0.0	-	0.0
45-69	405	6.3	5.6-7.1	2.2	1.6-2.9	0.2	0.0-0.3	0.0	0.0-0.3	-	0.0	-	0.0
<b>15-69</b>	<b>685</b>	<b>6.2</b>	<b>5.5-6.8</b>	<b>1.8</b>	<b>1.2-2.5</b>	<b>0.1</b>	<b>0.0-0.2</b>	<b>0.0</b>	<b>0.0-0.2</b>	-	<b>0.0</b>	-	<b>0.0</b>

Table T 5: Current smokers and tobacco product smoked

Age group (years)	n	% Manufactured cigarettes	95% CI	% Hand-rolled cigarettes	95% CI	% Pipes of tobacco	95% CI	% Cigars, cheroots, cigarillos	95% CI	% Shisha	95% CI	% Other	95% CI
<b>Men</b>													
15-29	64	97.9	93.9-100.0	15.4	4.8-25.9	2.7	0.0-7.8	4.7	0.0-11.1	0.0	-	0.0	-
30-44	133	86.3	76.0-96.6	20.1	8.8-31.4	0.6	0.0-1.7	1.2	0.0-2.9	0.0	-	0.0	-
45-69	213	86.9	81.8-92.0	20.3	13.9-26.8	0.8	0.0-2.0	0.0	0.0-0.0	0.0	-	0.0	-
<b>15-69</b>	<b>410</b>	<b>90.7</b>	<b>86.4-95.0</b>	<b>18.5</b>	<b>12.0-24.9</b>	<b>1.4</b>	<b>0.0-3.4</b>	<b>2.0</b>	<b>0.0-4.4</b>	<b>0.0</b>	-	<b>0.0</b>	-
<b>Women</b>													
15-29	14	88.6	67.4-100.0	15.9	0.0-37.1	0.0	-	0.0	-	0.0	-	0.0	-
30-44	120	73.5	63.7-83.3	32.9	21.8-43.9	5.4	0.9-10.0	0.0	-	0.0	-	0.0	-
45-69	221	72.1	64.7-79.4	33.2	24.9-41.5	5.6	1.7-9.6	0.0	-	0.0	-	0.0	-
<b>15-69</b>	<b>355</b>	<b>74.3</b>	<b>67.5-81.1</b>	<b>31.2</b>	<b>23.7-38.7</b>	<b>5.0</b>	<b>2.2-7.7</b>	<b>0.0</b>	-	<b>0.0</b>	-	<b>0.0</b>	-
<b>Both Sexes</b>													
15-29	78	97.0	92.6-100.0	15.4	5.8-25.1	2.4	0.0-7.0	4.2	0.0-10.0	0.0	-	0.0	-
30-44	253	82.5	74.1-91.0	23.9	14.5-33.3	2.0	0.1-3.9	0.9	0.0-2.1	0.0	-	0.0	-
45-69	434	81.0	76.3-85.8	25.4	19.7-31.1	2.7	1.0-4.5	0.0	-	0.0	-	0.0	-
<b>15-69</b>	<b>765</b>	<b>86.1</b>	<b>81.9-90.2</b>	<b>22.1</b>	<b>16.5-27.7</b>	<b>2.4</b>	<b>0.7-4.1</b>	<b>1.5</b>	<b>0.0-3.2</b>	<b>0.0</b>	-	<b>0.0</b>	-

Table T6: Former daily smokers (who do not currently smoke), among all respondents and ever daily smokers

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
<b>Among all respondents</b>									
15–29	272	1.4	0.0–3.0	681	0.2	0.0–0.6	953	0.8	0.0–1.6
30–44	395	4.4	1.7–7.1	1,131	1.2	0.6–1.8	1,526	2.7	1.4–4.1
45–69	610	15.8	12.3–19.3	974	6.9	5.1–8.7	1,584	11.3	9.2–13.4
<b>15–69</b>	<b>1,277</b>	<b>6.2</b>	<b>4.7–7.6</b>	<b>2,786</b>	<b>2.2</b>	<b>1.7–2.8</b>	<b>4,063</b>	<b>4.1</b>	<b>3.3–4.9</b>
<b>Among ever daily smokers</b>									
15–29	50	7.9	0.0–17.1	14	9.9	0.0–25.5	64	8.1	0.0–16.4
30–44	126	14.1	6.1–22.0	126	9.8	4.6–15.0	252	12.8	6.8–18.8
45–69	286	33.0	26.6–39.4	284	23.9	18.2–29.5	570	29.5	24.9–34.2
<b>15–69</b>	<b>462</b>	<b>20.9</b>	<b>16.1–25.7</b>	<b>424</b>	<b>18.7</b>	<b>14.1–23.2</b>	<b>886</b>	<b>20.2</b>	<b>16.5–23.9</b>

Table T7: Current smokers who have attempted to stop or been advised by a doctor to stop smoking

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
<b>Current smokers who have tried to stop smoking</b>									
15–29	64	31.5	17.5–45.5	14	36.7	6.5–66.8	78	32.1	19.1–45.0
30–44	133	23.4	15.2–31.6	120	22.5	12.7–32.3	253	23.1	16.5–29.8
45–69	213	26.4	19.2–33.7	221	19.8	13.4–26.3	434	23.8	18.4–29.3
<b>15–69</b>	<b>410</b>	<b>27.4</b>	<b>20.5–34.2</b>	<b>355</b>	<b>22.5</b>	<b>16.0–28.9</b>	<b>765</b>	<b>26.0</b>	<b>20.5–31.5</b>
<b>Current smokers who have been advised by doctor to stop smoking (in last 12 months)</b>									
15–29	32	14.3	2.5–26.1	8	50.5	10.1–90.9	40	18.1	6.4–29.8
30–44	84	18.3	8.5–28.0	66	16.4	6.1–26.7	150	17.7	9.9–25.6
45–69	135	34.0	24.4–43.6	133	17.7	10.2–25.2	268	27.9	21.0–34.8
<b>15–69</b>	<b>251</b>	<b>23.0</b>	<b>16.2–29.7</b>	<b>207</b>	<b>20.5</b>	<b>12.8–28.2</b>	<b>458</b>	<b>22.3</b>	<b>16.9–27.7</b>

Table T8: Smokeless tobacco use

Age group (years)	n	Current user				Non user			
		% Daily	95% CI	% Non-daily	95% CI	% Past user	95% CI	% Never used	95% CI
<b>Men</b>									
15–29	289	17.7	12.4–23.1	4.6	1.6–7.6	1.3	0.0–3.1	76.4	70.2–82.6
30–44	417	38.3	32.5–44.0	1.6	0.2–3.0	5.0	2.3–7.7	55.1	49.2–61.1
45–69	630	37.7	32.7–42.6	1.0	0.1–1.9	5.1	3.0–7.3	56.2	51.0–61.4
<b>15–69</b>	<b>1,336</b>	<b>28.5</b>	<b>25.0–32.0</b>	<b>2.8</b>	<b>1.3–4.3</b>	<b>3.3</b>	<b>2.1–4.5</b>	<b>65.4</b>	<b>61.3–69.4</b>
<b>Women</b>									
15–29	683	1.4	0.4–2.4	0.0	0.0–0.0	0.1	0.0–0.2	98.5	97.5–99.5
30–44	1,141	5.7	4.1–7.3	0.4	0.0–0.9	0.7	0.2–1.1	93.2	91.5–94.9
45–69	983	8.7	6.3–11.1	0.7	0.1–1.3	0.4	0.0–0.8	90.2	87.5–92.8
<b>15–69</b>	<b>2,807</b>	<b>4.5</b>	<b>3.5–5.5</b>	<b>0.3</b>	<b>0.1–0.5</b>	<b>0.3</b>	<b>0.1–0.5</b>	<b>94.9</b>	<b>93.7–96.0</b>
<b>Both sexes</b>									
15–29	972	9.5	6.8–12.1	2.3	0.8–3.7	0.7	0.0–1.6	87.6	84.6–90.7
30–44	1,558	21.2	18.2–24.3	1.0	0.3–1.7	2.7	1.4–4.1	75.1	71.8–78.3
45–69	1,613	23.3	20.2–26.3	0.8	0.3–1.4	2.8	1.7–3.9	73.1	69.8–76.4
<b>15–69</b>	<b>4,143</b>	<b>16.3</b>	<b>14.4–18.2</b>	<b>1.5</b>	<b>0.8–2.3</b>	<b>1.8</b>	<b>1.2–2.4</b>	<b>80.4</b>	<b>78.3–82.5</b>

Table T9: Former daily smokeless tobacco users (who don't currently use tobacco), among all respondents and ever daily users

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
<b>Among all respondents</b>									
15–29	278	0.3	0.0–0.9	683	0.0	0.0–0.0	961	0.1	0.0–0.4
30–44	411	4.1	1.5–6.6	1,137	0.5	0.1–0.9	1,548	2.2	1.0–3.4
45–69	625	4.5	2.5–6.4	977	0.3	0.0–0.7	1,602	2.4	1.4–3.4
<b>15–69</b>	<b>1,314</b>	<b>2.5</b>	<b>1.6–3.3</b>	<b>2,797</b>	<b>0.2</b>	<b>0.1–0.4</b>	<b>4,111</b>	<b>1.3</b>	<b>0.9–1.7</b>
<b>Among ever daily users</b>									
15–29	54	1.6	0.0–4.9	9	0.0	0.0–0.0	63	1.5	0.0–4.5
30–44	179	9.5	3.8–15.1	74	8.0	2.1–14.0	253	9.3	4.4–14.1
45–69	263	10.5	6.2–14.9	82	3.3	0.0–7.1	345	9.3	5.6–12.9
<b>15–69</b>	<b>496</b>	<b>7.7</b>	<b>5.0–10.4</b>	<b>165</b>	<b>4.6</b>	<b>1.7–7.5</b>	<b>661</b>	<b>7.3</b>	<b>5.0–9.6</b>

Table T10: Mean times of smokeless tobacco use by type, among daily smokeless tobacco users

Age group (years)	n	Snuff by mouth	95% CI	Snuff by nose	95% CI	Chewing tobacco	95% CI	Betel, quid	95% CI	Other	95% CI
<b>Men</b>											
15–29	53	4.3	3.0–5.7	0.0	-	1.9	1.0–2.8	0.1	0.0–0.2	0.0	-
30–44	166	6.4	5.6–7.2	0.0	-	0.9	0.5–1.3	0.0	0.0–0.1	0.0	-
45–69	236	5.5	4.6–6.4	0.0	-	1.2	0.7–1.7	0.1	0.0–0.1	0.0	-
<b>15–69</b>	<b>455</b>	<b>5.5</b>	<b>4.8–6.1</b>	<b>0.0</b>	<b>-</b>	<b>1.3</b>	<b>0.9–1.7</b>	<b>0.1</b>	<b>0.0–0.1</b>	<b>0.0</b>	<b>-</b>
<b>Women</b>											
15–29	9	2.9	0.5–5.3	0.0	-	1.6	0.0–3.6	0.4	0.0–1.1	0.0	-
30–44	66	5.4	4.3–6.4	0.1	0.0–0.2	0.6	0.2–1.1	0.1	0.0–0.3	0.0	-
45–69	79	5.6	4.4–6.7	0.0	-	0.5	0.1–1.0	0.0	-	0.0	-
<b>15–69</b>	<b>154</b>	<b>5.1</b>	<b>4.2–6.0</b>	<b>0.0</b>	<b>0.0–0.1</b>	<b>0.7</b>	<b>0.3–1.2</b>	<b>0.1</b>	<b>0.0–0.3</b>	<b>0.0</b>	<b>-</b>
<b>Both sexes</b>											
15–29	62	4.2	3.0–5.5	0.0	-	1.9	1.1–2.7	0.1	0.0–0.2	0.0	-
30–44	232	6.2	5.5–7.0	0.0	0.0–0.0	0.9	0.5–1.2	0.1	0.0–0.1	0.0	-
45–69	315	5.5	4.8–6.3	0.0	-	1.1	0.6–1.5	0.1	0.0–0.1	0.0	-
<b>15–69</b>	<b>609</b>	<b>5.4</b>	<b>4.8–6.0</b>	<b>0.0</b>	<b>0.0–0.0</b>	<b>1.2</b>	<b>0.9–1.6</b>	<b>0.1</b>	<b>0.0–0.1</b>	<b>0.0</b>	<b>-</b>



Table T11: Current users of smokeless tobacco and product used

Age group (years)	n	% Snuff by mouth	95% CI	% Snuff by nose	95% CI	% Chewing tobacco	95% CI	% Betel, quid	95% CI	% Other	95% CI
<b>Men</b>											
15-29	64	62.5	48.4-76.5	2.0	0.0-5.9	33.1	19.9-46.4	9.5	0.5-18.5	0.0	-
30-44	172	86.8	80.7-92.9	0.0	0.0-0.0	20.5	12.2-28.8	8.5	3.5-13.5	0.0	-
45-69	241	80.6	74.3-87.0	0.0	0.0-0.0	19.4	13.0-25.7	7.4	3.9-11.0	0.0	-
<b>15-69</b>	<b>477</b>	<b>76.6</b>	<b>70.2-83.1</b>	<b>0.7</b>	<b>0.0-2.0</b>	<b>24.3</b>	<b>17.8-30.8</b>	<b>8.5</b>	<b>4.7-12.3</b>	<b>0.0</b>	-
<b>Women</b>											
15-29	9	50.8	15.2-86.4	0.0	0.0-0.0	35.9	0.2-71.6	13.3	0.0-37.9	0.0	-
30-44	70	88.5	80.9-96.1	1.5	0.0-4.5	12.3	4.5-20.1	3.3	0.0-8.5	0.0	-
45-69	85	88.5	81.5-95.6	0.0	0.0-0.0	12.5	4.9-20.2	0.3	0.0-1.0	0.0	-
<b>15-69</b>	<b>164</b>	<b>83.3</b>	<b>75.1-91.5</b>	<b>0.5</b>	<b>0.0-1.6</b>	<b>15.7</b>	<b>7.2-24.2</b>	<b>3.2</b>	<b>0.0-8.8</b>	<b>0.0</b>	-
<b>Both sexes</b>											
15-29	73	61.8	48.4-75.1	1.9	0.0-5.6	33.3	20.7-45.9	9.7	1.1-18.3	0.0	-
30-44	242	87.0	81.6-92.5	0.2	0.0-0.7	19.3	12.0-26.6	7.8	3.4-12.1	0.0	-
45-69	326	82.2	76.8-87.5	0.0	0.0-0.0	18.0	12.6-23.5	6.1	3.1-9.0	0.0	-
<b>15-69</b>	<b>641</b>	<b>77.6</b>	<b>71.8-83.3</b>	<b>0.6</b>	<b>0.0-1.8</b>	<b>23.1</b>	<b>17.3-29.0</b>	<b>7.8</b>	<b>4.4-11.1</b>	<b>0.0</b>	-

Table T12: Exposure to second-hand smoke during past 30 days

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
<b>At home</b>									
15–29	286	38.4	31.3–45.4	679	34.5	29.6–39.4	965	36.4	31.9–40.9
30–44	414	34.9	28.6–41.2	1,136	34.2	30.1–38.2	1,550	34.5	30.3–38.7
45–69	630	37.9	32.8–43.1	977	36.7	32.8–40.5	1,607	37.3	33.7–40.9
<b>15–69</b>	<b>1,330</b>	<b>37.3</b>	<b>33.0–41.6</b>	<b>2,792</b>	<b>35.0</b>	<b>31.8–38.2</b>	<b>4,122</b>	<b>36.1</b>	<b>33.0–39.2</b>
<b>In the workplace</b>									
15–29	285	42.9	35.6–50.2	678	28.4	23.8–33.0	963	35.5	30.8–40.2
30–44	415	44.6	38.0–51.2	1,128	32.8	28.6–37.0	1,543	38.4	34.0–42.9
45–69	629	43.1	38.2–47.9	977	34.8	30.8–38.8	1,606	39.0	35.3–42.6
<b>15–69</b>	<b>1,329</b>	<b>43.4</b>	<b>38.8–47.9</b>	<b>2,783</b>	<b>31.3</b>	<b>28.0–34.6</b>	<b>4,112</b>	<b>37.2</b>	<b>33.9–40.5</b>

## Alcohol consumption

Table A1: Alcohol consumption among all respondents

Age group (years)	n	% Current drinker (past 30 days)	95% CI	% Drank in past 12 months, not current	95% CI	% Abstainer for past 12 months	95% CI	% Lifetime abstainer	95% CI
<b>Men</b>									
15–29	289	21.0	15.1–26.8	7.7	4.1–11.3	4.8	2.3–7.2	66.5	59.6–73.4
30–44	417	37.6	31.5–43.8	6.3	3.2–9.3	7.8	4.8–10.8	48.3	41.5–55.1
45–69	630	30.8	26.2–35.5	7.0	4.7–9.2	9.3	6.6–12.1	52.9	47.6–58.1
<b>15–69</b>	<b>1,336</b>	<b>28.0</b>	<b>24.3–31.8</b>	<b>7.1</b>	<b>5.1–9.1</b>	<b>6.8</b>	<b>5.2–8.5</b>	<b>58.0</b>	<b>53.5–62.6</b>
<b>Women</b>									
15–29	683	4.4	2.1–6.7	1.8	0.3–3.3	1.5	0.5–2.4	92.4	89.6–95.1
30–44	1,141	8.9	6.3–11.6	2.9	1.5–4.2	2.9	1.6–4.2	85.3	81.6–89.1
45–69	983	9.9	7.4–12.4	2.5	1.4–3.6	3.2	1.9–4.5	84.4	80.9–87.9
<b>15–69</b>	<b>2,807</b>	<b>7.1</b>	<b>5.2–9.0</b>	<b>2.3</b>	<b>1.5–3.1</b>	<b>2.3</b>	<b>1.6–3.0</b>	<b>88.3</b>	<b>85.9–90.7</b>
<b>Both sexes</b>									
15–29	972	12.6	9.4–15.7	4.7	2.8–6.6	3.1	1.8–4.4	79.6	75.8–83.4
30–44	1,558	22.6	19.0–26.2	4.5	2.8–6.1	5.3	3.7–6.8	67.7	63.4–71.9
45–69	1,613	20.4	17.4–23.4	4.8	3.5–6.0	6.3	4.7–7.8	68.5	64.9–72.2
<b>15–69</b>	<b>4,143</b>	<b>17.4</b>	<b>15.0–19.7</b>	<b>4.7</b>	<b>3.6–5.7</b>	<b>4.5</b>	<b>3.6–5.4</b>	<b>73.5</b>	<b>70.7–76.3</b>

Table A2: Frequency of alcohol consumption in past 12 months

Age group (years)	n	% Daily	95% CI	% 5–6 days per week	95% CI	% 1–4 days per week	95% CI	% 1–3 days per month	95% CI	% < once a month	95% CI
<b>Men</b>											
15–29	87	8.1	2.0–14.3	5.5	0.8–10.3	29.5	18.0–40.9	28.3	17.7–38.9	28.6	16.5–40.7
30–44	186	19.4	11.9–26.9	5.8	1.8–9.7	32.7	25.1–40.2	22.0	15.7–28.3	20.2	13.5–26.8
45–69	229	29.1	22.2–36.0	5.6	2.5–8.8	21.0	15.0–26.9	23.9	17.7–30.0	20.4	14.7–26.2
<b>15–69</b>	<b>502</b>	<b>17.9</b>	<b>13.8–22.1</b>	<b>5.6</b>	<b>3.2–8.1</b>	<b>28.0</b>	<b>22.5–33.5</b>	<b>24.9</b>	<b>20.0–29.9</b>	<b>23.5</b>	<b>18.0–28.9</b>
<b>Women</b>											
15–29	45	17.8	2.7–32.9	2.7	0.0–7.4	18.2	6.1–30.4	32.6	15.3–49.8	28.7	7.8–49.6
30–44	137	16.2	8.0–24.3	1.7	0.0–4.0	27.9	18.3–37.5	22.6	14.8–30.4	31.7	24.0–39.4
45–69	118	18.5	9.4–27.6	8.5	2.3–14.7	19.5	11.6–27.4	30.4	21.9–38.8	23.2	14.4–32.0
<b>15–69</b>	<b>300</b>	<b>17.5</b>	<b>10.7–24.3</b>	<b>4.3</b>	<b>1.0–7.6</b>	<b>22.0</b>	<b>15.7–28.3</b>	<b>28.3</b>	<b>22.6–34.1</b>	<b>27.8</b>	<b>19.7–35.9</b>
<b>Both sexes</b>											
15–29	132	9.9	3.9–15.9	5.0	1.1–9.0	27.4	18.0–36.9	29.1	19.8–38.3	28.6	17.9–39.3
30–44	323	18.6	12.7–24.6	4.8	1.7–8.0	31.6	25.5–37.7	22.1	17.1–27.2	22.8	17.3–28.3
45–69	347	26.5	20.5–32.5	6.3	3.5–9.2	20.6	15.7–25.5	25.5	20.4–30.5	21.1	16.2–26.1
<b>15–69</b>	<b>802</b>	<b>17.8</b>	<b>13.9–21.7</b>	<b>5.4</b>	<b>3.3–7.4</b>	<b>26.7</b>	<b>22.2–31.2</b>	<b>25.7</b>	<b>21.6–29.7</b>	<b>24.4</b>	<b>19.6–29.2</b>

Table A3: Mean number of drinking occasions in past 30 days, among current drinkers (i.e., those who drank in last 30 days)

Age group (years)	Men			Women			Both sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
15–29	63	9.7	7.0–12.4	35	12.7	6.0–19.5	98	10.3	7.5–13.0
30–44	162	13.0	11.0–15.0	105	10.6	7.9–13.3	267	12.5	10.9–14.1
45–69	192	15.0	12.9–17.1	93	12.1	9.5–14.8	285	14.3	12.6–16.1
<b>15–69</b>	<b>417</b>	<b>12.4</b>	<b>11.1–13.8</b>	<b>233</b>	<b>11.8</b>	<b>9.2–14.3</b>	<b>650</b>	<b>12.3</b>	<b>11.0–13.6</b>

Table A4: Mean number of standard drinks per drinking occasion, among current drinkers (i.e., those who drank in last 30 days)

Age group (years)	Men			Women			Both sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
15–29	63	4.7	3.8–5.7	35	2.6	2.0–3.2	98	4.3	3.5–5.2
30–44	162	4.9	4.1–5.6	105	3.6	2.7–4.5	267	4.6	4.0–5.2
45–69	192	4.6	4.1–5.2	93	3.2	2.7–3.8	285	4.3	3.8–4.8
<b>15–69</b>	<b>417</b>	<b>4.7</b>	<b>4.3–5.2</b>	<b>233</b>	<b>3.2</b>	<b>2.7–3.7</b>	<b>650</b>	<b>4.4</b>	<b>4.0–4.8</b>

Table A5: Category I, II and III\* drinking, among current drinkers (i.e., those who drank in last 30 days)

Age group (years)	n	% Category III	95% CI	% Category II	95% CI	% Category I	95% CI
<b>Men</b>							
15–29	63	8.7	0.3–17.0	2.0	0.0–4.9	89.3	80.6–98.1
30–44	162	13.4	5.5–21.2	9.2	3.4–15.0	77.5	68.2–86.7
45–69	192	11.3	6.0–16.6	12.6	7.3–18.0	76.1	69.1–83.0
<b>15–69</b>	<b>417</b>	<b>11.1</b>	<b>7.0–15.2</b>	<b>7.7</b>	<b>4.9–10.6</b>	<b>81.2</b>	<b>76.6–85.8</b>
<b>Women</b>							
15–29	35	8.3	0.0–19.0	15.4	0.0–36.5	76.3	56.1–96.5
30–44	105	11.3	3.4–19.3	12.7	5.4–20.0	76.0	64.2–87.8
45–69	93	19.0	9.1–28.8	11.1	4.5–17.7	69.9	58.2–81.6
<b>15–69</b>	<b>233</b>	<b>13.2</b>	<b>7.1–19.4</b>	<b>12.9</b>	<b>6.4–19.4</b>	<b>73.9</b>	<b>64.4–83.3</b>

\*A Category I drinker is defined as drinking <40g of pure alcohol on average per day for men and <20g for women; a Category II drinker is defined as drinking ≥ 40g and < 60g of pure alcohol on average per day for men and ≥20g and <40g for women; a Category III drinker is defined as drinking ≥ 60g of pure alcohol on average day for men and ≥40g for women.

Table A6: Category III and II\* drinking, among all respondents

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
<b>Category III</b>									
15–29	289	1.8	0.0–3.7	683	0.4	0.0–0.8	972	1.1	0.0–2.1
30–44	417	5.0	1.9–8.2	1,141	1.0	0.2–1.8	1,558	2.9	1.3–4.5
45–69	630	3.5	1.8–5.2	983	1.9	0.8–3.0	1,613	2.7	1.6–3.8
<b>15–69</b>	<b>1,336</b>	<b>3.1</b>	<b>1.9–4.4</b>	<b>2,807</b>	<b>0.9</b>	<b>0.4–1.5</b>	<b>4,143</b>	<b>2.0</b>	<b>1.2–2.8</b>
<b>Category II</b>									
15–29	289	0.4	0.0–1.0	683	0.7	0.0–1.8	972	0.6	0.0–1.2
30–44	417	3.5	1.3–5.6	1,141	1.1	0.4–1.9	1,558	2.2	1.1–3.3
45–69	630	3.9	2.2–5.6	983	1.1	0.4–1.8	1,613	2.5	1.6–3.4
<b>15–69</b>	<b>1,336</b>	<b>2.2</b>	<b>1.4–2.9</b>	<b>2,807</b>	<b>0.9</b>	<b>0.3–1.5</b>	<b>4,143</b>	<b>1.5</b>	<b>1.0–2.0</b>

\* A Category II drinker is defined as drinking  $\geq 40$ g and  $< 60$ g of pure alcohol on average per day for men and  $\geq 20$ g and  $< 40$ g for women; a Category III drinker is defined as drinking  $\geq 60$ g of pure alcohol on average day for men and  $\geq 40$ g for women.

Table A7: Mean maximum number of drinks consumed on one occasion in past 30 days, among current drinkers

Age group (years)	Men			Women			Both sexes		
	n	Mean maximum number	95% CI	n	Mean maximum number	95% CI	n	Mean maximum number	95% CI
15–29	63	7.5	4.9–10.1	35	3.1	2.4–3.9	98	6.7	4.6–8.9
30–44	161	7.0	5.9–8.1	105	5.1	3.5–6.7	266	6.6	5.7–7.6
45–69	192	6.5	5.5–7.4	92	5.2	3.8–6.5	284	6.1	5.3–7.0
<b>15–69</b>	<b>416</b>	<b>7.0</b>	<b>6.0–8.1</b>	<b>232</b>	<b>4.6</b>	<b>3.7–5.5</b>	<b>648</b>	<b>6.5</b>	<b>5.7–7.4</b>

Table A8: Consumption of 4/5 or more drinks on a single occasion at least once during the past 30 days, among total respondents

Age group (years)	Men			Women		
	n	% $\geq 5$ drinks	95% CI	n	% $\geq 4$ drinks	95% CI
15–29	289	14.5	9.2–19.8	683	1.1	0.3–1.8
30–44	417	25.1	20.0–30.2	1,141	4.2	2.6–5.9
45–69	630	19.5	15.6–23.3	983	4.8	3.1–6.5
<b>15–69</b>	<b>1,336</b>	<b>18.6</b>	<b>15.3–21.9</b>	<b>2,807</b>	<b>2.9</b>	<b>2.0–3.8</b>

Table A9: Mean number of times consumed 4/5 or more drinks on a single occasion in past 30 days, among current drinkers

Age group (years)	Men			Women		
	n	Mean number of times	95% CI	n	Mean number of times	95% CI
15–29	63	4.8	2.6–7.0	35	1.3	0.5–2.1
30–44	162	6.8	4.5–9.0	105	3.3	1.6–5.0
45–69	192	6.6	4.9–8.2	93	3.9	2.3–5.6
<b>15–69</b>	<b>417</b>	<b>6.0</b>	<b>4.8–7.2</b>	<b>233</b>	<b>2.9</b>	<b>1.9–4.0</b>

Table A10: Drinking with meals among current drinkers

Age group (years)	n	Drinking with or without meals							
		% Usually with meals	95% CI	% Sometimes with meals	95% CI	% Rarely with meals	95% CI	% Never with meals	95% CI
<b>Men</b>									
15–29	63	57.6	43.9–71.4	16.8	6.1–27.5	3.3	0.0–7.0	22.3	11.5–33.0
30–44	162	43.8	34.6–53.0	24.1	15.8–32.4	15.0	9.3–20.8	17.1	9.9–24.3
45–69	192	45.4	36.7–54.0	25.5	18.3–32.6	14.1	8.4–19.9	15.0	9.1–20.9
<b>15–69</b>	<b>417</b>	<b>49.1</b>	<b>42.3–55.9</b>	<b>22.0</b>	<b>16.4–27.5</b>	<b>10.7</b>	<b>7.3–14.0</b>	<b>18.3</b>	<b>13.4–23.1</b>
<b>Women</b>									
15–29	35	43.5	17.8–69.2	26.3	5.5–47.2	9.7	0.0–21.2	20.5	6.1–34.9
30–44	105	35.7	23.2–48.2	34.0	20.9–47.0	12.5	6.7–18.2	17.9	8.8–27.1
45–69	93	35.5	23.5–47.5	24.1	13.7–34.5	24.0	13.4–34.6	16.4	7.0–25.8
<b>15–69</b>	<b>233</b>	<b>37.9</b>	<b>26.6–49.1</b>	<b>28.2</b>	<b>18.5–37.8</b>	<b>15.9</b>	<b>10.2–21.5</b>	<b>18.1</b>	<b>12.1–24.1</b>
<b>Both sexes</b>									
15–29	98	55.1	42.8–67.4	18.5	8.7–28.3	4.4	0.7–8.1	22.0	12.6–31.3
30–44	267	42.1	34.2–50.1	26.1	19.0–33.3	14.5	9.5–19.5	17.3	11.3–23.3
45–69	285	43.0	35.6–50.4	25.1	19.0–31.3	16.5	11.2–21.8	15.3	10.0–20.7
<b>15–69</b>	<b>650</b>	<b>46.8</b>	<b>40.8–52.7</b>	<b>23.2</b>	<b>18.2–28.3</b>	<b>11.7</b>	<b>8.7–14.8</b>	<b>18.2</b>	<b>14.1–22.4</b>

Table A11: Frequency and quantity of drinks consumed in past 7 days, among current drinkers

Age group (years)		Men					
n	% Drank on 4+ days	95% CI	% 5+ drinks on any day	95% CI	% 20+ drinks in past 7 days	95% CI	
15–29	63	33.0	18.0–48.1	33.5	19.0–47.9	19.4	6.1–32.7
30–44	162	40.4	30.5–50.2	47.2	37.7–56.7	31.2	21.5–40.8
45–69	192	50.1	41.6–58.5	41.5	33.0–50.0	36.1	27.9–44.3
<b>15–69</b>	<b>417</b>	<b>40.7</b>	<b>34.1–47.4</b>	<b>40.7</b>	<b>33.9–47.5</b>	<b>28.5</b>	<b>22.5–34.5</b>

Age group (years)		Women					
n	% Drank on 4+ days	95% CI	% 4+ drinks on any day	95% CI	% 15+ drinks in past 7 days	95% CI	
15–29	35	33.9	10.8–56.9	19.7	7.4–31.9	16.8	0.0–37.8
30–44	105	27.9	17.5–38.4	36.2	21.8–50.6	20.2	8.8–31.6
45–69	93	39.5	27.9–51.1	35.7	24.3–47.0	26.8	16.1–37.6
<b>15–69</b>	<b>233</b>	<b>33.9</b>	<b>24.3–43.4</b>	<b>31.2</b>	<b>23.9–38.5</b>	<b>21.6</b>	<b>12.3–31.0</b>

Age group (years)		Both sexes	
n	% Drank on 4+ days	95% CI	
15–29	98	33.2	19.8–46.6
30–44	267	37.8	29.9–45.7
45–69	285	47.5	40.4–54.6
<b>15–69</b>	<b>650</b>	<b>39.3</b>	<b>33.3–45.3</b>

## Fruit and vegetable consumption

Table D1: Mean number of days fruit consumed in a typical week

Age group (years)	Men			Women			Both sexes		
	n	Mean number of days	95% CI	n	Mean number of days	95% CI	n	Mean number of days	95% CI
15–29	289	1.8	1.6–2.1	683	1.9	1.7–2.1	972	1.9	1.7–2.1
30–44	417	2.1	1.8–2.5	1,141	1.9	1.7–2.1	1,558	2.0	1.8–2.3
45–69	630	2.0	1.8–2.2	983	1.8	1.6–2.0	1,613	1.9	1.7–2.1
<b>15–69</b>	<b>1,336</b>	<b>2.0</b>	<b>1.8–2.2</b>	<b>2,807</b>	<b>1.9</b>	<b>1.7–2.1</b>	<b>4,143</b>	<b>1.9</b>	<b>1.8–2.1</b>

Table D2: Mean number of days vegetables consumed in a typical week

Age group (years)	Men			Women			Both sexes		
	n	Mean number of days	95% CI	n	Mean number of days	95% CI	n	Mean number of days	95% CI
15–29	289	4.7	4.4–5.0	683	4.7	4.5–5.0	972	4.7	4.5–4.9
30–44	417	4.9	4.6–5.2	1,141	4.8	4.6–5.0	1,558	4.8	4.7–5.0
45–69	630	4.9	4.7–5.1	983	4.8	4.6–5.0	1,613	4.9	4.7–5.0
<b>15–69</b>	<b>1,336</b>	<b>4.8</b>	<b>4.6–5.0</b>	<b>2,807</b>	<b>4.8</b>	<b>4.6–4.9</b>	<b>4,143</b>	<b>4.8</b>	<b>4.6–4.9</b>

Table D3: Mean number of servings of fruit on average per day

Age group (years)	Men			Women			Both sexes		
	n	Mean number of servings	95% CI	n	Mean number of servings	95% CI	n	Mean number of servings	95% CI
15–29	289	0.5	0.4–0.5	682	0.5	0.4–0.6	971	0.5	0.4–0.5
30–44	417	0.5	0.4–0.6	1,141	0.5	0.4–0.5	1,558	0.5	0.4–0.6
45–69	630	0.5	0.4–0.5	983	0.4	0.4–0.5	1,613	0.5	0.4–0.5
<b>15–69</b>	<b>1,336</b>	<b>0.5</b>	<b>0.4–0.6</b>	<b>2,806</b>	<b>0.5</b>	<b>0.4–0.5</b>	<b>4,142</b>	<b>0.5</b>	<b>0.4–0.5</b>

Table D4: Mean number of servings of vegetables on average per day

Age group (years)	Men			Women			Both sexes		
	n	Mean number of servings	95% CI	n	Mean number of servings	95% CI	n	Mean number of servings	95% CI
15–29	289	1.3	1.2–1.4	683	1.3	1.2–1.4	972	1.3	1.2–1.4
30–44	417	1.4	1.3–1.6	1,141	1.3	1.3–1.4	1,558	1.4	1.3–1.5
45–69	630	1.4	1.3–1.5	983	1.4	1.3–1.5	1,613	1.4	1.3–1.5
<b>15–69</b>	<b>1,336</b>	<b>1.4</b>	<b>1.3–1.5</b>	<b>2,807</b>	<b>1.3</b>	<b>1.3–1.4</b>	<b>4,143</b>	<b>1.4</b>	<b>1.3–1.4</b>



Table D5: Mean number of servings of fruit or vegetables on average per day

Age group (years)	n	Men		n	Women		n	Both sexes	
		Mean number of servings	95% CI		Mean number of servings	95% CI		Mean number of servings	95% CI
15–29	289	1.8	1.6–1.9	683	1.8	1.7–1.9	972	1.8	1.7–1.9
30–44	417	2.0	1.8–2.2	1,141	1.8	1.7–1.9	1,558	1.9	1.8–2.0
45–69	630	1.9	1.8–2.0	983	1.8	1.7–1.9	1,613	1.8	1.7–1.9
<b>15–69</b>	<b>1,336</b>	<b>1.9</b>	<b>1.7–2.0</b>	<b>2,807</b>	<b>1.8</b>	<b>1.7–1.9</b>	<b>4,143</b>	<b>1.8</b>	<b>1.7–1.9</b>

Table D6: Type of oil or fat most often used for household meal preparation

Type of oil	% (n=4,143)	95% CI
Mustard oil	79.1	75.9–82.2
Refined vegetable oil	18.1	15.0–21.2
Butter or ghee	0.9	0.3–1.6
Lard or suet	0.0	-
Noodles oil	0.0	-
None in particular	0.6	0.2–1.0
None used	1.3	0.6–1.9
Other	0.0	-

Table D7: Mean number of meals eaten outside home in a week

Age group (years)	n	Men		n	Women		n	Both sexes	
		Mean	95% CI		Mean	95% CI		Mean	95% CI
15–29	288	0.5	0.3–0.7	682	0.1	0.1–0.2	970	0.3	0.2–0.5
30–44	417	0.5	0.4–0.7	1,140	0.1	0.1–0.1	1,557	0.3	0.2–0.4
45–69	630	0.2	0.2–0.3	982	0.0	0.0–0.0	1,612	0.1	0.1–0.2
<b>15–69</b>	<b>1,335</b>	<b>0.5</b>	<b>0.3–0.6</b>	<b>2,804</b>	<b>0.1</b>	<b>0.1–0.1</b>	<b>4,139</b>	<b>0.3</b>	<b>0.2–0.3</b>

## Physical activity

Table P1: Mean minutes of total physical activity per day

Age group (years)	Men			Women			Both sexes		
	n	Mean minutes	95% CI	n	Mean minutes	95% CI	n	Mean minutes	95% CI
15–29	286	270.3	245.0–295.6	680	269.6	249.7–289.4	966	269.9	252.5–287.4
30–44	411	303.1	277.6–328.5	1,135	279.8	265.0–294.7	1,546	290.8	274.9–306.8
45–69	627	241.8	223.0–260.6	978	237.1	222.4–251.8	1,605	239.5	225.8–253.2
<b>15–69</b>	<b>1,324</b>	<b>270.9</b>	<b>254.1–287.8</b>	<b>2,793</b>	<b>263.9</b>	<b>250.6–277.3</b>	<b>4,117</b>	<b>267.4</b>	<b>254.8–280.0</b>

Table P2: Median minutes of total physical activity per day

Age group (years)	Men			Women			Both sexes		
	n	Median minutes	Inter-quartile range (P25–P75)	n	Median minutes	Inter-quartile range (P25–P75)	n	Median minutes	Inter-quartile range (P25–P75)
15–29	286	255.0	132.8–385.7	680	240.0	150.0–360.0	966	244.3	145.7–360.0
30–44	411	278.6	167.1–428.6	1,135	255.0	162.9–360.0	1,546	264.3	165.0–390.0
45–69	627	210.0	120.0–330.0	978	205.7	120.0–330.0	1,605	210.0	120.0–330.0
<b>15–69</b>	<b>1,324</b>	<b>242.1</b>	<b>135.0–381.4</b>	<b>2,793</b>	<b>240.0</b>	<b>150.0–360.0</b>	<b>4,117</b>	<b>240.0</b>	<b>143.6–360.0</b>

Table P3: Mean minutes spent in physical activity (work-, transport- and recreation-related) on average per day

Age group (years)	Men			Women			Both sexes		
	n	Mean minutes	95% CI	n	Mean minutes	95% CI	n	Mean minutes	95% CI
<b>Work-related physical activity</b>									
15–29	286	156.7	133.7–179.8	680	193.7	178.7–208.7	966	175.5	160.5–190.6
30–44	411	208.4	183.9–232.9	1,135	209.6	197.2–222.0	1,546	209.0	194.4–223.6
45–69	627	160.9	145.6–176.2	978	168.8	157.8–179.9	1,605	164.9	154.1–175.6
<b>15–69</b>	<b>1,324</b>	<b>171.2</b>	<b>156.0–186.5</b>	<b>2,793</b>	<b>191.6</b>	<b>181.4–201.8</b>	<b>4,117</b>	<b>181.6</b>	<b>171.0–192.3</b>
<b>Transport-related physical activity</b>									
15–29	286	86.2	74.6–97.8	680	73.8	66.0–81.7	966	79.9	72.5–87.3
30–44	411	87.7	79.6–95.8	1,135	69.2	64.1–74.3	1,546	78.0	72.6–83.4
45–69	627	79.1	71.7–86.5	978	67.6	62.1–73.2	1,605	73.4	68.2–78.6
<b>15–69</b>	<b>1,324</b>	<b>84.6</b>	<b>77.4–91.8</b>	<b>2,793</b>	<b>70.9</b>	<b>66.0–75.9</b>	<b>4,117</b>	<b>77.6</b>	<b>72.7–82.6</b>
<b>Recreation-related physical activity</b>									
15–29	286	27.4	20.1–34.6	680	2.0	1.0–3.1	966	14.5	10.8–18.1
30–44	411	7.0	3.6–10.3	1,135	1.0	0.1–1.9	1,546	3.8	2.1–5.6
45–69	627	1.8	0.5–3.0	978	0.7	0.0–1.4	1,605	1.2	0.5–1.9
<b>15–69</b>	<b>1,324</b>	<b>15.1</b>	<b>11.4–18.8</b>	<b>2,793</b>	<b>1.4</b>	<b>0.8–2.0</b>	<b>4,117</b>	<b>8.1</b>	<b>6.2–10.0</b>

Table P4: Median minutes spent in physical activity (work-, transport- and recreation-related) on average per day

Age group (years)	Men			Women			Both sexes		
	n	Median minutes	Inter-quartile range (P25–P75)	n	Median minutes	Inter-quartile range (P25–P75)	n	Median minutes	Inter-quartile range (P25–P75)
<b>Work-related physical activity</b>									
15–29	286	137.1	25.7–248.6	680	180.0	107.1–270.0	966	154.3	64.3–261.4
30–44	411	180.0	64.3–308.6	1,135	180.0	120.0–285.0	1,546	180.0	98.6–300.0
45–69	627	120.0	51.4–240.0	978	150.0	75.0–248.6	1,605	132.9	60.0–240.0
<b>15–69</b>	<b>1,324</b>	<b>150.0</b>	<b>42.8–270.0</b>	<b>2,793</b>	<b>180.0</b>	<b>94.3–270.0</b>	<b>4,117</b>	<b>154.3</b>	<b>68.6–270.0</b>
<b>Transport-related physical activity</b>									
15–29	286	60.0	30.0–120.0	680	60.0	30.0–105.0	966	60.0	30.0–120.0
30–44	411	60.0	34.3–120.0	1,135	60.0	30.0–90.0	1,546	60.0	30.0–115.0
45–69	627	60.0	30.0–120.0	978	60.0	25.7–90.0	1,605	60.0	30.0–103.0
<b>15–69</b>	<b>1,324</b>	<b>60.0</b>	<b>30.0–120.0</b>	<b>2,793</b>	<b>60.0</b>	<b>30.0–99.0</b>	<b>4,117</b>	<b>60.0</b>	<b>30.0–120.0</b>
<b>Recreation-related physical activity</b>									
15–29	286	0.0	0.0–34.3	680	0.0	0.0	966	0.0	0.0
30–44	411	0.0	0.0	1,135	0.0	0.0	1,546	0.0	0.0
45–69	627	0.0	0.0	978	0.0	0.0	1,605	0.0	0.0
<b>15–69</b>	<b>1,324</b>	<b>0.0</b>	<b>0.0</b>	<b>2,793</b>	<b>0.0</b>	<b>0.0</b>	<b>4,117</b>	<b>0.0</b>	<b>0.0</b>

Table P5: Percentage of respondents not doing minimum recommended (at least 10 minutes) physical activity (work-, transport- and recreation-related)

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
<b>No work-related physical activity</b>									
15–29	286	14.4	9.4–19.4	680	1.5	0.5–2.5	966	7.8	5.3–10.4
30–44	411	13.7	9.1–18.2	1,135	1.9	1.0–2.8	1,546	7.5	5.2–9.8
45–69	627	16.6	12.8–20.5	978	10.8	8.3–13.2	1,605	13.7	11.3–16.1
<b>15–69</b>	<b>1,324</b>	<b>14.8</b>	<b>11.8–17.8</b>	<b>2,793</b>	<b>4.0</b>	<b>3.2–4.9</b>	<b>4,117</b>	<b>9.3</b>	<b>7.7–10.9</b>
<b>No transport-related physical activity</b>									
15–29	286	7.9	3.7–12.0	680	6.9	4.5–9.4	966	7.4	4.9–9.9
30–44	411	3.9	1.5–6.4	1,135	6.7	4.8–8.6	1,546	5.4	3.7–7.1
45–69	627	5.1	3.2–7.1	978	8.3	6.1–10.5	1,605	6.7	5.0–8.4
<b>15–69</b>	<b>1,324</b>	<b>6.1</b>	<b>3.9–8.3</b>	<b>2,793</b>	<b>7.2</b>	<b>5.6–8.9</b>	<b>4,117</b>	<b>6.7</b>	<b>5.2–8.1</b>
<b>No recreation-related physical activity</b>									
15–29	286	62.1	55.6–68.7	680	93.8	91.3–96.3	966	78.3	74.4–82.1
30–44	411	89.7	85.6–93.8	1,135	98.5	97.7–99.4	1,546	94.3	92.3–96.4
45–69	627	96.7	95.2–98.3	978	99.6	99.1–100.0	1,605	98.2	97.3–99.0
<b>15–69</b>	<b>1,324</b>	<b>78.8</b>	<b>74.9–82.6</b>	<b>2,793</b>	<b>96.6</b>	<b>95.4–97.8</b>	<b>4,117</b>	<b>87.9</b>	<b>85.7–90.1</b>

Table P6: Contribution of work-, transport- and recreation-related physical activity to total activity

Age group (years)	n	% Activity for work	95% CI	% Activity for transport	95% CI	% Activity during leisure time	95% CI
<b>Men</b>							
15–29	284	51.4	46.1–56.8	36.2	31.3–41.1	12.4	9.5–15.2
30–44	407	59.7	55.7–63.7	37.3	33.7–40.9	3.0	1.6–4.4
45–69	614	57.3	53.8–60.7	41.5	38.1–44.9	1.2	0.5–2.0
<b>15–69</b>	<b>1,305</b>	<b>55.1</b>	<b>51.8–58.5</b>	<b>37.9</b>	<b>34.9–41.0</b>	<b>6.9</b>	<b>5.4–8.5</b>
<b>Women</b>							
15–29	677	69.9	67.7–72.0	29.0	26.9–31.1	1.1	0.6–1.6
30–44	1,129	73.4	71.8–74.9	26.4	24.9–27.9	0.2	0.1–0.4
45–69	947	66.3	64.2–68.3	33.5	31.4–35.5	0.3	0.0–0.6
<b>15–69</b>	<b>2,753</b>	<b>69.9</b>	<b>68.5–71.3</b>	<b>29.4</b>	<b>28.1–30.8</b>	<b>0.7</b>	<b>0.4–0.9</b>
<b>Both sexes</b>							
15–29	961	60.8	57.7–64.0	32.5	29.8–35.3	6.6	5.1–8.1
30–44	1,536	66.9	64.7–69.1	31.6	29.5–33.6	1.6	0.9–2.2
45–69	1,561	61.7	59.5–63.9	37.6	35.4–39.7	0.7	0.3–1.2
<b>15–69</b>	<b>4,058</b>	<b>62.7</b>	<b>60.6–64.7</b>	<b>33.6</b>	<b>31.8–35.4</b>	<b>3.7</b>	<b>2.9–4.5</b>

Table P7: Percentage of respondents not engaging in vigorous physical activity

Age group (years)	n	Men			Women			Both sexes		
		%	95% CI	n	%	95% CI	n	%	95% CI	
15–29	286	35.4	28.7–42.2	680	62.5	57.0–67.9	966	49.2	44.4–54.0	
30–44	411	43.3	36.6–50.1	1,135	56.4	51.1–61.6	1,546	50.2	45.3–55.1	
45–69	627	57.6	52.3–62.8	978	72.0	67.7–76.4	1,605	64.8	61.0–68.5	
<b>15–69</b>	<b>1,324</b>	<b>43.5</b>	<b>39.1–47.9</b>	<b>2,793</b>	<b>63.3</b>	<b>59.4–67.2</b>	<b>4,117</b>	<b>53.6</b>	<b>50.1–57.1</b>	

Table P8: Minutes spent in sedentary activity on a typical day

Age group (years)	n	Mean minutes	95% CI	Median minutes	Inter-quartile range (P25–P75)
<b>Men</b>					
15–29	289	150.2	139.3–161.1	120.0	90.0–210.0
30–44	417	144.0	133.1–154.8	120.0	75.0–180.0
45–69	630	159.4	148.9–169.8	120.0	90.0–210.0
<b>15–69</b>	<b>1,336</b>	<b>151.1</b>	<b>144.0–158.2</b>	<b>120.0</b>	<b>90.0–180.0</b>
<b>Women</b>					
15–29	683	156.4	147.8–165.0	150.0	105.0–210.0
30–44	1,141	142.1	134.9–149.3	120.0	90.0–180.0
45–69	983	163.1	153.7–172.6	120.0	90.0–240.0
<b>15–69</b>	<b>2,807</b>	<b>154.2</b>	<b>147.7–160.7</b>	<b>120.0</b>	<b>90.0–210.0</b>
<b>Both sexes</b>					
15–29	972	153.3	145.6–161.0	120.0	90.0–210.0
30–44	1,558	143.0	136.2–149.8	120.0	90.0–180.0
45–69	1,613	161.2	153.7–168.7	120.0	90.0–240.0
<b>15–69</b>	<b>4,143</b>	<b>152.7</b>	<b>147.1–158.2</b>	<b>120.0</b>	<b>90.0–195.0</b>

## Dietary salt

Table DS1: Types of dietary salt used

Type of dietary salt	% (n=4,143)	95% CI
Powdered salt from packet with two children logo	91.0	88.3–93.8
Crystal salt	6.7	4.4–8.9
Powdered salt without logo	2.3	1.2–3.3
Other types	0.0	0.0–0.1

Table DS2: Salt consumption habits

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
<b>Add salt always or often before eating or when eating</b>									
15–29	289	4.0	1.5–6.4	682	6.0	4.0–8.1	971	5.0	3.5–6.5
30–44	416	3.7	1.4–5.9	1,141	5.3	3.6–7.0	1,557	4.5	3.1–6.0
45–69	630	4.4	2.2–6.6	982	4.5	3.1–6.0	1,612	4.5	3.1–5.9
<b>15–69</b>	<b>1,335</b>	<b>4.0</b>	<b>2.4–5.6</b>	<b>2,805</b>	<b>5.5</b>	<b>4.2–6.7</b>	<b>4,140</b>	<b>4.7</b>	<b>3.7–5.8</b>
<b>Add salt always or often while cooking or preparing food at home</b>									
15–29	289	98.4	96.7–100.0	683	97.4	95.9–98.9	972	97.9	96.8–99.0
30–44	417	99.2	98.5–99.9	1,141	98.2	97.3–99.1	1,558	98.7	98.1–99.3
45–69	630	96.7	94.8–98.6	983	96.8	95.3–98.3	1,613	96.7	95.4–98.0
<b>15–69</b>	<b>1,336</b>	<b>98.1</b>	<b>97.1–99.2</b>	<b>2,807</b>	<b>97.5</b>	<b>96.6–98.4</b>	<b>4,143</b>	<b>97.8</b>	<b>97.0–98.6</b>
<b>Always or often consume processed food high in salt</b>									
15–29	289	18.5	13.2–23.7	683	14.1	10.4–17.9	972	16.3	12.9–19.6
30–44	417	13.8	9.6–17.9	1,141	6.2	4.3–8.0	1,558	9.8	7.5–12.1
45–69	630	5.1	2.9–7.3	981	4.5	2.6–6.5	1,611	4.8	3.2–6.4
<b>15–69</b>	<b>1,336</b>	<b>13.6</b>	<b>10.6–16.6</b>	<b>2,805</b>	<b>9.4</b>	<b>7.4–11.4</b>	<b>4,141</b>	<b>11.5</b>	<b>9.5–13.4</b>

Table DS3: Self-reported quantity of salt consumed

Age group (years)	n	% Far too much	95% CI	% Too much	95% CI	% Just the right amount	95% CI	% Too little	95% CI	% Far too little	95% CI
<b>Men</b>											
15–29	288	0.0	0.0–0.0	9.5	6.3–12.8	78.9	73.5–84.3	11.6	7.0–16.2	0.0	0.0–0.0
30–44	417	0.0	0.0–0.0	9.6	6.6–12.7	78.9	74.2–83.6	11.0	7.5–14.5	0.5	0.0–1.1
45–69	629	0.3	0.0–0.7	11.0	7.7–14.3	74.8	70.4–79.2	12.7	10.0–15.4	1.3	0.2–2.4
<b>15–69</b>	<b>1,334</b>	<b>0.1</b>	<b>0.0–0.2</b>	<b>10.0</b>	<b>7.8–12.1</b>	<b>77.8</b>	<b>74.4–81.1</b>	<b>11.7</b>	<b>9.1–14.3</b>	<b>0.5</b>	<b>0.1–0.8</b>
<b>Women</b>											
15–29	683	0.4	0.0–0.8	10.6	7.9–13.3	81.4	77.4–85.3	7.7	5.3–10.1	0.0	0.0–0.0
30–44	1,140	0.9	0.2–1.7	13.2	10.4–15.9	78.9	75.6–82.2	6.7	4.8–8.5	0.3	0.0–0.8
45–69	981	0.3	0.0–0.8	10.6	8.3–12.8	76.1	72.7–79.5	12.1	9.7–14.6	0.9	0.2–1.5
<b>15–69</b>	<b>2,804</b>	<b>0.5</b>	<b>0.2–0.8</b>	<b>11.3</b>	<b>9.6–13.0</b>	<b>79.3</b>	<b>76.8–81.9</b>	<b>8.6</b>	<b>7.0–10.1</b>	<b>0.3</b>	<b>0.1–0.5</b>
<b>Both sexes</b>											
15–29	971	0.2	0.0–0.4	10.1	7.9–12.2	80.2	76.8–83.5	9.6	7.0–12.2	0.0	0.0–0.0
30–44	1,557	0.5	0.1–0.9	11.5	9.4–13.6	78.9	76.0–81.8	8.7	6.8–10.7	0.4	0.0–0.8
45–69	1,610	0.3	0.0–0.6	10.8	8.7–12.8	75.4	72.4–78.5	12.4	10.4–14.4	1.1	0.4–1.7
<b>15–69</b>	<b>4,138</b>	<b>0.3</b>	<b>0.1–0.5</b>	<b>10.6</b>	<b>9.2–12.1</b>	<b>78.6</b>	<b>76.3–80.8</b>	<b>10.1</b>	<b>8.5–11.7</b>	<b>0.4</b>	<b>0.2–0.6</b>

Table DS4: Percentage of respondents who agree with the importance of lowering salt in diet

Age Group (years)	n	% Very important	95% CI	% Somewhat important	95% CI	% Not at all important	95% CI
<b>Men</b>							
15–29	274	41.7	34.4–49.0	45.7	39.2–52.2	12.6	7.4–17.7
30–44	388	42.6	36.7–48.5	48.9	42.8–55.0	8.5	5.4–11.7
45–69	569	36.3	31.2–41.3	48.9	44.2–53.7	14.8	11.0–18.6
<b>15–69</b>	<b>1,231</b>	<b>40.5</b>	<b>36.0–45.0</b>	<b>47.4</b>	<b>43.4–51.3</b>	<b>12.1</b>	<b>9.1–15.1</b>
<b>Women</b>							
15–29	608	31.3	26.5–36.2	53.5	48.4–58.7	15.2	11.7–18.6
30–44	988	27.0	23.1–30.9	56.4	52.1–60.7	16.6	13.4–19.8
45–69	814	25.4	21.1–29.7	56.6	51.8–61.5	18.0	14.2–21.9
<b>15–69</b>	<b>2,410</b>	<b>28.7</b>	<b>25.5–31.8</b>	<b>55.1</b>	<b>51.6–58.5</b>	<b>16.3</b>	<b>13.9–18.7</b>
<b>Both sexes</b>							
15–29	882	36.6	32.0–41.3	49.5	45.1–54.0	13.8	10.6–17.1
30–44	1,376	34.7	30.8–38.6	52.7	48.6–56.8	12.6	10.3–14.9
45–69	1,383	31.1	27.3–34.8	52.6	48.9–56.3	16.4	13.4–19.3
<b>15–69</b>	<b>3,641</b>	<b>34.7</b>	<b>31.5–37.9</b>	<b>51.2</b>	<b>48.1–54.2</b>	<b>14.2</b>	<b>12.1–16.3</b>

Table DS5: Techniques used on a regular basis to control salt intake

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
<b>Avoid/minimise consumption of processed foods</b>									
15–29	289	14.0	9.2–18.9	683	13.9	9.5–18.4	972	14.0	10.3–17.7
30–44	417	15.9	11.4–20.4	1,141	15.7	11.7–19.8	1,558	15.8	12.1–19.5
45–69	630	16.2	11.8–20.7	983	17.0	12.6–21.4	1,613	16.6	12.8–20.4
<b>15–69</b>	<b>1,336</b>	<b>15.1</b>	<b>11.6–18.7</b>	<b>2,807</b>	<b>15.2</b>	<b>11.6–18.9</b>	<b>4,143</b>	<b>15.2</b>	<b>12.0–18.3</b>
<b>Look at the salt or sodium levels on food labels</b>									
15–29	289	9.0	4.9–13.2	683	6.9	4.1–9.7	972	7.9	5.2–10.7
30–44	417	9.0	5.6–12.5	1,141	6.9	4.5–9.3	1,558	7.9	5.4–10.4
45–69	630	7.8	4.8–10.8	983	4.5	2.8–6.1	1,613	6.1	4.1–8.2
<b>15–69</b>	<b>1,336</b>	<b>8.7</b>	<b>5.9–11.5</b>	<b>2,807</b>	<b>6.3</b>	<b>4.3–8.2</b>	<b>4,143</b>	<b>7.5</b>	<b>5.4–9.5</b>
<b>Eat meals without adding salt at the table</b>									
15–29	289	43.0	35.5–50.4	683	38.4	33.0–43.7	972	40.6	35.6–45.6
30–44	417	43.3	37.8–48.9	1,141	42.1	37.4–46.9	1,558	42.7	38.8–46.6
45–69	630	45.9	40.3–51.5	983	42.7	37.8–47.5	1,613	44.3	39.9–48.7
<b>15–69</b>	<b>1,336</b>	<b>43.9</b>	<b>39.0–48.8</b>	<b>2,807</b>	<b>40.5</b>	<b>36.5–44.5</b>	<b>4,143</b>	<b>42.2</b>	<b>38.4–45.9</b>
<b>Buy low salt/sodium alternatives</b>									
15–29	289	13.0	8.2–17.9	683	12.4	8.2–16.5	972	12.7	9.2–16.2
30–44	417	13.7	9.5–17.9	1,141	14.3	10.1–18.4	1,558	14.0	10.4–17.7
45–69	630	13.1	9.0–17.2	983	15.3	10.9–19.7	1,613	14.2	10.6–17.8
<b>15–69</b>	<b>1,336</b>	<b>13.2</b>	<b>9.9–16.6</b>	<b>2,807</b>	<b>13.7</b>	<b>10.0–17.3</b>	<b>4,143</b>	<b>13.5</b>	<b>10.4–16.5</b>
<b>Cook meals without adding salt</b>									
15–29	289	0.1	0.0–0.4	683	0.3	0.0–1.0	972	0.2	0.0–0.6
30–44	417	0.0	0.0–0.0	1,141	0.0	0.0–0.1	1,558	0.2	0.0–0.0
45–69	630	0.4	0.0–1.0	983	0.0	0.0–0.0	1,613	0.2	0.0–0.5
<b>15–69</b>	<b>1,336</b>	<b>0.2</b>	<b>0.0–0.4</b>	<b>2,807</b>	<b>0.2</b>	<b>0.0–0.5</b>	<b>4,143</b>	<b>0.2</b>	<b>0.0–0.4</b>
<b>Use other spices in place of salt when cooking</b>									
15–29	289	1.8	0.0–3.5	683	1.2	0.0–2.7	972	1.5	0.3–2.6
30–44	417	0.2	0.0–0.7	1,141	1.2	0.5–2.0	1,558	0.8	0.3–1.2
45–69	630	1.7	0.3–3.1	983	1.2	0.1–2.2	1,613	1.4	0.5–2.3
<b>15–69</b>	<b>1,336</b>	<b>1.4</b>	<b>0.5–2.3</b>	<b>2,807</b>	<b>1.2</b>	<b>0.4–2.0</b>	<b>4,143</b>	<b>1.3</b>	<b>0.7–1.9</b>
<b>Avoid eating out</b>									
15–29	289	0.4	0.0–1.2	683	0.0	0.0–0.0	972	0.2	0.0–0.6
30–44	417	0.0	0.0–0.0	1,141	0.2	0.0–0.6	1,558	0.1	0.0–0.3
45–69	630	0.4	0.0–1.0	983	0.3	0.0–0.9	1,613	0.3	0.0–0.8
<b>15–69</b>	<b>1,336</b>	<b>0.3</b>	<b>0.0–0.7</b>	<b>2,807</b>	<b>0.2</b>	<b>0.0–0.4</b>	<b>4,143</b>	<b>0.2</b>	<b>0.0–0.5</b>
<b>Use other techniques to control salt</b>									
15–29	289	0.0	0.0–0.0	683	0.2	0.0–0.6	972	0.1	0.0–0.3
30–44	417	0.0	0.0–0.0	1,141	0.0	0.0–0.1	1,558	0.0	0.0–0.1
45–69	630	0.1	0.0–0.3	983	0.1	0.0–0.2	1,613	0.1	0.0–0.2
<b>15–69</b>	<b>1,336</b>	<b>0.0</b>	<b>0.0–0.1</b>	<b>2,807</b>	<b>0.1</b>	<b>0.0–0.3</b>	<b>4,143</b>	<b>0.1</b>	<b>0.0–0.2</b>



## Oral health

Table O1: Percentage of respondents with natural teeth

Age group (years)	n	% No natural teeth	95% CI	% 1–9 natural teeth	95% CI	% 10–19 natural teeth	95% CI	% ≥ 20 natural teeth	95% CI
<b>Men</b>									
15–29	287	0.0	0.0–0.0	0.0	0.0–0.0	0.8	0.0–2.4	99.2	97.6–100.0
30–44	417	0.0	0.0–0.0	0.0	0.0–0.0	0.6	0.0–1.2	99.4	98.8–100.0
45–69	629	0.4	0.0–0.9	2.2	0.8–3.6	11.1	7.8–14.4	86.3	82.7–89.9
<b>15–69</b>	<b>1,333</b>	<b>0.1</b>	<b>0.0–0.2</b>	<b>0.6</b>	<b>0.2–1.0</b>	<b>3.6</b>	<b>2.3–4.8</b>	<b>95.7</b>	<b>94.4–97.1</b>
<b>Women</b>									
15–29	679	0.3	0.0–0.8	0.0	0.0–0.0	0.6	0.0–1.2	99.1	98.3–100.0
30–44	1,136	0.0	0.0–0.0	0.0	0.0–0.0	2.5	1.1–3.9	97.5	96.1–98.9
45–69	981	1.1	0.5–1.7	3.1	1.9–4.4	13.5	10.8–16.2	82.3	79.4–85.2
<b>15–69</b>	<b>2,796</b>	<b>0.4</b>	<b>0.1–0.7</b>	<b>0.8</b>	<b>0.5–1.2</b>	<b>4.5</b>	<b>3.6–5.4</b>	<b>94.3</b>	<b>93.3–95.3</b>
<b>Both sexes</b>									
15–29	966	0.1	0.0–0.4	0.0	0.0–0.0	0.7	0.0–1.5	99.2	98.3–100.0
30–44	1,553	0.0	0.0–0.0	0.0	0.0–0.0	1.6	0.8–2.4	98.4	97.6–99.2
45–69	1,610	0.8	0.4–1.1	2.7	1.7–3.6	12.3	10.0–14.5	84.3	81.8–86.8
<b>15–69</b>	<b>4,129</b>	<b>0.3</b>	<b>0.1–0.4</b>	<b>0.7</b>	<b>0.5–1.0</b>	<b>4.0</b>	<b>3.2–4.8</b>	<b>95.0</b>	<b>94.1–95.8</b>

Table O2: Percentage of respondents with poor or very poor state of teeth and gums, among those with natural teeth

Age group (years)	n	Men			Women			Both sexes		
		%	95% CI	n	%	95% CI	n	%	95% CI	
<b>Poor or very poor state of teeth</b>										
15–29	289	4.8	2.3–7.3	683	5.7	3.5–7.8	972	5.2	3.5–7.0	
30–44	416	5.6	3.1–8.2	1,138	10.2	7.9–12.6	1,554	8.0	6.0–10.0	
45–69	625	17.3	13.3–21.3	966	19.6	16.3–23.0	1,591	18.5	15.6–21.4	
<b>15–69</b>	<b>1,330</b>	<b>8.4</b>	<b>6.5–10.3</b>	<b>2,787</b>	<b>10.5</b>	<b>8.7–12.3</b>	<b>4,117</b>	<b>9.5</b>	<b>8.0–11.0</b>	
<b>Poor or very poor state of gums</b>										
15–29	289	3.5	1.4–5.6	683	4.1	2.2–6.1	972	3.8	2.3–5.3	
30–44	416	3.6	1.6–5.6	1,138	8.6	6.5–10.8	1,554	6.2	4.6–7.9	
45–69	625	12.8	9.2–16.3	966	14.3	11.4–17.1	1,591	13.5	10.9–16.1	
<b>15–69</b>	<b>1,330</b>	<b>6.0</b>	<b>4.4–7.7</b>	<b>2,787</b>	<b>8.0</b>	<b>6.5–9.5</b>	<b>4,117</b>	<b>7.0</b>	<b>5.8–8.3</b>	

Table O3: Percentage of respondents with removable dentures

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
<b>With removable dentures</b>									
15–29	289	0.4	0.0–1.2	683	0.4	0.0–1.0	972	0.4	0.0–0.9
30–44	417	0.9	0.0–1.9	1,141	1.0	0.3–1.7	1,558	0.9	0.3–1.6
45–69	630	2.1	0.9–3.4	983	2.0	1.1–2.8	1,613	2.1	1.2–2.9
<b>15–69</b>	<b>1,336</b>	<b>1.0</b>	<b>0.4–1.6</b>	<b>2,807</b>	<b>1.0</b>	<b>0.6–1.4</b>	<b>4,143</b>	<b>1.0</b>	<b>0.6–1.4</b>
<b>With upper jaw denture, among those with removable dentures</b>									
15–29	1	0.0	0.0–0.0	2	46.0	0.0–100.0	3	23.8	0.0–70.3
30–44	3	29.7	0.0–87.7	10	45.6	8.3–83.0	13	38.7	5.5–71.9
45–69	18	88.2	75.8–100.0	23	69.7	45.9–93.4	41	79.4	65.4–93.3
<b>15–69</b>	<b>22</b>	<b>58.2</b>	<b>26.5–90.0</b>	<b>35</b>	<b>58.1</b>	<b>34.5–81.7</b>	<b>57</b>	<b>58.2</b>	<b>39.8–76.5</b>
<b>With lower jaw denture, among those with removable dentures</b>									
15–29	1	0.0	0.0–0.0	2	0.0	0.0–0.0	3	0.0	0.0–0.0
30–44	3	51.2	0.0–100.0	10	59.8	24.3–95.3	13	56.1	22.0–90.2
45–69	18	28.2	9.4–47.0	23	50.0	28.1–72.0	41	38.6	22.8–54.3
<b>15–69</b>	<b>22</b>	<b>28.0</b>	<b>3.6–52.4</b>	<b>35</b>	<b>42.9</b>	<b>23.2–62.6</b>	<b>57</b>	<b>35.5</b>	<b>20.0–51.1</b>
<b>With both upper and lower jaw denture, among those with removable dentures</b>									
15–29	1	0.0	0.0–0.0	2	0.0	0.0–0.0	3	0.0	0.0–0.0
30–44	3	0.0	0.0–0.0	10	19.0	0.0–52.0	13	10.7	0.0–31.4
45–69	18	16.4	0.0–32.9	23	30.6	11.0–50.3	41	23.2	10.3–36.1
<b>15–69</b>	<b>22</b>	<b>9.6</b>	<b>0.0–21.1</b>	<b>35</b>	<b>21.2</b>	<b>7.1–35.4</b>	<b>57</b>	<b>15.5</b>	<b>6.6–24.4</b>

Table O4: Percentage of respondents who have seen a dentist in the past 12 months

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
15–29	289	5.0	1.9–8.1	683	4.8	2.5–7.1	972	4.9	3.0–6.8
30–44	417	5.1	2.5–7.8	1,141	7.1	5.3–8.9	1,558	6.2	4.5–7.8
45–69	630	6.7	4.3–9.2	983	10.1	7.7–12.5	1,613	8.4	6.6–10.1
<b>15–69</b>	<b>1,336</b>	<b>5.5</b>	<b>3.6–7.4</b>	<b>2,807</b>	<b>6.8</b>	<b>5.3–8.3</b>	<b>4,143</b>	<b>6.2</b>	<b>4.9–7.4</b>

Table O5: Percentage of respondents who have never received dental care

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
15–29	289	84.5	77.3–91.7	683	88.3	84.9–91.6	972	86.4	82.4–90.4
30–44	417	86.4	82.3–90.5	1,141	82.3	79.3–85.4	1,558	84.3	81.4–87.2
45–69	630	80.0	75.7–84.3	983	78.6	75.3–81.8	1,613	79.3	76.5–82.1
<b>15–69</b>	<b>1,336</b>	<b>83.8</b>	<b>79.7–87.8</b>	<b>2,807</b>	<b>84.1</b>	<b>81.9–86.3</b>	<b>4,143</b>	<b>83.9</b>	<b>81.4–86.5</b>

Table O6: Main reason for last visit to dentist, among those who ever visited a dentist

Age group (years)	n	% Consultation/advice		% Pain or trouble with teeth or gums		% Follow-up treatment		% Routine check-up treatment		% Other	
		%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI
<b>Men</b>											
15–29	35	23.5	8.7–38.4	58.7	42.3–75.2	16.2	2.3–30.1	1.5	0.0–4.5	0.0	-
30–44	55	12.8	3.0–22.6	74.2	62.8–85.7	8.3	2.2–14.4	4.6	0.0–10.1	0.0	-
45–69	130	4.9	0.7–9.1	73.9	65.4–82.4	19.4	12.1–26.8	1.7	0.0–4.2	0.0	-
<b>15–69</b>	<b>220</b>	<b>14.9</b>	<b>7.1–22.8</b>	<b>67.2</b>	<b>58.4–76.0</b>	<b>15.6</b>	<b>8.6–22.6</b>	<b>2.3</b>	<b>0.2–4.3</b>	<b>0.0</b>	<b>-</b>
<b>Women</b>											
15–29	79	5.2	0.6–9.8	72.5	58.7–86.3	17.4	4.8–30.0	5.0	0.0–10.8	0.0	-
30–44	206	2.9	0.8–5.0	84.3	78.6–90.1	11.5	6.2–16.9	1.3	0.0–3.2	0.0	-
45–69	216	3.1	0.6–5.6	79.4	72.8–86.1	16.8	10.6–22.9	0.7	0.0–1.6	0.0	-
<b>15–69</b>	<b>501</b>	<b>3.8</b>	<b>1.9–5.6</b>	<b>78.5</b>	<b>72.7–84.4</b>	<b>15.4</b>	<b>10.0–20.7</b>	<b>2.3</b>	<b>0.2–4.5</b>	<b>0.0</b>	<b>-</b>
<b>Both sexes</b>											
15–29	114	15.5	5.5–25.5	64.8	53.7–75.8	16.7	7.3–26.2	3.0	0.0–6.2	0.0	-
30–44	261	7.0	2.8–11.1	80.2	74.4–86.0	10.2	6.1–14.3	2.7	0.2–5.2	0.0	-
45–69	346	4.0	1.5–6.5	76.8	71.3–82.2	18.1	13.2–22.9	1.2	0.0–2.5	0.0	-
<b>15–69</b>	<b>721</b>	<b>9.3</b>	<b>4.9–13.7</b>	<b>72.9</b>	<b>67.4–78.5</b>	<b>15.5</b>	<b>10.9–20.0</b>	<b>2.3</b>	<b>0.8–3.8</b>	<b>0.0</b>	<b>-</b>

Table O7: Percentage of respondents who clean their teeth at least once and at least twice a day

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
<b>Clean teeth at least once a day</b>									
15–29	289	98.4	97.0–99.7	683	97.6	96.4–98.8	972	98.0	97.0–98.9
30–44	417	95.8	93.7–97.8	1,141	94.0	91.8–96.2	1,558	94.9	93.2–96.5
45–69	630	91.2	88.6–93.9	983	88.0	85.0–90.9	1,613	89.6	87.4–91.9
<b>15–69</b>	<b>1,336</b>	<b>95.8</b>	<b>94.6–97.0</b>	<b>2,807</b>	<b>94.1</b>	<b>92.6–95.6</b>	<b>4,143</b>	<b>94.9</b>	<b>93.8–96.0</b>

Clean teeth at least twice a day									
15–29	289	13.0	8.6–17.5	683	13.2	9.5–16.8	972	13.1	10.2–16.0
30–44	417	7.3	4.4–10.2	1,141	8.9	6.4–11.4	1,558	8.1	6.0–10.2
45–69	630	5.7	3.4–8.0	983	6.6	4.6–8.7	1,613	6.1	4.4–7.9
<b>15–69</b>	<b>1,336</b>	<b>9.5</b>	<b>7.0–12.1</b>	<b>2,807</b>	<b>10.3</b>	<b>8.0–12.5</b>	<b>4,143</b>	<b>9.9</b>	<b>8.0–11.8</b>

Table O8: Percentage of respondents who use toothpaste, among those who clean their teeth

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
15–29	289	93.8	90.1–97.5	682	92.6	90.0–95.3	971	93.2	90.6–95.8
30–44	413	87.1	82.9–91.3	1,138	83.9	79.9–87.9	1,551	85.4	82.0–88.8
45–69	617	78.9	73.8–83.9	956	77.1	72.9–81.4	1,573	78.0	74.0–82.0
<b>15–69</b>	<b>1,319</b>	<b>88.0</b>	<b>85.1–90.9</b>	<b>2,776</b>	<b>86.3</b>	<b>83.5–89.0</b>	<b>4,095</b>	<b>87.1</b>	<b>84.7–89.6</b>

Table O9: Percentage of respondents who use toothpaste containing fluoride, among those who use toothpaste

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
15–29	264	91.1	86.6–95.6	584	87.0	83.5–90.6	848	89.1	85.8–92.4
30–44	368	83.7	79.0–88.5	964	75.8	70.7–80.8	1,332	79.7	75.6–83.8
45–69	540	72.5	66.4–78.7	784	66.3	60.7–71.9	1,324	69.5	64.4–74.7
<b>15–69</b>	<b>1,172</b>	<b>84.3</b>	<b>80.9–87.8</b>	<b>2,332</b>	<b>78.8</b>	<b>75.3–82.2</b>	<b>3,504</b>	<b>81.6</b>	<b>78.5–84.7</b>

Table O10: Percentage of respondents who have had problems resulting from poor oral status during past 12 months

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
<b>Difficulty chewing food</b>									
15–29	289	7.5	4.2–10.7	683	12.2	8.8–15.7	972	9.9	7.5–12.3
30–44	417	11.6	7.9–15.3	1,141	22.7	19.4–26.1	1,558	17.4	14.9–19.9
45–69	630	21.7	17.8–25.6	983	30.4	26.5–34.2	1,613	26.0	23.1–28.9
<b>15–69</b>	<b>1,336</b>	<b>12.4</b>	<b>10.2–14.6</b>	<b>2,807</b>	<b>19.9</b>	<b>17.4–22.3</b>	<b>4,143</b>	<b>16.2</b>	<b>14.4–18.0</b>
<b>Difficulty with speech/trouble pronouncing words</b>									
15–29	289	1.3	0.0–2.6	683	4.4	2.3–6.6	972	2.9	1.6–4.2
30–44	417	3.0	1.2–4.8	1,141	8.0	6.0–9.9	1,558	5.6	4.2–7.0
45–69	630	8.9	6.2–11.6	983	13.0	10.3–15.7	1,613	10.9	8.8–13.0
<b>15–69</b>	<b>1,336</b>	<b>3.8</b>	<b>2.7–5.0</b>	<b>2,807</b>	<b>7.6</b>	<b>6.1–9.2</b>	<b>4,143</b>	<b>5.8</b>	<b>4.7–6.8</b>

<b>Feeling tense because of problems with teeth or mouth</b>									
15–29	289	1.5	0.0–3.1	683	1.0	0.3–1.8	972	1.3	0.4–2.1
30–44	417	1.8	0.4–3.2	1,141	4.2	2.8–5.7	1,558	3.1	2.1–4.0
45–69	630	4.0	2.4–5.7	983	6.4	4.4–8.3	1,613	5.2	3.7–6.7
<b>15–69</b>	<b>1,336</b>	<b>2.3</b>	<b>1.4–3.2</b>	<b>2,807</b>	<b>3.3</b>	<b>2.5–4.1</b>	<b>4,143</b>	<b>2.8</b>	<b>2.2–3.4</b>
<b>Embarrassed because of appearance of teeth</b>									
15–29	289	0.2	0.0–0.7	683	1.4	0.4–2.3	972	0.8	0.3–1.3
30–44	417	1.2	0.0–2.3	1,141	2.6	1.4–3.9	1,558	1.9	1.1–2.8
45–69	630	3.4	1.7–5.1	983	3.7	2.2–5.1	1,613	3.5	2.2–4.8
<b>15–69</b>	<b>1,336</b>	<b>1.3</b>	<b>0.7–1.9</b>	<b>2,807</b>	<b>2.3</b>	<b>1.6–3.0</b>	<b>4,143</b>	<b>1.8</b>	<b>1.3–2.3</b>
<b>Avoid smiling because of teeth</b>									
15–29	289	0.9	0.0–2.1	683	1.4	0.4–2.4	972	1.2	0.4–1.9
30–44	417	0.9	0.0–1.9	1,141	2.2	1.2–3.3	1,558	1.6	0.9–2.4
45–69	630	3.6	1.4–5.9	983	5.1	3.3–6.9	1,613	4.4	2.7–6.0
<b>15–69</b>	<b>1,336</b>	<b>1.7</b>	<b>0.8–2.5</b>	<b>2,807</b>	<b>2.6</b>	<b>1.7–3.5</b>	<b>4,143</b>	<b>2.1</b>	<b>1.5–2.8</b>
<b>Interrupted sleep</b>									
15–29	289	2.4	0.7–4.1	683	6.2	3.9–8.5	972	4.3	2.9–5.8
30–44	417	3.8	1.7–5.9	1,141	10.9	8.5–13.3	1,558	7.5	5.8–9.2
45–69	630	9.1	6.0–12.2	983	13.0	10.2–15.9	1,613	11.0	8.8–13.3
<b>15–69</b>	<b>1,336</b>	<b>4.6</b>	<b>3.3–5.9</b>	<b>2,807</b>	<b>9.3</b>	<b>7.6–11.0</b>	<b>4,143</b>	<b>7.0</b>	<b>5.8–8.1</b>
<b>Days not at work because of teeth or mouth</b>									
15–29	289	0.3	0.0–0.9	683	0.2	0.0–0.4	972	0.2	0.0–0.5
30–44	417	0.2	0.0–0.6	1,141	1.3	0.6–2.0	1,558	0.8	0.4–1.2
45–69	630	1.2	0.4–2.1	983	2.1	1.0–3.2	1,613	1.7	0.9–2.4
<b>15–69</b>	<b>1,336</b>	<b>0.5</b>	<b>0.2–0.9</b>	<b>2,807</b>	<b>1.0</b>	<b>0.6–1.3</b>	<b>4,143</b>	<b>0.8</b>	<b>0.5–1.0</b>
<b>Difficulty doing usual activities</b>									
15–29	289	0.9	0.0–2.1	683	3.1	1.6–4.7	972	2.0	1.1–3.0
30–44	417	1.9	0.5–3.2	1,141	7.0	5.2–8.7	1,558	4.5	3.3–5.8
45–69	630	7.1	4.2–10.0	983	9.0	6.6–11.4	1,613	8.1	6.1–10.1
<b>15–69</b>	<b>1,336</b>	<b>2.9</b>	<b>1.8–3.9</b>	<b>2,807</b>	<b>5.7</b>	<b>4.6–6.9</b>	<b>4,143</b>	<b>4.3</b>	<b>3.5–5.2</b>
<b>Less tolerant of spouse or people close to them</b>									
15–29	289	0.0	0.0–0.0	683	0.4	0.0–0.9	972	0.2	0.0–0.5
30–44	417	0.0	0.0–0.0	1,141	1.0	0.4–1.6	1,558	0.5	0.2–0.9
45–69	630	0.9	0.2–1.6	983	2.0	0.8–3.1	1,613	1.4	0.8–2.1
<b>15–69</b>	<b>1,336</b>	<b>0.2</b>	<b>0.1–0.4</b>	<b>2,807</b>	<b>1.0</b>	<b>0.6–1.4</b>	<b>4,143</b>	<b>0.6</b>	<b>0.4–0.9</b>
<b>Reduced participation in social activities</b>									
15–29	289	0.0	0.0–0.0	683	0.2	0.0–0.4	972	0.1	0.0–0.2
30–44	417	0.0	0.0–0.0	1,141	1.1	0.5–1.8	1,558	0.6	0.2–1.0
45–69	630	1.8	0.8–2.8	983	2.2	1.0–3.4	1,613	2.0	1.1–2.9
<b>15–69</b>	<b>1,336</b>	<b>0.5</b>	<b>0.2–0.8</b>	<b>2,807</b>	<b>1.0</b>	<b>0.6–1.4</b>	<b>4,143</b>	<b>0.7</b>	<b>0.5–1.0</b>

## Housing and energy

Table X1: Roof materials of house

Roof materials	% (n=4,143)	95% CI
Corrugated iron, zinc or other metal sheets	38.5	33.8–43.2
Cement concrete	25.8	21.2–30.4
Grass, leaves, reeds, thatch, wood, mud, bamboo or mixed materials	15.2	12.0–18.3
Tiles, slate, shingles	11.6	8.9–14.3
Stones	5.3	3.5–7.1
Bricks, stones, lime	3.6	2.5–4.6
Other materials	0.1	0.0–0.1

Table X2: Wall materials of house

Wall materials	% (n=4,143)	95% CI
Mud, dirt	34.3	30.3–38.3
Cement concrete	29.3	24.9–33.4
Stones	14.0	11.4–16.6
Grass, leaves, reeds, thatch, wood, mud, bamboo or mixed materials	11.1	8.8–13.5
Fired bricks	8.3	6.4–10.1
Unfired bricks	2.2	1.5–3.0
Wood	0.7	0.2–1.2
Other materials	0.0	0.0–0.0

Table X3: Floor materials of house

Floor materials	% (n=4,143)	95% CI
Mud, dirt	62.7	57.8–67.6
Cement	35.5	30.6–40.4
Wood, planks	0.6	0.2–1.1
Bricks, stones, lime	1.1	0.6–1.6
Bamboo, logs	0.0	0.0–0.1

Table X4: Percentage of respondents with a separate kitchen in their house

n (Respondents)	% With separate kitchen	95% CI	% Without separate kitchen	95% CI
4,143	84.9	82.5–87.2	15.1	12.8–17.5

Table X5: Types of stoves used for cooking

Type of stove	% (n=4,143)	95% CI
Mud stove	60.2	55.8–64.7
Gas stove	26.9	22.2–31.7
Open fire	6.7	4.7–8.6
Smokeless stove	6.0	4.3–7.7
Kerosene stove	0.1	0.0–0.3

Table X6: Main source of lighting

Source of lighting	% (n=4,143)	95% CI
Electricity	82.9	78.2–87.5
Solar	9.8	6.3–13.4
Kerosene	5.2	3.4–6.9
Pine wood fuel	1.1	0.6–1.6
Candles	0.4	0.1–0.6
Other	0.6	0.1–1.2

## Overweight and obesity

Table M1: Mean height and weight among all respondents

Mean height (cm)						
Age group (years)	n	Men		n	Women	
		Mean	95% CI		Mean	95% CI
15–29	286	163.0	162.0–164.0	682	150.9	150.3–151.6
30–44	414	161.3	160.5–162.0	1,138	150.8	150.3–151.3
45–69	626	160.1	159.3–160.8	978	149.1	148.7–149.6
<b>15–69</b>	<b>1,326</b>	<b>161.7</b>	<b>161.1–162.3</b>	<b>2,798</b>	<b>150.4</b>	<b>150.0–150.8</b>

Mean weight (kg)						
Age group (years)	n	Men		n	Women	
		Mean	95% CI		Mean	95% CI
15–29	286	57.2	55.9–58.5	655	49.0	48.4–49.7
30–44	414	60.2	58.8–61.5	1,130	53.1	52.2–53.9
45–69	626	58.8	57.6–60.0	978	51.0	49.9–52.0
<b>15–69</b>	<b>1,326</b>	<b>58.4</b>	<b>57.5–59.3</b>	<b>2,763</b>	<b>50.7</b>	<b>50.1–51.3</b>

Table M2: Mean BMI (kg/m<sup>2</sup>) among all respondents

Age group (years)	n	Men		Women			Both sexes		
		Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
15–29	284	21.6	21.1–22.0	653	21.6	21.3–21.8	937	21.6	21.3–21.8
30–44	414	23.1	22.7–23.6	1,129	23.4	23.0–23.7	1,543	23.2	22.9–23.6
45–69	625	23.0	22.6–23.5	974	22.9	22.4–23.4	1,599	23.0	22.6–23.3
<b>15–69</b>	<b>1,323</b>	<b>22.4</b>	<b>22.1–22.7</b>	<b>2,756</b>	<b>22.4</b>	<b>22.2–22.7</b>	<b>4,079</b>	<b>22.4</b>	<b>22.2–22.6</b>

Table M3: Percentage of respondents (excluding pregnant women) in each BMI category

Age group (years)	n	% Underweight (BMI <18.5)		% Normal weight (BMI 18.5–24.9)		% Overweight (BMI 25.0–29.9)		% Obese (BMI ≥30.0)		
		Mean	95% CI	Mean	95% CI	Mean	95% CI	Mean	95% CI	
<b>Men</b>										
15–29	284	8.0	4.5–11.5	78.7	73.6–83.8	11.8	7.9–15.7	1.5	0.1–2.9	
30–44	414	7.5	4.7–10.3	63.4	57.8–69.0	24.6	19.3–29.9	4.6	1.8–7.3	
45–69	625	11.4	8.1–14.8	61.6	57.0–66.3	22.3	18.2–26.5	4.6	2.8–6.5	
<b>15–69</b>	<b>1,323</b>	<b>8.8</b>	<b>6.6–11.0</b>	<b>70.0</b>	<b>66.6–73.5</b>	<b>18.0</b>	<b>15.2–20.8</b>	<b>3.1</b>	<b>2.0–4.3</b>	



<b>Women</b>									
15–29	653	12.3	9.3–15.2	73.4	69.7–77.2	12.3	9.5–15.1	2.0	0.9–3.1
30–44	1,129	8.8	6.7–10.9	61.0	57.3–64.6	23.3	20.1–26.5	6.9	4.9–8.9
45–69	974	15.0	12.0–17.9	58.2	54.5–61.9	19.6	16.3–22.8	7.3	5.1–9.4
<b>15–69</b>	<b>2,756</b>	<b>12.0</b>	<b>10.1–13.9</b>	<b>65.9</b>	<b>63.5–68.3</b>	<b>17.3</b>	<b>15.4–19.2</b>	<b>4.8</b>	<b>3.7–5.9</b>
<b>Both Sexes</b>									
15–29	937	10.1	7.8–12.5	76.1	72.8–79.3	12.0	9.7–14.4	1.7	0.9–2.6
30–44	1,543	8.2	6.4–9.9	62.1	58.7–65.6	23.9	20.7–27.1	5.8	4.1–7.5
45–69	1,599	13.2	10.9–15.5	59.9	56.7–63.1	21.0	18.2–23.7	6.0	4.5–7.4
<b>15–69</b>	<b>4,079</b>	<b>10.4</b>	<b>8.8–12.1</b>	<b>67.9</b>	<b>65.6–70.3</b>	<b>17.7</b>	<b>15.8–19.5</b>	<b>4.0</b>	<b>3.1–4.8</b>

Table M4: Percentage of respondents classified as overweight (BMI≥25)

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
15–29	284	13.3	9.1–17.4	653	14.3	11.3–17.3	937	13.8	11.3–16.3
30–44	414	29.1	23.5–34.8	1,129	30.3	26.4–34.1	1,543	29.7	26.0–33.4
45–69	625	26.9	22.3–31.6	974	26.9	22.8–31.0	1,599	26.9	23.6–30.3
<b>15–69</b>	<b>1,323</b>	<b>21.2</b>	<b>18.1–24.2</b>	<b>2,756</b>	<b>22.1</b>	<b>19.8–24.4</b>	<b>4,079</b>	<b>21.6</b>	<b>19.5–23.8</b>

Table M5: Mean waist and hip circumference among all respondents (excluding pregnant women)

<b>Waist circumference (cm)</b>						
Age group (years)	Men			Women		
	n	Mean	95% CI	n	Mean	95% CI
15–29	286	76.7	75.6–77.8	655	74.4	73.5–75.2
30–44	414	81.6	80.3–82.9	1,130	79.0	78.0–80.0
45–69	626	83.6	82.3–84.8	978	78.3	77.0–79.6
<b>15–69</b>	<b>1,326</b>	<b>79.8</b>	<b>79.0–80.7</b>	<b>2,763</b>	<b>76.7</b>	<b>76.0–77.5</b>
<b>Hip circumference (cm)</b>						
Age group (years)	Men			Women		
	n	Mean	95% CI	n	Mean	95% CI
15–29	286	87.2	86.2–88.3	655	86.0	85.2–86.8
30–44	414	88.8	87.7–89.9	1,130	89.4	88.6–90.2
45–69	626	88.8	88.0–89.7	978	88.1	87.0–89.2
<b>15–69</b>	<b>1,326</b>	<b>88.1</b>	<b>87.4–88.7</b>	<b>2,763</b>	<b>87.5</b>	<b>86.8–88.2</b>

Table M6: Mean waist-to-hip ratio among all respondents (excluding pregnant women)

Age group (years)	Men			Women		
	n	Mean	95% CI	n	Mean	95% CI
15–29	286	0.9	0.9–0.9	655	0.9	0.9–0.9
30–44	414	0.9	0.9–0.9	1,130	0.9	0.9–0.9
45–69	626	0.9	0.9–0.9	978	0.9	0.9–0.9
<b>15–69</b>	<b>1,326</b>	<b>0.9</b>	<b>0.9–0.9</b>	<b>2,763</b>	<b>0.9</b>	<b>0.9–0.9</b>

## Blood pressure

Table H1: Blood pressure measurement and diagnosis of hypertension

Age group (years)	n	% Never measured	95% CI	% Measured, not diagnosed	95% CI	% Diagnosed, but not within past 12 months	95% CI	% Diagnosed within past 12 months	95% CI
<b>Men</b>									
15–29	289	56.2	49.7–62.7	43.1	36.5–49.7	0.0	0.0–0.0	0.7	0.0–1.5
30–44	417	37.4	31.3–43.5	56.8	50.8–62.8	1.6	0.2–2.9	4.2	1.9–6.5
45–69	630	33.7	28.3–39.1	50.6	45.3–55.9	1.3	0.5–2.2	14.3	11.2–17.5
<b>15–69</b>	<b>1,336</b>	<b>45.2</b>	<b>40.8–49.6</b>	<b>48.7</b>	<b>44.5–52.9</b>	<b>0.8</b>	<b>0.4–1.2</b>	<b>5.3</b>	<b>4.1–6.6</b>
<b>Women</b>									
15–29	683	45.7	40.6–50.9	52.5	47.3–57.7	0.8	0.2–1.4	1.0	0.2–1.8
30–44	1,141	38.1	33.9–42.3	56.3	52.1–60.4	1.5	0.8–2.2	4.2	2.6–5.7
45–69	983	32.8	28.8–36.9	51.3	47.2–55.5	1.7	0.7–2.6	14.2	11.2–17.1
<b>15–69</b>	<b>2,807</b>	<b>40.3</b>	<b>36.5–44.0</b>	<b>53.2</b>	<b>49.6–56.8</b>	<b>1.2</b>	<b>0.8–1.7</b>	<b>5.3</b>	<b>4.3–6.3</b>
<b>Both sexes</b>									
15–29	972	50.9	46.7–55.1	47.9	43.6–52.1	0.4	0.1–0.7	0.8	0.3–1.4
30–44	1,558	37.8	33.7–41.8	56.5	52.5–60.5	1.5	0.8–2.3	4.2	2.8–5.5
45–69	1,613	33.3	29.3–37.2	51.0	47.1–54.8	1.5	0.8–2.2	14.3	11.9–16.6
<b>15–69</b>	<b>4,143</b>	<b>42.7</b>	<b>39.4–45.9</b>	<b>51.0</b>	<b>47.9–54.1</b>	<b>1.0</b>	<b>0.7–1.3</b>	<b>5.3</b>	<b>4.4–6.2</b>

Table H2: Percentage of respondents currently taking blood pressure drugs prescribed by doctor or health worker, among those diagnosed

Age group (years)	n	Men		Women		Both sexes			
		% Taking medication	95% CI	n	% Taking medication	95% CI	n	% Taking medication	95% CI
15–29	3	14.9	0.0–46.3	15	16.0	0.0–40.1	18	15.7	0.0–35.3
30–44	24	36.7	14.6–58.8	67	38.6	24.9–52.3	91	37.7	24.9–50.5
45–69	103	66.9	55.5–78.2	147	60.5	50.7–70.3	250	63.7	55.7–71.7
<b>15–69</b>	<b>130</b>	<b>56.8</b>	<b>45.2–68.3</b>	<b>229</b>	<b>49.5</b>	<b>41.3–57.8</b>	<b>359</b>	<b>53.0</b>	<b>45.8–60.1</b>

Table H3: Percentage of previously diagnosed hypertensive respondents who have received lifestyle advice from a doctor or health worker

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
<b>Advised to reduce salt intake</b>									
15–29	3	14.9	0.0–46.3	15	26.2	0.6–51.9	18	23.3	2.1–44.4
30–44	24	78.4	62.4–94.4	67	80.0	68.5–91.5	91	79.2	69.5–89.0
45–69	103	82.8	74.5–91.1	147	79.7	71.6–87.9	250	81.3	75.4–87.1
<b>15–69</b>	<b>130</b>	<b>78.2</b>	<b>69.4–87.0</b>	<b>229</b>	<b>72.9</b>	<b>65.5–80.4</b>	<b>359</b>	<b>75.5</b>	<b>69.8–81.1</b>
<b>Advised to lose weight</b>									
15–29	3	14.9	0.0–46.3	15	31.1	1.8–60.5	18	26.9	2.6–51.2
30–44	24	48.2	25.1–71.4	67	39.2	24.5–54.0	91	43.6	31.2–55.9
45–69	103	38.8	27.3–50.3	147	44.8	34.2–55.4	250	41.8	33.8–49.8
<b>15–69</b>	<b>130</b>	<b>39.9</b>	<b>29.9–49.9</b>	<b>229</b>	<b>41.7</b>	<b>33.4–50.0</b>	<b>359</b>	<b>40.9</b>	<b>34.2–47.6</b>
<b>Advised to stop smoking (among current smokers)</b>									
15–29	1	0.0	0.0–0.0	0	0.0	-	1	0.0	0.0–0.0
30–44	8	58.7	18.6–98.7	11	72.3	42.1–100.0	19	64.4	36.6–92.3
45–69	24	71.7	54.2–89.2	23	56.1	30.6–81.6	47	65.5	50.3–80.7
<b>15–69</b>	<b>33</b>	<b>62.6</b>	<b>43.3–81.8</b>	<b>34</b>	<b>61.5</b>	<b>39.5–83.5</b>	<b>67</b>	<b>62.1</b>	<b>46.9–77.4</b>
<b>Advised to start or do more exercise</b>									
15–29	3	14.9	0.0–46.3	15	0.0	0.0–0.0	18	3.9	0.0–11.7
30–44	24	39.0	16.0–62.0	67	22.4	12.7–32.2	91	30.4	18.8–42.0
45–69	103	45.9	34.0–57.7	147	38.0	27.4–48.6	250	41.9	34.0–49.9
<b>15–69</b>	<b>130</b>	<b>42.6</b>	<b>32.2–53.1</b>	<b>229</b>	<b>29.4</b>	<b>21.8–37.0</b>	<b>359</b>	<b>35.6</b>	<b>29.3–42.0</b>

Table H4: Percentage of previously diagnosed hypertensive respondents who have visited or received treatment from a traditional healer

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
<b>Seen a traditional healer</b>									
15–29	3	14.9	0.0–46.3	15	0.0	0.0–0.0	18	3.9	0.0–11.7
30–44	24	11.3	0.0–27.5	67	9.5	0.8–18.2	91	10.3	1.4–19.3
45–69	103	10.8	2.7–18.9	147	13.6	6.7–20.5	250	12.2	6.6–17.8
<b>15–69</b>	<b>130</b>	<b>11.2</b>	<b>4.2–18.1</b>	<b>229</b>	<b>10.9</b>	<b>6.0–15.7</b>	<b>359</b>	<b>11.0</b>	<b>6.7–15.3</b>
<b>Currently taking herbal or traditional remedies for high blood pressure</b>									
15–29	3	14.9	0.0–46.3	15	0.0	0.0–0.0	18	3.9	0.0–11.7
30–44	24	6.1	0.0–18.0	67	2.2	0.0–6.5	91	4.1	0.0–10.1
45–69	103	1.4	0.0–3.6	147	9.0	3.4–14.6	250	5.2	2.1–8.3
<b>15–69</b>	<b>130</b>	<b>3.2</b>	<b>0.0–6.9</b>	<b>229</b>	<b>6.2</b>	<b>2.5–10.0</b>	<b>359</b>	<b>4.8</b>	<b>2.2–7.4</b>

Table M7: Mean systolic and diastolic blood pressure (mmHg)

Age group (years)	Men			Women			Both sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
<b>Mean systolic blood pressure (mmHg)</b>									
15–29	286	127.2	125.6–128.7	682	117.3	116.2–118.3	968	122.1	121.1–123.2
30–44	414	129.9	128.1–131.7	1,138	123.7	122.4–125.1	1,552	126.6	125.4–127.9
45–69	626	139.1	136.9–141.2	978	135.8	133.7–137.9	1,604	137.4	135.8–139.0
<b>15–69</b>	<b>1,326</b>	<b>131.1</b>	<b>129.9–132.3</b>	<b>2,798</b>	<b>123.9</b>	<b>122.8–124.9</b>	<b>4,124</b>	<b>127.4</b>	<b>126.5–128.3</b>
<b>Mean diastolic blood pressure (mmHg)</b>									
15–29	286	77.9	76.4–79.4	682	75.1	74.2–75.9	968	76.4	75.6–77.3
30–44	414	82.3	81.0–83.7	1,138	79.9	79.0–80.8	1,552	81.1	80.2–81.9
45–69	626	85.8	84.5–87.0	978	83.0	81.9–84.0	1,604	84.4	83.5–85.2
<b>15–69</b>	<b>1,326</b>	<b>81.2</b>	<b>80.2–82.2</b>	<b>2,798</b>	<b>78.5</b>	<b>77.8–79.1</b>	<b>4,124</b>	<b>79.8</b>	<b>79.2–80.4</b>

Table M8: Percentage of respondents with raised blood pressure

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
<b>SBP <math>\geq</math>140 and/or DBP <math>\geq</math> 90 mmHg, excluding those on medication for raised blood pressure</b>									
15–29	284	19.1	13.8–24.3	679	6.9	4.6–9.2	963	12.9	10.1–15.7
30–44	403	30.5	24.9–36.0	1,121	19.9	17.0–22.8	1,524	24.9	21.6–28.2
45–69	565	44.9	40.0–49.8	908	39.0	35.0–43.1	1,473	41.9	38.6–45.3
<b>15–69</b>	<b>1,252</b>	<b>28.7</b>	<b>25.3–32.1</b>	<b>2,708</b>	<b>18.5</b>	<b>16.4–20.5</b>	<b>3,960</b>	<b>23.4</b>	<b>21.3–25.6</b>
<b>SBP <math>\geq</math>140 and/or DBP <math>\geq</math> 90 mmHg or currently on medication for raised blood pressure</b>									
15–29	286	19.3	14.1–24.6	682	7.5	5.1–9.8	968	13.3	10.4–16.1
30–44	414	32.5	26.9–38.1	1,138	21.2	18.2–24.3	1,552	26.6	23.2–30.0
45–69	626	49.9	45.1–54.6	978	43.5	39.4–47.6	1,604	46.7	43.4–50.0
<b>15–69</b>	<b>1,326</b>	<b>31.1</b>	<b>27.7–34.5</b>	<b>2,798</b>	<b>20.6</b>	<b>18.5–22.7</b>	<b>4,124</b>	<b>25.7</b>	<b>23.5–27.9</b>
<b>SBP <math>\geq</math>160 and/or DBP <math>\geq</math> 100 mmHg, excluding those on medication for raised blood pressure</b>									
15–29	284	3.1	0.7–5.5	679	0.5	0.0–0.9	963	1.8	0.5–3.0
30–44	403	5.4	3.0–7.8	1,121	5.4	3.8–7.0	1,524	5.4	3.9–6.9
45–69	565	17.6	13.5–21.7	908	16.8	13.4–20.2	1,473	17.2	14.5–19.8
<b>15–69</b>	<b>1,252</b>	<b>7.4</b>	<b>5.4–9.4</b>	<b>2,708</b>	<b>5.9</b>	<b>4.7–7.0</b>	<b>3,960</b>	<b>6.6</b>	<b>5.5–7.8</b>
<b>SBP <math>\geq</math>160 and/or DBP <math>\geq</math> 100 mmHg or currently on medication for raised blood pressure</b>									
15–29	286	3.4	0.9–5.8	682	1.1	0.2–1.9	968	2.2	0.9–3.5
30–44	414	8.2	5.2–11.2	1,138	7.0	5.1–8.9	1,552	7.5	5.8–9.3
45–69	626	25.0	20.7–29.3	978	22.9	19.2–26.5	1,604	23.9	21.1–26.8
<b>15–69</b>	<b>1,326</b>	<b>10.5</b>	<b>8.4–12.6</b>	<b>2,798</b>	<b>8.4</b>	<b>7.0–9.7</b>	<b>4,124</b>	<b>9.4</b>	<b>8.1–10.7</b>

Table M9: Percentage of respondents with treated or controlled raised blood pressure, among those with raised blood pressure (SBP  $\geq$ 140 and/or DBP  $\geq$  90 mmHg) or currently on medication for raised blood pressure

Age group (Years)	n	% On medication and SBP<140 and DBP<90	95% CI	% On medication and SBP $\geq$ 140 and/or DBP $\geq$ 90	95% CI	% Not on medication and SBP $\geq$ 140 and/or DBP $\geq$ 90	95% CI
<b>Men</b>							
15–29	56	1.1	0.0–3.2	0.5	0.0–1.6	98.4	96.0–100.0
30–44	133	3.6	0.0–7.2	5.5	0.9–10.0	90.9	85.3–96.6
45–69	307	4.9	2.2–7.6	13.3	8.8–17.8	81.8	76.7–86.9
<b>15–69</b>	<b>496</b>	<b>3.4</b>	<b>1.6–5.3</b>	<b>7.5</b>	<b>4.9–10.1</b>	<b>89.1</b>	<b>85.9–92.3</b>
<b>Women</b>							
15–29	57	8.0	0.0–17.3	0.0	0.0–0.0	92.0	82.7–100.0
30–44	230	2.8	0.3–5.4	5.2	1.6–8.8	92.0	87.6–96.3
45–69	420	4.0	1.8–6.2	12.9	8.6–17.2	83.1	78.5–87.7
<b>15–69</b>	<b>707</b>	<b>4.3</b>	<b>2.1–6.6</b>	<b>8.5</b>	<b>5.9–11.2</b>	<b>87.1</b>	<b>83.8–90.5</b>
<b>Both sexes</b>							
15–29	113	3.1	0.0–6.2	0.4	0.0–1.1	96.6	93.4–99.7
30–44	363	3.3	0.9–5.6	5.4	2.3–8.4	91.4	87.7–95.1
45–69	727	4.5	2.5–6.4	13.1	9.9–16.3	82.4	78.8–86.1
<b>15–69</b>	<b>1,203</b>	<b>3.8</b>	<b>2.4–5.3</b>	<b>7.9</b>	<b>5.9–9.9</b>	<b>88.3</b>	<b>85.9–90.7</b>

Table M10: Mean heart rate (beats per minute)

Age group (years)	n	Men		Women			Both sexes		
		Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
15–29	286	78.4	76.8–80.0	682	83.1	82.0–84.2	968	80.8	79.8–81.8
30–44	414	77.1	75.7–78.5	1,138	82.1	81.2–83.0	1,552	79.7	78.8–80.6
45–69	626	79.4	78.3–80.6	978	81.3	80.4–82.1	1,604	80.3	79.6–81.1
<b>15–69</b>	<b>1,326</b>	<b>78.3</b>	<b>77.4–79.3</b>	<b>2,798</b>	<b>82.3</b>	<b>81.7–83.0</b>	<b>4,124</b>	<b>80.4</b>	<b>79.7–81.0</b>

## Blood glucose

Table H5: Blood glucose measurement and diagnosis of diabetes mellitus

Age group (years)	n	% Never measured	95% CI	% Measured, not diagnosed	95% CI	% Diagnosed, but not within past 12 months	95% CI	% Diagnosed within past 12 months	95% CI
<b>Men</b>									
15–29	289	92.7	89.0–96.3	6.7	3.2–10.3	0.0	0.0–0.0	0.6	0.0–1.6
30–44	417	85.9	81.6–90.1	12.9	8.8–16.9	0.0	0.0–0.0	1.3	0.1–2.4
45–69	630	77.1	72.5–81.7	15.7	12.0–19.3	0.7	0.0–1.3	6.6	4.1–9.0
<b>15–69</b>	<b>1,336</b>	<b>86.6</b>	<b>83.9–89.3</b>	<b>10.8</b>	<b>8.3–13.2</b>	<b>0.2</b>	<b>0.0–0.4</b>	<b>2.4</b>	<b>1.5–3.3</b>
<b>Women</b>									
15–29	683	94.6	92.6–96.5	5.4	3.5–7.3	0.0	0.0–0.0	0.1	0.0–0.2
30–44	1141	91.8	89.4–94.3	7.1	4.9–9.3	0.3	0.0–0.8	0.8	0.2–1.4
45–69	983	86.6	83.5–89.8	8.5	6.2–10.9	0.3	0.0–0.6	4.6	2.9–6.3
<b>15–69</b>	<b>2,807</b>	<b>91.7</b>	<b>90.1–93.4</b>	<b>6.7</b>	<b>5.3–8.1</b>	<b>0.2</b>	<b>0.0–0.3</b>	<b>1.4</b>	<b>0.9–2.0</b>
<b>Both sexes</b>									
15–29	972	93.6	91.5–95.7	6.1	4.0–8.1	0.0	0.0–0.0	0.3	0.0–0.8
30–44	1,558	89.0	86.2–91.7	9.9	7.3–12.5	0.2	0.0–0.4	1.0	0.4–1.6
45–69	1,613	81.8	78.6–85.0	12.1	9.8–14.4	0.5	0.1–0.9	5.6	4.0–7.2
<b>15–69</b>	<b>4,143</b>	<b>89.2</b>	<b>87.4–91.1</b>	<b>8.7</b>	<b>7.1–10.2</b>	<b>0.2</b>	<b>0.0–0.3</b>	<b>1.9</b>	<b>1.4–2.5</b>

Table H6: Percentage of respondents currently taking insulin and oral medication, among those previously diagnosed

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
<b>Taking insulin</b>									
15–29	2	16.6	0.0–57.0	1	0.0	0.0–0.0	3	15.2	0.0–50.5
30–44	5	14.2	0.0–42.6	10	0.0	0.0–0.0	15	7.3	0.0–21.7
45–69	47	11.1	0.0–23.9	42	6.5	0.0–16.9	89	9.2	0.2–18.3
<b>15–69</b>	<b>54</b>	<b>12.1</b>	<b>0.9–23.2</b>	<b>53</b>	<b>5.2</b>	<b>0.0–13.5</b>	<b>107</b>	<b>9.4</b>	<b>1.7–17.0</b>
<b>Taking oral drugs</b>									
15–29	2	16.6	0.0–57.0	1	100.0	100.0–100.0	3	23.3	0.0–68.3
30–44	5	34.5	0.0–77.9	10	41.5	7.5–75.5	15	37.9	10.1–65.7
45–69	47	71.7	55.9–87.6	42	72.4	57.9–86.8	89	72.0	61.2–82.8
<b>15–69</b>	<b>54</b>	<b>61.1</b>	<b>42.6–79.5</b>	<b>53</b>	<b>67.0</b>	<b>54.0–80.0</b>	<b>107</b>	<b>63.4</b>	<b>51.1–75.7</b>

Table H7: Percentage of respondents who have received diabetes lifestyle advice from a doctor or health worker, among those previously diagnosed

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
<b>Advised to adopt special prescribed diet</b>									
15–29	2	100.0	100.0–100.0	1	100.0	100.0–100.0	3	100.0	100.0–100.0
30–44	5	71.2	23.9–100.0	10	63.5	25.5–100.0	15	67.4	37.5–97.4
45–69	47	71.4	56.7–86.0	42	59.1	41.5–76.8	89	66.5	54.5–78.5
<b>15–69</b>	<b>54</b>	<b>74.5</b>	<b>61.0–87.9</b>	<b>53</b>	<b>60.6</b>	<b>44.2–76.9</b>	<b>107</b>	<b>69.1</b>	<b>58.1–80.0</b>
<b>Advised to lose weight</b>									
15–29	2	100.0	100.0–100.0	1	0.0	0.0–0.0	3	91.9	72.0–100.0
30–44	5	55.8	7.5–100.0	10	75.1	38.5–100.0	15	65.2	34.8–95.6
45–69	47	43.8	26.3–61.4	42	46.7	27.9–65.5	89	45.0	32.5–57.4
<b>15–69</b>	<b>54</b>	<b>51.4</b>	<b>34.2–68.7</b>	<b>53</b>	<b>51.3</b>	<b>36.5–66.1</b>	<b>107</b>	<b>51.4</b>	<b>39.3–63.4</b>
<b>Advised to stop smoking (among current smokers)</b>									
15–29	0	0.0	-	0	0.0	-	0	0.0	-
30–44	1	100.0	100.0–100.0	1	100.0	100.0–100.0	2	100.0	100.0–100.0
45–69	11	30.0	0.0–66.2	0	0.0	-	11	30.0	0.0–65.7
<b>15–69</b>	<b>12</b>	<b>36.4</b>	<b>1.3–71.5</b>	<b>1</b>	<b>100.0</b>	<b>100.0–100.0</b>	<b>13</b>	<b>41.4</b>	<b>8.4–74.5</b>
<b>Advised to start or do more exercise</b>									
15–29	2	100.0	100.0–100.0	1	100.0	100.0–100.0	3	100.0	100.0–100.0
30–44	5	71.2	23.9–100.0	10	69.1	32.9–100.0	15	70.2	40.4–99.9
45–69	47	65.8	48.0–83.5	42	40.9	23.1–58.6	89	55.8	41.8–69.9
<b>15–69</b>	<b>54</b>	<b>70.2</b>	<b>54.6–85.8</b>	<b>53</b>	<b>47.0</b>	<b>31.8–62.2</b>	<b>107</b>	<b>61.2</b>	<b>48.6–73.8</b>

Table H8: Percentage of respondents who have sought advice or treatment from a traditional healer for diabetes, among those previously diagnosed

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
<b>Seen a traditional healer</b>									
15–29	2	16.6	0.0–57.0	1	0.0	0.0–0.0	3	15.2	0.0–50.5
30–44	5	0.0	0.0–0.0	10	0.0	0.0–0.0	15	0.0	0.0–0.0
45–69	47	8.5	1.5–15.4	42	12.1	2.5–21.6	89	9.9	4.3–15.5
<b>15–69</b>	<b>54</b>	<b>8.3</b>	<b>1.9–14.7</b>	<b>53</b>	<b>9.6</b>	<b>2.0–17.2</b>	<b>107</b>	<b>8.8</b>	<b>4.0–13.6</b>
<b>Currently taking herbal or traditional treatments</b>									
15–29	2	16.6	0.0–57.0	1	0.0	0.0–0.0	3	15.2	0.0–50.5
30–44	5	28.8	0.0–76.1	10	14.3	0.0–41.3	15	21.8	0.0–49.6
45–69	47	11.9	0.2–23.5	42	13.7	3.7–23.7	89	12.6	3.6–21.6
<b>15–69</b>	<b>54</b>	<b>14.5</b>	<b>2.8–26.2</b>	<b>53</b>	<b>13.6</b>	<b>2.5–24.7</b>	<b>107</b>	<b>14.2</b>	<b>4.4–23.9</b>



Table M11: Percentage of respondents currently on medication for diabetes

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
15–29	289	0.1	0.0–0.3	683	0.1	0.0–0.2	972	0.1	0.0–0.2
30–44	417	0.4	0.0–1.0	1,141	0.6	0.1–1.1	1,558	0.5	0.1–0.9
45–69	630	5.8	3.4–8.2	983	3.6	2.1–5.0	1,613	4.7	3.2–6.2
<b>15–69</b>	<b>1,336</b>	<b>1.7</b>	<b>1.0–2.4</b>	<b>2,807</b>	<b>1.1</b>	<b>0.7–1.6</b>	<b>4,143</b>	<b>1.4</b>	<b>1.0–1.9</b>

Table M12: Mean fasting blood glucose (mg/dl) among all respondents

Age group (years)	Men			Women			Both sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
15–29	253	88.9	85.4–92.4	602	85.9	84.5–87.4	855	87.4	85.4–89.4
30–44	372	92.8	90.4–95.2	1,051	89.9	87.9–92.0	1,423	91.3	89.6–92.9
45–69	573	101.5	97.2–105.7	921	95.7	93.3–98.1	1,494	98.5	96.0–101.1
<b>15–69</b>	<b>1,198</b>	<b>93.4</b>	<b>91.2–95.6</b>	<b>2,574</b>	<b>89.7</b>	<b>88.3–91.0</b>	<b>3,772</b>	<b>91.5</b>	<b>90.0–92.9</b>

Table M13: Impaired fasting glycaemia among all respondents

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
15–29	253	1.3	0.0–3.1	602	2.3	0.9–3.8	855	1.8	0.7–3.0
30–44	372	9.5	5.5–13.4	1,051	2.5	1.2–3.7	1,423	5.7	3.5–8.0
45–69	573	7.2	4.5–9.8	921	5.4	3.5–7.3	1,494	6.3	4.5–8.0
<b>15–69</b>	<b>1,198</b>	<b>5.1</b>	<b>3.4–6.7</b>	<b>2,574</b>	<b>3.2</b>	<b>2.2–4.1</b>	<b>3,772</b>	<b>4.1</b>	<b>3.0–5.2</b>

Table M14: Raised blood glucose (plasma venous value  $\geq$  126 mg/dl) or currently on medication for diabetes

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
15–29	253	1.3	0.0–2.7	602	0.6	0.0–1.2	855	0.9	0.2–1.7
30–44	372	3.3	1.2–5.3	1051	2.9	1.2–4.6	1423	3.1	1.8–4.4
45–69	573	11.3	8.3–14.3	921	6.2	4.4–8.1	1494	8.7	7.0–10.5
<b>15–69</b>	<b>1198</b>	<b>4.6</b>	<b>3.4–5.7</b>	<b>2574</b>	<b>2.7</b>	<b>1.9–3.6</b>	<b>3772</b>	<b>3.6</b>	<b>2.9–4.4</b>

## Abnormal lipids

Table M15: Mean total cholesterol among all respondents including those currently on medication for raised cholesterol

Age group (years)	Men			Women			Both sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
15–29	252	150.5	145.4–155.6	600	152.1	148.5–155.7	852	151.3	147.9–154.6
30–44	372	176.1	170.5–181.8	1,045	160.5	157.5–163.4	1,417	167.8	164.3–171.3
45–69	573	172.7	168.0–177.3	919	177.5	174.1–181.0	1,492	175.1	171.8–178.4
<b>15–69</b>	<b>1,197</b>	<b>163.4</b>	<b>159.7–167.0</b>	<b>2,564</b>	<b>161.2</b>	<b>158.6–163.8</b>	<b>3,761</b>	<b>162.3</b>	<b>159.7–164.9</b>

Table M16: Percentage of respondents with raised total cholesterol or on medication for raised cholesterol

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
<b>Total cholesterol ≥ 190 mg/dl or currently on medication for raised cholesterol</b>									
15–29	252	15.7	10.9–20.5	600	13.0	9.7–16.2	852	14.3	11.2–17.4
30–44	372	33.6	27.5–39.8	1,045	20.0	17.0–23.0	1,417	26.4	23.0–29.9
45–69	573	30.3	26.0–34.7	919	35.6	31.5–39.7	1,492	33.0	29.7–36.3
<b>15–69</b>	<b>1,197</b>	<b>24.5</b>	<b>21.3–27.7</b>	<b>2,564</b>	<b>21.0</b>	<b>18.7–23.3</b>	<b>3,761</b>	<b>22.7</b>	<b>20.5–24.9</b>
<b>Total cholesterol ≥ 240 mg/dl or currently on medication for raised cholesterol</b>									
15–29	252	2.6	0.5–4.7	600	1.3	0.3–2.4	852	1.9	0.7–3.1
30–44	372	7.8	4.5–11.2	1,045	2.0	1.2–2.9	1,417	4.8	3.1–6.5
45–69	573	6.9	4.4–9.5	919	6.7	5.0–8.4	1,492	6.8	5.2–8.4
<b>15–69</b>	<b>1,197</b>	<b>5.2</b>	<b>3.6–6.7</b>	<b>2,564</b>	<b>3.0</b>	<b>2.2–3.7</b>	<b>3,761</b>	<b>4.0</b>	<b>3.1–5.0</b>

Table M17: Mean HDL among all respondents

Age group (years)	Men			Women			Both sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
15–29	253	38.8	36.9–40.7	602	42.4	41.0–43.7	855	40.6	39.3–41.9
30–44	372	39.7	38.2–41.3	1,052	40.5	39.5–41.5	1,424	40.1	39.1–41.1
45–69	573	39.5	38.2–40.9	920	41.4	40.3–42.5	1,493	40.5	39.5–41.5
<b>15–69</b>	<b>1,198</b>	<b>39.2</b>	<b>38.0–40.5</b>	<b>2,574</b>	<b>41.6</b>	<b>40.6–42.5</b>	<b>3,772</b>	<b>40.4</b>	<b>39.5–41.4</b>

Table M18: Percentage of respondents with low HDL

Percentage of respondents with HDL <40 mg/dl				Percentage of respondents with HDL <50 mg/dl			
Age group (years)	n	Men		Age group (years)	n	Women	
		%	95% CI			%	95% CI
15–29	253	63.3	55.9–70.7	15–29	602	76.6	72.1–81.2
30–44	372	58.7	52.1–65.4	30–44	1,052	82.6	79.6–85.6
45–69	573	60.1	54.9–65.3	45–69	920	80.5	77.0–84.1
<b>15–69</b>	<b>1,198</b>	<b>61.2</b>	<b>56.6–65.8</b>	<b>15–69</b>	<b>2,574</b>	<b>79.3</b>	<b>76.5–82.2</b>

Table M19: Mean fasting triglycerides among all respondents

Age group (years)	Men			Women			Both sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
15–29	252	113.2	101.2–125.2	600	97.2	92.1–102.3	852	105.0	98.3–111.8
30–44	369	160.5	148.5–172.6	1,048	117.9	112.9–122.9	1,417	137.9	131.0–144.7
45–69	570	146.1	136.8–155.4	914	138.6	132.7–144.5	1,484	142.3	136.3–148.3
<b>15–69</b>	<b>1,191</b>	<b>134.7</b>	<b>126.8–142.5</b>	<b>2,562</b>	<b>114.1</b>	<b>110.2–117.9</b>	<b>3,753</b>	<b>124.1</b>	<b>119.3–128.9</b>

Table M20: Percentage of respondents with raised fasting triglycerides

Age group (years)	Men			Women			Both sexes		
	n	%	95% CI	n	%	95% CI	n	%	95% CI
<b>Fasting triglycerides ≥ 150 mg/dl</b>									
15–29	252	21.2	14.4–28.0	600	10.2	7.5–12.8	852	15.6	11.9–19.2
30–44	369	44.1	37.6–50.7	1,048	20.9	17.9–23.8	1,417	31.8	28.1–35.4
45–69	570	36.4	31.6–41.2	914	33.5	29.5–37.4	1,484	34.9	31.5–38.3
<b>15–69</b>	<b>1,191</b>	<b>31.4</b>	<b>27.1–35.8</b>	<b>2,562</b>	<b>19.4</b>	<b>17.3–21.4</b>	<b>3,753</b>	<b>25.2</b>	<b>22.7–27.7</b>
<b>Fasting triglycerides ≥ 180 mg/dl</b>									
15–29	252	16.1	9.8–22.4	600	5.7	3.6–7.8	852	10.8	7.4–14.2
30–44	369	33.2	27.4–39.0	1,048	13.1	10.6–15.5	1,417	22.5	19.3–25.7
45–69	570	24.0	20.0–28.1	914	21.9	18.5–25.3	1,484	22.9	20.1–25.8
<b>15–69</b>	<b>1,191</b>	<b>22.8</b>	<b>19.1–26.5</b>	<b>2,562</b>	<b>12.1</b>	<b>10.4–13.8</b>	<b>3,753</b>	<b>17.3</b>	<b>15.1–19.4</b>

Table M21: Mean LDL among all respondents

Age group (years)	Men			Women			Both sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
15–29	226	92.9	88.7–97.1	556	92.3	89.4–95.2	782	92.6	89.9–95.3
30–44	340	104.5	100.0–109.0	967	99.6	97.2–102.0	1,307	101.8	99.2–104.5
45–69	527	105.8	102.2–109.3	854	110.1	107.3–112.9	1,381	108.0	105.4–110.6
<b>15–69</b>	<b>1,093</b>	<b>99.6</b>	<b>96.8–102.4</b>	<b>2,377</b>	<b>99.1</b>	<b>97.0–101.2</b>	<b>3,470</b>	<b>99.3</b>	<b>97.3–101.3</b>

## Combined risks factors

Table S1: Summary of combined risk factors

Age group (years)	n	% With 0 risk factors	95% CI	% With 1–2 risk factors	95% CI	% With 3–5 risk factors	95% CI
<b>Men</b>							
15–44	689	0.1	0.0–0.2	86.4	83.7–89.2	13.5	10.7–16.3
45–69	622	0.2	0.0–0.5	66.3	61.8–70.7	33.5	29.1–37.9
<b>15–69</b>	<b>1,311</b>	<b>0.1</b>	<b>0.0–0.2</b>	<b>80.9</b>	<b>78.4–83.4</b>	<b>19.0</b>	<b>16.5–21.5</b>
<b>Women</b>							
15–44	1,773	0.7	0.0–1.4	93.0	91.4–94.5	6.3	5.0–7.6
45–69	969	0.6	0.0–1.2	73.9	70.2–77.6	25.5	21.8–29.2
<b>15–69</b>	<b>2,742</b>	<b>0.7</b>	<b>0.2–1.2</b>	<b>87.9</b>	<b>86.2–89.7</b>	<b>11.4</b>	<b>9.8–13.0</b>
<b>Both sexes</b>							
15–44	2,462	0.4	0.0–0.8	89.8	88.0–91.5	9.8	8.2–11.5
45–69	1,591	0.4	0.1–0.7	70.1	66.9–73.2	29.5	26.4–32.7
<b>15–69</b>	<b>4,053</b>	<b>0.4</b>	<b>0.1–0.7</b>	<b>84.5</b>	<b>82.7–86.2</b>	<b>15.1</b>	<b>13.5–16.8</b>

## Annex II. List of Steering Committee Members, Study Team and Data Collection Team

### Steering committee

SN	Name	Designation	Organisation
1	Dr Guna Raj Lohani	Executive Chief	Nepal Health Research Council
2	Prof Dr Chop Lal Bhusal	Ex-Executive Chairman	Nepal Health Research Council
3	Dr Baburam Marasini	Director	Epidemiology and Disease Control Division
4	Prof Ramesh Kant Adhikari	Professor	Kathmandu Medical College
5	Dr Laxmi Raj Pathak	Ex-Director General	Department of Health Services
6	Dr Shanker Pratap Singh	Ex-Member Secretary	Nepal Health Research Council
7	Dr Sunil Singh	Consultant Pathologist	Nepal Army Institute of Health Sciences
8	Prof Chitra Kumar Gurung	Member	Ethical Review Board
9	Dr Prakash Raj Regmi	Consultant Cardiologist	National Academy of Medical Sciences
10	Dr Kedar Narsingh KC	Professor	Institute of Medicine
11	Dr Ramesh Chokhani	Consultant Chest Physician	Norvic Hospital
12	Dr Anjani Kumar Jha	Consultant Radio Oncologist	BP Koirala Memorial Cancer Hospital
13	Dr Aarati Shah	Consultant Oncologist	National Academy of Medical Sciences
14	Dr Abhinav Vaidya	Associate Professor	Kathmandu Medical College
15	Dr Pradip Shrestha	Consultant Diabetologist	Institute of Medicine
16	Ms Sushhama Neupane	Research Officer	Nepal Health Research Council

### Study team

SN	Name	Designation	Organisation
1	Dr Guna Raj Lohani	Executive Chief	Nepal Health Research Council
2	Prof Dr Chop Lal Bhusal	Ex-Executive Chairman	Nepal Health Research Council
3	Dr Shanker Pratap Singh	Ex-Member Secretary	Nepal Health Research Council
4	Dr Sunil Singh	Consultant Pathologist	Nepal Army Institute of Health Sciences
5	Dr Abhinav Vaidya	Associate Professor	Kathmandu Medical College
6	Dr Suresh Mehata	Research Advisor	Nepal Health Sector Support Programme
7	Ms Sushhama Neupane	Research Officer	Nepal Health Research Council
8	Dr Frank Paulin	Public Health Administrator	WHO, Country Office Nepal
9	Dr Renu Garg Madanlal	Regional Advisor, NCD	WHO, SEARO
10	Dr Leanne Margaret Riley	Team Leader, Surveillance	Surveillance and Population-based Prevention Unit, WHO Headquarters
11	Dr Regina Guthold	Technical Officer, Surveillance	Surveillance and Population-based Prevention Unit, WHO Headquarters
12	Melanie Cowan	Technical Officer, Surveillance	Surveillance and Population-based Prevention Unit, WHO Headquarters
13	Dr Krishna Kumar Aryal	Research Officer	Nepal Health Research Council

## Supervisors and enumerators

### Supervisors

Mr Baivab Man Shrestha

Mr Anurag Singh Ghimire

### Laboratory technologists

Mr Laxman Panthi

Mr Lok Nath Chaudhary

Mr Sameer Basnet

### Laboratory technicians

Ms Lila Chaulagain

Ms Poonam Yadav

### Enumerators

Ms Laxmi Dhoju	Ms Renu Sharma
Mr Kiran Chatakuli	Ms Manju Pokhrel
Mr Roshan Ansari	Ms Samita Khadka
Mr Krishna Bahadur Ranabhat	Ms Chumma Bishwakarma
Mr Purna Bdr Gharti	Ms Jonny Shrestha
Ms Amrita Adhikari	Ms Parmilashree Shrestha
Ms Jharna Shrestha	Mr Prakash Kandel
Ms Samjhana Thapa	Mr Bishwanath Thakur
Mr Abhishek Kr Chaudary	Ms Sanju Shah
Mr Bishnu Khatri	Ms Yubika Ghimire
Mr Chandan Kr Pandey	

## Annex III. Survey Instruments



### WHO STEPS Instrument for Non Communicable Diseases Risk Factor Surveillance

Nepal

#### Survey information

Licatuion and date		Response	Code
1	Ward ID	_____	11
2	Ward Number	_____	12
3	Interviewer ID	_____	13
4	Date of completion of the instrument	_____ dd      mm      year	14



Conset, interview language and name		Response	Code
Participant Id number _____			
5	Consent has been read and obtained	Yes 1 No 2 <b>If NO, END</b>	15
6	Interview language	English 1 Nepali 2	16
7	Time of interview (24 hour clock)	_____ : _____ hrs            mins	17
8	Family surname	_____	18
9	First name	_____	19
Additional information that may be helpful			
10	Contact phone number where possible	_____	110

Record and file identification information (I5 to I10) separately from the completed questionnaire.

## STEP I. Demographic information

### Demographic information

Question	Response	Code																																		
11	Sex ( <i>record male female as observed</i> )  Male 1 Female 2	C1																																		
12	What is your date of birth?  <div style="text-align: center;"> <table style="margin: auto;"> <tr> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> </tr> <tr> <td colspan="11" style="text-align: center;"><i>If known, Go to C4</i></td> </tr> <tr> <td colspan="2" style="text-align: center;">dd</td> <td colspan="2" style="text-align: center;">mm</td> <td colspan="7" style="text-align: center;">year</td> </tr> </table> </div> Don't know 77 77 7777													<i>If known, Go to C4</i>											dd		mm		year							C2
<i>If known, Go to C4</i>																																				
dd		mm		year																																
13	How old are you?  Years <table style="display: inline-table; margin-left: 10px;"><tr><td style="border: 1px solid black; width: 20px; height: 20px;"></td><td style="border: 1px solid black; width: 20px; height: 20px;"></td></tr></table>			C3																																
14	In total, how many years have you spent in school or full-time study (excluding pre-school)?  Years <table style="display: inline-table; margin-left: 10px;"><tr><td style="border: 1px solid black; width: 20px; height: 20px;"></td><td style="border: 1px solid black; width: 20px; height: 20px;"></td></tr></table>			C4																																
15	What is the <b>highest level of education</b> you have completed?  No formal schooling 1  Less than primary school 2  Primary school completed 3  Secondary school completed 4  Higher secondary (10+2)/ PCL completed 5  Bachelor degree completed 6  Post graduate degree 7  Refused 88	C5																																		
16	What is your <b>ethnic background</b> ?  (USE CASTE CLASSIFICATION CARD)  Dalit 1  Disadvantaged Janajatis 2  Disadvantaged non-Dalit Terai caste groups 3  Religious minorities 4  Relatively advantaged Janajatis 5  Upper caste groups 6  Refused 88	C6																																		



Demographic information continued			
Question	Response	Code	
17	What is your <b>marital status</b> ?	Never married 1 Currently married 2 Separated 3 Divorced 4 Widowed 5 Cohabiting 6 Refused 88	C7
18	Which of the following best describes your <b>main work</b> status over the past 12 months?	Government employee 1 Non-government employee 2 Self-employed 3 Non-paid 4 Student 5 Homemaker 6 Retired 7 Unemployed (able to work) 8 Unemployed (unable to work) 9 Refused 88	C8
19	How many people older than 15 years, including yourself, live in your household?	Number of people <input type="text"/>	C9

## STEP I. Behavioural measurements

Tobacco use																															
Now I am going to ask you some questions about tobacco use.																															
Question	Response	Code																													
20	Do you <b>currently</b> smoke any <b>tobacco</b> products, such as cigarettes, cigars, pipes, bidis, hukahs or tamakhus?  (USE SHOWCARD)	Yes 1  No 2 <i>If No, go to T8</i>	T1																												
21	Do you currently smoke tobacco products <b>daily</b> ?	Yes 1 No 2	T2																												
22	How old were you when you <b>first started</b> smoking?	Age (years) <input type="text"/> <input type="text"/> <input type="text"/> <i>If known, go to T5a/T5aw</i> Don't know 77	T3																												
23	Do you remember how long ago it was?(RECORD ONLY 1, NOT ALL 3)  <i>Don't know 77</i>	In Years <input type="text"/> <input type="text"/> <input type="text"/> <i>If known, go to T5a/T5aw</i> OR in months <input type="text"/> <input type="text"/> <input type="text"/> <i>If known, go to T5a/T5aw</i> OR in weeks <input type="text"/> <input type="text"/> <input type="text"/>	T4a T4b T4c																												
24	On average, <b>how many</b> of the following products do you smoke <b>each day/week</b> ?  (IF LESS THAN DAILY, RECORD WEEKLY)  (RECORD FOR EACH TYPE, USE SHOWCARD)  <i>Don't know 7777</i>	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;"></th> <th style="width: 10%; text-align: center;">DAILY↓</th> <th style="width: 10%; text-align: center;">WEEKLY↓</th> <th style="width: 40%;"></th> </tr> </thead> <tbody> <tr> <td>Manufactured cigarettes</td> <td style="text-align: center;"><input type="text"/></td> <td style="text-align: center;"><input type="text"/></td> <td style="vertical-align: top;">T5a/T5aw</td> </tr> <tr> <td>Hand-rolled cigarettes</td> <td style="text-align: center;"><input type="text"/></td> <td style="text-align: center;"><input type="text"/></td> <td style="vertical-align: top;">T5b/T5bw</td> </tr> <tr> <td>Pipes full of tobacco</td> <td style="text-align: center;"><input type="text"/></td> <td style="text-align: center;"><input type="text"/></td> <td style="vertical-align: top;">T5c/T5cw</td> </tr> <tr> <td>Cigars, cheroots, cigarillos</td> <td style="text-align: center;"><input type="text"/></td> <td style="text-align: center;"><input type="text"/></td> <td style="vertical-align: top;">T5d/T5dw</td> </tr> <tr> <td>Other</td> <td style="text-align: center;"><input type="text"/></td> <td style="text-align: center;"><input type="text"/></td> <td style="vertical-align: top;">T5e/T5ew</td> </tr> <tr> <td>Other (please specify):</td> <td colspan="2" style="text-align: center;"><input type="text"/></td> <td style="vertical-align: top;">T5other/ T5otherw</td> </tr> </tbody> </table>		DAILY↓	WEEKLY↓		Manufactured cigarettes	<input type="text"/>	<input type="text"/>	T5a/T5aw	Hand-rolled cigarettes	<input type="text"/>	<input type="text"/>	T5b/T5bw	Pipes full of tobacco	<input type="text"/>	<input type="text"/>	T5c/T5cw	Cigars, cheroots, cigarillos	<input type="text"/>	<input type="text"/>	T5d/T5dw	Other	<input type="text"/>	<input type="text"/>	T5e/T5ew	Other (please specify):	<input type="text"/>		T5other/ T5otherw	T5a/T5aw T5b/T5bw T5c/T5cw T5d/T5dw T5e/T5ew T5other/ T5otherw
	DAILY↓	WEEKLY↓																													
Manufactured cigarettes	<input type="text"/>	<input type="text"/>	T5a/T5aw																												
Hand-rolled cigarettes	<input type="text"/>	<input type="text"/>	T5b/T5bw																												
Pipes full of tobacco	<input type="text"/>	<input type="text"/>	T5c/T5cw																												
Cigars, cheroots, cigarillos	<input type="text"/>	<input type="text"/>	T5d/T5dw																												
Other	<input type="text"/>	<input type="text"/>	T5e/T5ew																												
Other (please specify):	<input type="text"/>		T5other/ T5otherw																												
25	During the past 12 months, have you tried to <b>stop smoking</b> ?	Yes 1 No 2	T6																												
26	During any visit to a doctor or other health worker in the past 12 months, were you advised to quit smoking tobacco?	Yes 1 <i>If T2=Yes, go to T12; if T2=No, go to T9</i> No 2 <i>If T2=Yes, go to T12; if T2=No, go to T9</i> No visit during the past 12 months 3 <i>If T2=Yes, go to T12; if T2=No, go to T9</i>	T7																												
27	In the past, did you <b>ever smoke</b> any tobacco products? (USE SHOWCARD)	Yes 1 No 2 <i>If No, go to T12</i>	T8																												
28	In the past, did you <b>ever smoke daily</b> ?	Yes 1 <i>If T1=Yes, go to T12, else go to T10</i> No 2 <i>If T1=Yes, go to T12, else go to T10</i>	T9																												

Tobacco use continued				
Question	Response		Code	
29	How old were you when you <b>stopped</b> smoking?	Age (years) <input type="text"/> <input type="text"/> <i>If known, go to T12</i> Don't know 77	T10	
30	How <b>long ago</b> did you stop smoking?  (RECORD ONLY 1, NOT ALL 3)  <i>Don't know 77</i>	Years ago <input type="text"/> <input type="text"/> <i>If known, go to T12</i>	T11a	
		OR Months ago <input type="text"/> <input type="text"/> <i>If known, go to T12</i>	T11b	
		OR Weeks ago <input type="text"/> <input type="text"/>	T11c	
31	Do you <b>currently use</b> any <b>smokeless tobacco</b> products such as [ <i>snuff, chewing tobacco, nasal snuff, khaini, surti, gutka</i> ]? (USE SHOWCARD)	Yes 1 No 2 <i>If no, go to T15</i>	T12	
32	Do you <b>currently use smokeless tobacco</b> products <b>daily</b> ?	Yes 1 No 2 <i>If no, go to T14aw</i>	T13	
33	On average, how many <b>times a day/week</b> do you use ....  (IF LESS THAN DAILY, RECORD WEEKLY)  (RECORD FOR EACH TYPE, USE SHOWCARD)  <i>Don't know 7777</i>	DAILY↓      WEEKLY↓		
		Snuff, by mouth <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	T14a/T14aw
		Snuff, by nose <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	T14b/T14bw
		Chewing tobacco <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	T14c/T14cw
		Betel <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	T14d/ T14dw
	Other <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	T14e/T14ew	
	Other (please specify): <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<i>If other, go to T14other, if T13=No, go to T16, else go to T17</i> <i>If T13=No, go to T16, else go to T17</i>	T14other/ T14 otherw	
34	In the <b>past</b> , did you <b>ever use</b> smokeless tobacco products such as [ <i>snuff, chewing tobacco, nasal snuff, khaini, surti, gutka</i> ]?	Yes 1 No 2 <i>If no, go to T17</i>	T15	
35	In the <b>past</b> , did you <b>ever use</b> smokeless tobacco products such as [ <i>snuff, chewing tobacco, nasal snuff, khaini, surti, gutka</i> ] <b>daily</b> ?	Yes 1 No 2	T16	
36	During the past 7 days, on how many days did someone <b>in your home</b> smoke when you were present?	Number of days <input type="text"/> <input type="text"/> <input type="text"/> Don't know 77	T17	
37	During the past 7 days, on how many days did someone smoke in closed areas <b>in your workplace</b> (in the building, in a work area or a specific office) when you were present?	Number of days <input type="text"/> <input type="text"/> <input type="text"/> Don't know or don't work in a closed area 77	T18	

Alcohol consumption			
The next questions ask about the consumption of alcohol.			
Question	Response	Code	
38	Have you <b>ever</b> consumed an alcoholic drink such as beer, wine, spirits, fermented cider or <i>jaad, raksi, tungba</i> ? (USE SHOWCARD)	Yes 1 No 2 <i>If no, go to D1</i>	A1a
39	Have you consumed an alcoholic drink within the <b>past 12 months</b> ?	Yes 1 No 2 <i>If no, go to D1</i>	A1b
40	During the past 12 months, <b>how frequently</b> have you had at least one alcoholic drink? (READ RESPONSES, USE SHOWCARD)	Daily 1 5–6 days per week 2 1–4 days per week 3 1–3 days per month 4 Less than once a month 5	A2
41	Have you consumed an alcoholic drink within the <b>past 30 days</b> ?	Yes 1 No 2 <i>If no, go to D1</i>	A3
42	During the past 30 days, on how many <b>occasions</b> did you have at least one alcoholic drink?	Number <input type="text"/> Don't know 77	A4
43	During the past 30 days, when you drank alcohol, <b>on average</b> , how many <b>standard alcoholic drinks</b> did you have during one drinking occasion? (USE SHOWCARD)	Number <input type="text"/> Don't know 77	A5
44	During the past 30 days, what was the <b>largest number</b> of standard alcoholic drinks you had on a single occasion, counting all types of alcoholic drinks together?	Largest number <input type="text"/> Don't Know 77	A6
45	During the past 30 days, how many times did you have for <b>men: five or more</b> for <b>women: four or more</b> standard alcoholic drinks in a single drinking occasion?	Number of times <input type="text"/> Don't know 77	A7
46	During the past 30 days, when you consumed an alcoholic drink, how often was it with meals? Please do not count snacks.	Usually with meals 1 Sometimes with meals 2 Rarely with meals 3 Never with meals 4	A8
47	During each of the <b>past 7 days</b> , how many standard alcoholic drinks did you have each day? (USE SHOWCARD)  <i>Don't know 77</i>	Monday <input type="text"/> Tuesday <input type="text"/> Wednesday <input type="text"/> Thursday <input type="text"/> Friday <input type="text"/> Saturday <input type="text"/> Sunday <input type="text"/>	A9a A9b A9c A9d A9e A9f A9g



## Dietary salt

The next questions ask about your knowledge, attitudes and behaviour towards dietary salt. Dietary salt includes ordinary table salt, unrefined salt such as sea salt, iodised salt and salty sauces such as soya sauce or fish sauce. The following questions are on adding salt to food right before you eat it, how food is prepared in your home, eating processed foods that are high in salt such as *chau chau*, *Lays chips*, *Kurkure*, salty biscuits, canned fish, dry meat, *titura*, preserved pickle, *bhujia*, mixtures, *papad* etc. and on controlling your salt intake. Please answer the questions even if you consider yourself to eat a diet low in salt.

Question		Response	Code
56	How often do you <b>add salt</b> to your food before you eat it or as you are eating it?  (SELECT ONLY ONE)	Always 1 Often 2 Sometimes 3 Rarely 4 Never 5 Don't know 77	DS1
57	How often is <b>salt added</b> in cooking or preparing foods in your household?	Always 1 Often 2 Sometimes 3 Rarely 4 Never 5 Don't know 77	DS2
58	How often do you eat <b>processed food high in salt</b> , such as <i>chau chau</i> , <i>Lays</i> , <i>Kurkure</i> , <i>salty biscuits</i> , <i>canned fish</i> , <i>dry meat</i> , <i>titura</i> , <i>preserved pickle</i> , <i>bhujia</i> , <i>mixtures</i> , <i>papad</i> etc.?  (USE SHOWCARD)	Always 1 Often 2 Sometimes 3 Rarely 4 Never 5 Don't know 77	DS3
59	<b>How much salt</b> do you think you consume?	Far too much 1 Too much 2 Just the right amount 3 Too little 4 Far too little 5 Don't know 77	DS4
60	Do you think that too much salt in your diet could cause a serious <b>health problem</b> ?	Yes 1 No 2 Don't know 77	DS5
61	How important to you is <b>lowering the salt</b> in your diet?	Very important 1 Somewhat important 2 Not at all important 3 Don't know 77	DS6

Dietary salt continued			
Question	Response	Code	
62	Do you do any of the following on a regular basis to <b>control your salt intake?</b> (RECORD FOR EACH)		
	Avoid/minimise consumption of processed foods	Yes 1 No 2	DS7a
	Look at the salt or sodium labels on food	Yes 1 No 2	DS7b
	Eat meals without adding salt at the table	Yes 1 No 2	DS7c
	Buy low salt/sodium alternatives	Yes 1 No 2	DS7d
	Cook meals without adding salt	Yes 1 No 2	DS7e
	Use spices other than salt when cooking	Yes 1 No 2	DS7f
	Avoid eating out	Yes 1 No 2	DS7g
	Other	Yes 1 <i>If Yes, go to DS7other</i> No 2	DS7h
	Other (please specify)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	DS7other
63	Which type of salt do you use?	Crystal Salt 1 Powdered Salt without logo 2 Powdered salt with two children logo 3 Others 4 (If others go to X3 other Others (Please Specify) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	X3 X3 Other
64	How much salt does your family consume?(Fill only one option)	milligrams in a day <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	X4
	1 pathi crystal salt = 3,000 mg	milligrams in a week <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
	1 mana crystal salt = 375 mg	milligrams in a month <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
	1packet powdered salt = 1,000 mg	Don't know 77	

Oral health			
The next questions ask about your oral health status and related behaviours.			
Question		Response	Code
65	How many <b>natural teeth</b> do you have?	No natural teeth 1 <i>If no natural teeth, go to O4</i> 1 to 9 teeth 2 10 to 19 teeth 3 20 teeth or more 4 Don't know 77	O1
66	How would you describe the <b>state of your teeth</b> ?	Excellent 1 Very good 2 Good 3 Average 4 Poor 5 Very poor 6 Don't know 77	O2
67	How would you describe the <b>state of your gums</b> ?	Excellent 1 Very good 2 Good 3 Average 4 Poor 5 Very poor 6 Don't know 77	O3
68	Do you have any <b>removable dentures</b> ?	Yes 1 No 2 <i>If no, go to O6</i>	O4
Which of the following removable dentures do you have? (RECORD FOR EACH)			
69	An upper jaw denture	Yes 1 No 2	O5a
	A lower jaw denture	Yes 1 No 2	O5b
70	During the past 12 months, did your teeth or mouth cause any <b>pain or discomfort</b> ?	Yes 1 No 2	O6
71	How long has it been since you last <b>saw a dentist</b> ?	Less than 6 months 1 6–12 months 2 More than 1 year, but less than 2 years 3 2 or more years, but less than 5 years 4 5 or more years 5 Never received dental care 6 <i>If never, go to O9</i>	O7



72	What was the <b>main reason for your last visit</b> to the dentist?	Consultation/advice 1	O8
		Pain or trouble with teeth, gums or mouth 2	
73	How <b>often do you clean</b> your teeth?	Treatment / Follow-up treatment 3	O9
		Routine check-up treatment 4	
		Other 5 <i>If other, go to O8other</i>	
		Other (please specify) <input type="text"/>	
		Never 1 <i>If Never, go to O13a</i>	
		Once a month 2	
		2-3 times a month 3	
		Once a week 4	
		2-6 times a week 5	
		Once a day 6	
		Twice or more a day 7	

Oral health continued			
Question		Response	Code
74	Do you use <b>toothpaste</b> to clean your teeth?	Yes 1	O10
		No 2 <i>If no, go to O12a</i>	
75	Do you use <b>toothpaste</b> containing <b>fluoride</b> ?	Yes 1	O11
		No 2	
		Don't know 77	
76	Do you use any of the following to <b>clean your teeth</b> ? (RECORD FOR EACH)		
	Toothbrush	Yes 1 No 2	O12a
	Wooden toothpick	Yes 1 No 2	O12b
	Plastic toothpick	Yes 1 No 2	O12c
	Thread (dental floss)	Yes 1 No 2	O12d
	Charcoal	Yes 1 No 2	O12e
	Chewstick/miswak	Yes 1 No 2	O12f
	Other	Yes 1 <i>If Yes, go to O12other</i> No 2	O12g
	Other (please specify)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	O12 other
	77	Have you <b>experienced any of the following problems</b> during the past 12 months because of the <b>state of your teeth</b> ? (RECORD FOR EACH)	
Difficulty in chewing foods		Yes 1 No 2	O13a
Difficulty with speech/trouble pronouncing words		Yes 1 No 2	O13b
Felt tense because of problems with teeth or mouth		Yes 1 No 2	O13c
Embarrassed about appearance of teeth		Yes 1 No 2	O13d

	Avoided smiling because of teeth	Yes 1 No 2	O13e
	Sleep is often interrupted	Yes 1 No 2	O13f
	Days not at work because of teeth or mouth	Yes 1 No 2	O13g
	Difficulty doing usual activities	Yes 1 No 2	O13h
	Less tolerant of spouse or people close to you	Yes 1 No 2	O13i
	Reduced participation in social activities	Yes 1 No 2	O13j
78	Are you currently suffering from dental caries?	Yes 1 No 2	O14

Physical activity		
<p>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. Think of work as the things that you have to do such as paid or unpaid work, study or training, household chores, harvesting food and crops, fishing or hunting for food, seeking employment, walking uphill or downhill for routine work. In answering the following questions 'vigorous-intensity activities' are activities that require hard physical effort and cause large increases in breathing or heart rate, 'moderate-intensity activities' are activities that require moderate physical effort and cause small increases in breathing or heart rate.</p>		
Question	Response	Code
<b>Work</b>		
79	<p>Does your work involve vigorous-intensity activity that causes large increases in breathing or heart rate [<i>carrying or lifting heavy loads, digging or construction work</i>] for at least 10 minutes continuously? (USE SHOWCARD)</p> <p>Yes 1</p> <p>No 2 <i>If no, go to P4</i></p>	P1
80	<p>In a typical week, on how many days do you do vigorous-intensity activities as part of your work?</p> <p>Number of days <input type="text"/></p>	P2
81	<p>How much time do you spend doing vigorous-intensity activities at work on a typical day?</p> <p>Hours: minutes <input type="text"/> : <input type="text"/></p> <p>hrs mins</p>	P3 (a-b)
82	<p>Does your work involve moderate-intensity activity that causes small increases in breathing or heart rate [<i>brisk walking, carrying light loads, manual washing clothes, mopping of floor, gardening at home</i>] for at least 10 minutes continuously?</p> <p>[INSERT EXAMPLES] (USE SHOWCARD)</p> <p>Yes 1</p> <p>No 2 <i>If no, go to P 7</i></p>	P4
83	<p>In a typical week, on how many days do you do moderate-intensity activities as part of your work?</p> <p>Number of days <input type="text"/></p>	P5
84	<p>How much time do you spend doing moderate-intensity activities at work on a typical day?</p> <p>Hours: minutes <input type="text"/> : <input type="text"/></p> <p>hrs mins</p>	P6 (a-b)
<b>Travel to and from places</b>		
<p>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.</p>		
85	<p>Do you walk or use a bicycle (<i>pedal cycle</i>) for at least 10 minutes continuously to get to and from places?</p> <p>Yes 1</p> <p>No 2 <i>If no, go to P 10</i></p>	P7
86	<p>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?</p> <p>Number of days <input type="text"/></p>	P8
87	<p>How much time do you spend walking or bicycling for travel on a typical day?</p> <p>Hours: minutes <input type="text"/> : <input type="text"/></p> <p>hrs mins</p>	P9 (a-b)

Physical activity continued			
Question		Response	Code
<b>Recreational activity</b>			
The next questions exclude the work and transport activities that you have already mentioned. Now I would like to ask you about sports, fitness and recreational activities (leisure) like cycling, swimming, volleyball, badminton, yoga.			
88	Do you do any vigorous-intensity sports, fitness or recreational (leisure) activities that cause large increases in breathing or heart rate [ <i>running or football</i> ] for at least 10 minutes continuously?  (USE SHOWCARD)	Yes 1  No 2 <i>If no, go to P 13</i>	P10
89	In a typical week, on how many days do you do vigorous-intensity sports, fitness or recreational (leisure) activities?	Number of days <input type="text"/>	P11
90	How much time do you spend doing vigorous-intensity sports, fitness or recreational activities on a typical day?	Hours: minutes <input type="text"/> : <input type="text"/> hrs        mins	P12 (a-b)
91	Do you do any moderate-intensity sports, fitness or recreational (leisure) activities that cause a small increase in breathing or heart rate [ <i>brisk walking, cycling, swimming, volleyball, badminton, yoga</i> ] for at least 10 minutes continuously?  [INSERT EXAMPLES] (USE SHOWCARD)	Yes 1  No 2 <i>If no, go to P16</i>	P13
92	In a typical week, on how many days do you do moderate-intensity sports, fitness or recreational (leisure) activities?	Number of days <input type="text"/>	P14
93	How much time do you spend doing moderate-intensity sports, fitness or recreational (leisure) activities on a typical day?	Hours: minutes <input type="text"/> : <input type="text"/> hrs        mins	P15 (a-b)

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, travelling in car or bus, reading, playing cards or watching television, but does not include time spent sleeping.  [INSERT EXAMPLES] (USE SHOWCARD)			
94	How much time do you usually spend sitting or reclining on a typical day?	Hours: minutes <input type="text"/> : <input type="text"/> hrs        mins	P16 (a-b)

Housing and energy (Indoor air pollution)			
The next questions ask about housing and energy.			
Question	Response	Code	
95	Observe the roof material of house (Don't ask the participants, just observe yourself)	Grass/leaves/reeds/thatch/wood/ mud/bamboo or mixed 1 Stone 2 Concrete 3 Tiles, slate, shingles 4 Bricks, stones and lime 5 Corrugated iron, zinc or other metal sheets 6 Others 7 (If others go to X5 other) Others (Please specify) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	X5  X5 Other
96	Observe the wall materials of house	Grass/leaves/reeds/bamboos /thatch or mixed 1 Mud/dirt 2 Unfired bricks 3 Wood 4 Fired bricks 5 Stone 6 Cement concrete 7 Others 8 (If others go to X6 other) Others (please specify) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	X6  X6 Other
97	Observe the floor materials of house	Mud/dirt 1 Wood/planks 2 Bamboo or logs 3 Cement 4 Bricks, stones and lime 5 Others 6 (If others go to X7 other) Others (please specify) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	X7  X7 Other
98	Do you have a separate room that is used as a kitchen?	Yes 1 No 2	X8
99	What is the main fuel for cooking in your house?	Wood/timber 1 Kerosene 2 LPG 3 Cow dung 4 Bio-gas 5 Straw and thatch 6 Others 9 (If others go to X9 other) Others (please specify) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	X9  X9 Other

Housing and energy continued			
Question	Response	Code	
100	What type of stove do you use in house	<p>Open fire 1</p> <p>Mud stove 2</p> <p>Smokeless stove 3</p> <p>Kerosene stove 4</p> <p>Gas stove 5</p> <p>Others 6 (If others go to X10 other)</p> <p>Others (please specify) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p>	<p>X10</p> <p>X10 Other</p>
101	What is the main source of lighting for your house?	<p>Kerosene 1</p> <p>Pine wood fuel 2</p> <p>Solar 3</p> <p>Candle 4</p> <p>Electricity 5</p> <p>Others 6 (If others go to X11 other)</p> <p>Others (please specify) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p>	<p>X11</p> <p>X11 Other</p>

History of raised blood pressure			
Question		Response	Code
102	Have you ever had your blood pressure measured by a doctor or other health worker?	Yes 1	H1
		No 2 <i>If no, go to H6</i>	
103	Have you ever been told by a doctor or other health worker that you have raised blood pressure or hypertension?	Yes 1	H2a
		No 2 <i>If no, go to H6</i>	
104	Have you been told in the past 12 months?	Yes 1	H2b
		No 2	

105	Are you currently receiving any of the following treatments/advice for high blood pressure prescribed by a doctor or other health worker?		
	Drugs (medication) that you have taken in the past two weeks	Yes 1	H3a
		No 2	
	Advice to reduce salt intake	Yes 1	H3b
		No 2	
	Advice or treatment to lose weight	Yes 1	H3c
No 2			
Advice or treatment to stop smoking	Yes 1	H3d	
	No 2		
Advice to start or do more exercise	Yes 1	H3e	
	No 2		
106	Have you ever seen a traditional healer for raised blood pressure or hypertension?	Yes 1	H4
		No 2	
107	Are you currently taking any herbal or traditional remedy for your raised blood pressure?	Yes 1	H5
		No 2	



History of diabetes			
Question	Response	Code	
108	Have you ever had your blood glucose measured by a doctor or other health worker?	Yes 1 No 2 <i>If no, go to M1</i>	H6
109	Have you ever been told by a doctor or other health worker that you have raised blood glucose or diabetes?	Yes 1 No 2 <i>If no, go to M1</i>	H7a
110	Have you been told in the past 12 months?	Yes 1 No 2	H7b
111	Are you currently receiving any of the following treatments/advice for diabetes prescribed by a doctor or other health worker?		
	Insulin	Yes 1 No 2	H8a
	Drugs (medication) that you have taken in the past two weeks	Yes 1 No 2	H8b
	Special prescribed diet	Yes 1 No 2	H8c
	Advice or treatment to lose weight	Yes 1 No 2	H8d
	Advice or treatment to stop smoking	Yes 1 No 2	H8e
	Advice to start or do more exercise	Yes 1 No 2	H8f
112	Have you ever seen a traditional healer for diabetes or raised blood glucose?	Yes 1 No 2	H9
113	Are you currently taking any herbal or traditional remedy for your diabetes?	Yes 1 No 2	H10

## STEP II. Physical measurements

CORE: Height and weight			
Question	Response		Code
114	Interviewer ID	_____	M1
115	Device IDs for height and weight	Height _____	M2a
		Weight _____	M2b
116	Height	in centimetres (cm) _____	M3
117	Weight	in kilograms (kg) _____	M4
	<i>If too large for scale 666.6</i>		
118	<b>For women:</b> Are you pregnant?	Yes 1 <i>If yes, go to M 8</i>	M5
		No 2	
CORE: Waist			
119	Device ID for waist	_____	M6
120	Waist circumference	in Centimetres (cm) _____	M7
CORE: Blood pressure			
121	Interviewer ID	_____	M8
122	Device ID for blood pressure	_____	M9
123	Cuff size used	Small 1	M10
		Medium 2	
		Large 3	
124	Reading 1	Systolic ( mmHg) _____	M11a
		Diastolic (mmHg) _____	M11b
125	Reading 2	Systolic ( mmHg) _____	M12a
		Diastolic (mmHg) _____	M12b
126	Reading 3	Systolic ( mmHg) _____	M13a
		Diastolic (mmHg) _____	M13b
127	During the past two weeks, have you been treated for raised blood pressure with drugs (medication) prescribed by a doctor or other health worker?	Yes 1	M14
		No 2	
Hip circumference and heart rate			
128	Hip circumference	in centimetres (cm) _____	M15
129	Heart rate		
	Reading 1	Beats per minute _____	M16a
	Reading 2	Beats per minute _____	M16b
	Reading 3	Beats per minute _____	M16c

### STEP III Biochemical measurements

Blood glucose			
Question	Response	Code	
130	During the past 12 hours have you had anything to eat or drink, other than water?	Yes 1 No 2	B1
131	Technician ID		B2
132	Device ID		B3
133	Time of day blood specimen taken (24 hour clock)	Hours: minutes             :             hrs      mins	B4
134	Fasting blood glucose	mg/dl                            .	B5
135	Today, have you taken insulin or other drugs (medication) that have been prescribed by a doctor or other health worker for raised blood glucose?	Yes 1 No 2	B6
Blood lipids			
136	Device ID		B7
137	Total cholesterol	mg/dl                            .	B8
138	During the past two weeks, have you been treated for raised cholesterol with drugs (medication) prescribed by a doctor or other health worker?	Yes 1 No 2	B9
Triglycerides and HDL cholesterol			
139	Triglycerides	mg/dl                            .	B10
140	HDL Cholesterol	mg/dl                            .	B11

## Annex IV. Caste Classification Card

### 1. Dalit

Hill: Kami, Damai, Sarkii, Gaine, Badi

Terai: Chamar, Mushar, Dusah, Paswan, Tatma, Khatway, Bantar, Dom, Chiadimar, Dhobi, Halkhor

### 2. Disadvantaged janajati

Hill: Magar, Tamang, Rai, Limbu, Sherpa, Bhote, Walung, Byansi, Hyolomo, Garrti/Bhujel, Kuumal, Sunar, Baramu, Pahari, Yakkah, Chhantal, Jirel, Darai, Dura, Majhi, Danuwar, Thami, Lepcha, Chaepang, Bote, Raji, Hayu, Raute, Kusunda

Terai: Tharu, Dhanuk, Rajbansi, Tajpuria, Gangai, Dhimarl, Meche, Kisan, Munda, Santhal/Satar, Dhangad/Jhangad, Koche, Pattarkatta/Kusbadiay

### 3. Disadvantaged non-Dalit Terai caste groups

Yadav, Teli, Kalwar, Sudhi, Sonar, Lohar, Koiri, Kurmi, Kanu, Haluwai, Hajam/Thakur, Badhe, Bahae, Rajba, Kewat, Mallah, Nuniya, Kumhar, Kahar, Lodhar, Bing/Banda, Bhediyar, Mali, Kumar, Dhunia

### 4. Religious minorities

Muslims, Churoute

### 5. Relatively advantaged janajatis

Newar, Thakali, Gurung

### 6. Upper caste groups

Brahman (hill), Chhetri, Thakuri, Sanyasi, Brahman (Terai), Rajput, Kayastha, Baniya, Marwadi, Jaine, Nuraang, Bengali

## Annex V. Show Cards

### A. Tobacco products



Cigarettes



Hookah



Bidi



Betel leaf



Cigar



Chewing tobacco



Pipe



Snuff available in wet and dry form

## B. Alcohol

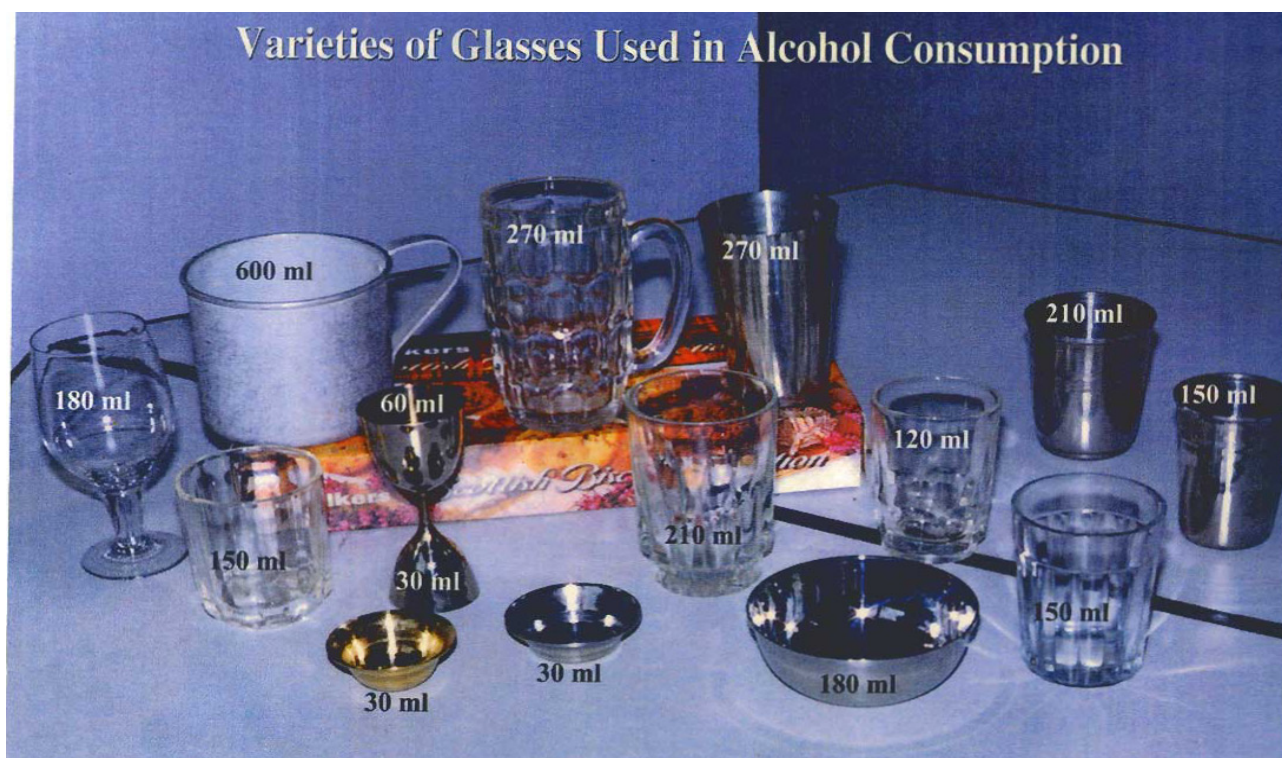
### Calculation of standard drink

Types of alcohol	Concentration of alcohol	1 standard drink
Beer, jaand and tongba	5%	250 ml
Local raksi	27%	45 ml
Whisky, vodka (spirits), rum	40%	30 ml
Wine (red and white)	12%	105 ml

**Standard drink:** One standard drink = 10 grams alcohol




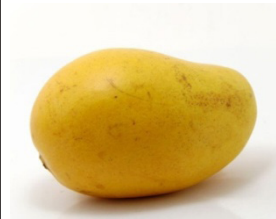



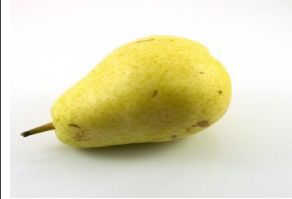

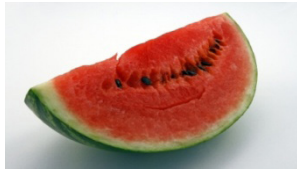






Calculation formula = Volume of alcohol\*percentage of alcohol\*specific gravity of ethyl alcohol (0.789)

The following varieties of glasses were showed to respondents for calculation of standard drink.



### C. Diet (a typical fruit and vegetable and serving size)

#### Fruit

<b>JACK FRUIT</b> 	<b>BANANA</b> 	 <b>GRAPES</b>	<b>MANGO</b> 
<b>APPLE</b> 	<b>ORANGE</b> 	<b>PEACH</b> 	<b>PEAR</b> 
<b>STRAWBERRIES</b> 	<b>WATERMELON</b> 	<b>PINEAPPLE</b> 	<b>LYCHEES</b> 
<b>POMELO</b> 	<b>PLUM</b> 	<b>GRAPEFRUIT</b> 	<b>GUAVA</b> 

**Serving size:** One standard serving = 80 grams

Fruit	1 Serving size
Apple, banana, orange	1 medium size piece
Chopped, cooked or canned fruit	½ cup
Fruit juice	½ cup juice from fruit, not artificially flavoured
Vegetables	
Raw green leafy vegetables	1 cup
Other vegetables cooked/chopped	½ cup
Vegetable juice	½ cup

## D. Typical physical activities

### Vigorous activities



Ploughing field



Carrying heavy load



Digging ditch



Cycle rickshaw driving

### Moderate activities



Housework and domestic chores



Kitchen Work



Gardening



Weaving



Work-related physical activity		Leisure/spare time-related physical activity	
<b>MODERATE-intensity activities</b> Makes you breathe somewhat harder than normal	<b>VIGOROUS- intensity activities</b> Makes you breathe much harder than normal	<b>MODERATE-intensity activities</b> Makes you breathe somewhat harder than normal	<b>VIGOROUS-intensity activities</b> Makes you breathe much harder than normal
<b>Examples:</b> <ul style="list-style-type: none"> <li>• Cleaning (vacuuming, mopping, polishing, scrubbing, sweeping, ironing)</li> <li>• Washing (beating and brushing carpets, wringing clothes (by hand))</li> <li>• Gardening</li> <li>• Milking cow (by hand)</li> <li>• Planting and harvesting crops</li> <li>• Digging dry soil (with spade)</li> <li>• Weaving</li> <li>• Woodwork (chiselling, sawing softwood)</li> <li>• Mixing cement (with shovel)</li> <li>• Labouring (pushing loaded wheelbarrow, operating jack hammer)</li> <li>• Walking with load on head</li> <li>• Drawing water</li> <li>• Tending animals</li> </ul>	<b>Examples:</b> <ul style="list-style-type: none"> <li>• Forestry (cutting, chopping, carrying wood)</li> <li>• Sawing hard-wood</li> <li>• Ploughing</li> <li>• Cutting crops (sugar cane)</li> <li>• Gardening (digging)</li> <li>• Grinding (with pestle)</li> <li>• Labouring (shovelling sand)</li> <li>• Loading furniture (stoves, fridge)</li> <li>• Instructing spinning (fitness)</li> <li>• Instructing sports aerobics</li> <li>• Sorting postal parcels (fast pace)</li> <li>• Cycle rickshaw driving</li> </ul>	<b>Examples:</b> <ul style="list-style-type: none"> <li>• Cycling</li> <li>• Jogging</li> <li>• Dancing</li> <li>• Horse riding</li> <li>• Tai chi</li> <li>• Yoga</li> <li>• Pilates</li> <li>• Low-impact aerobics</li> <li>• Cricket</li> </ul>	<b>Examples:</b> <ul style="list-style-type: none"> <li>• Soccer</li> <li>• Rugby</li> <li>• Tennis</li> <li>• High-impact aerobics</li> <li>• Aqua aerobics</li> <li>• Ballet dancing</li> <li>• Fast swimming</li> </ul>

## **Annex VI: Reference Laboratories**

National Public Health Laboratory, Kathmandu, Nepal

Kantipur Hospital, Kathmandu, Nepal

BP Koirala Institute of Health Science (BPKIHS), Dharan, Nepal

BP Koirala Cancer Hospital, Chitwan, Nepal

Nepalgunj Medical College, Kohalpur, Nepal

Manipal Medical College, Pokhara, Nepal



*Published by*

**Nepal Health Research Council (NHRC)**

Ramshah Path, Kathmandu, Nepal

Phone: 977-1-4254220, Fax: 977-1-4262469

E-mail: [nhrc@nhrc.org.np](mailto:nhrc@nhrc.org.np)

Website: [www.nhrc.org.np](http://www.nhrc.org.np)