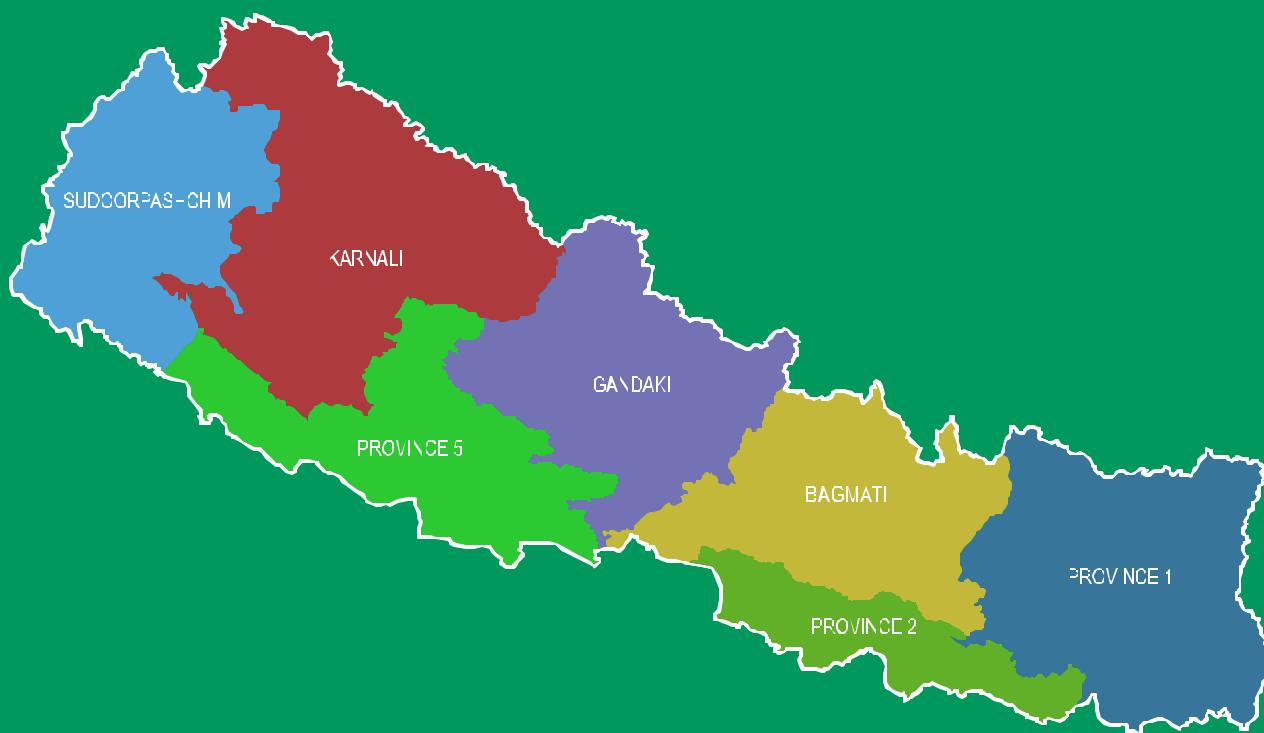




# Noncommunicable Disease Risk Factors: STEPS Survey Nepal 2019





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# **Noncommunicable Disease Risk Factors: STEPS Survey Nepal 2019**

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## Foreword

In recent years, noncommunicable diseases (NCDs) have globally shown increasing impact on population health with leading cause of premature deaths. Nepal is facing increasing burden of NCDs resulting significant health, social and economic consequences. This increased burden is attributed to many social determinants like unhealthy lifestyles, globalization, trade and marketing, demographic and economic transitions. Nepal has taken several steps in the control of NCDs through formulation of multisectoral NCDs action plan for prevention and control of NCDs (2014-2020). Implementing such policies into practice requires knowledge of the burden of NCDs and its risk factors. Moreover, there are no routinely available nationwide prevalence studies on NCDs and its risk factors. Hence, this NCD STEPs risk factors survey provides very useful information for monitoring progress of NCDs prevention and control of NCDs in Nepal.

As a measure of assessing the prevalence of risk factors of NCDs in the country, this National NCD risk factor survey using the WHO STEPS tool was carried out with the scientific standards, applying the standardized tools developed by the WHO, to study status and trends of the common risk factors of NCDs in Nepal.

I believe that this report provides evidence on status of NCDs and its risk factors in Nepal which should prove useful for the concerned organizations to focus and contribute towards the prevention, control and reduction of NCD burden and its risk factors. The finding of this survey also helps to monitor and report on the progress of NCD related work as well as provides evidence for monitoring of the progress of multisectoral action plans 2014-2020. In the base of this evidence, policy makers and planner will be better equipped to make a new national action plan for the prevention and control of non-communicable diseases in Nepal.

On the behalf of Government of Nepal, Ministry of Health and Population, I would like to take this opportunity to reveal our commitment that we will routinely review the magnitude of NCDs and their socioeconomic impact across the country, discuss the political and policy relevance addressing NCDs and identify the challenges, opportunities, and actions to be recommended for integrating the prevention and control of NCDs in Nepal. Finally, I would like to congratulate to team of NHRC and believes that this report will help Government of Nepal in developing new strategies to prevent and control the burden of non-communicable disease in Nepal.

12<sup>th</sup> January, 2020

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Bhanu Bhakta Dhakal  
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नवराज रावत  
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### Foreword

We are witnessing the high and growing burden of noncommunicable diseases (NCDs) morbidity and mortality. Almost one member in every family in our community is suffered from NCDs. This burgeoning of NCDs has been attributed to changing demographics and lifestyles of the population, which includes rapid urbanization, increased industrialization, rising personal incomes, expanded education and improved health care. However, there is lack of adequate and reliable information on most of the NCDs and its risk factors in the federal context as these evidences are very useful for formulating policies and plans of federal, provincial and local Governments.

This NCDs STEPS survey conducted by Nepal Health Research Council (NHRC) with the support of Government of Nepal and World Health Organization (WHO) is aimed to assess prevalence of major risk factors for NCDs to establish baseline information for policy and program development in the federal context of Nepal. I hope that the output of this report will be taken into account by the government and all stakeholders to design evidence-based public health interventions to prevent and control the increasing burden of NCDs. The report helps policymakers find the best strategies for cost-effective and evidence-based NCD interventions.

I would like to take this opportunity to make a commitment of keeping NCDs as a political priority in Nepal. Finally, I would like to express my gratitude to all the people who directly or indirectly involved in successful completion of this important study and congratulate to the study team members of NHRC and WHO who contributed for successful completion of this study.

Mr. Nabaraj Raut  
State Minister for Health and Population





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**Ministry of Health and Population**



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**Preface**

The global prevalence of noncommunicable diseases (NCDs) is increasing, with the greatest burden occurring in low and middle income countries. As a leading cause of death globally, NCDs such as cardiovascular diseases, cancer, diabetes and chronic respiratory disease are the leading causes of death and disability worldwide. Unless urgent and specific focus on preventing, treating and controlling NCDs are targeted, the burden of NCDs will soon be unbearable to a poor nation like Nepal. Recognizing global threat of NCDs, Sustainable Development Goals (SDG) targets one third reduction in some type of noncommunicable disease i.e. Cancer, CVD, Chronic Respiratory Disease and diabetes by 2030.

The majority of NCDs are considered preventable as they are predominantly caused by modifiable risk factors such as tobacco use, insufficient physical activity, raised cholesterol, raised blood pressure and alcohol consumption. The essential reduction of the NCDs requires focusing on reducing their risk factors and access to preventive and curative care for various types of NCDs. Besides World Health Organization (WHO) STEPs Survey, there are no available nationwide prevalence studies on NCDs risk factors. WHO recommends that it is necessary to undertake NCDs risk factors survey every five years to facilitate evidence informed planning and programming. In this regards, NCD Risk Factors: STEPS Survey 2019 undertaken by Nepal Health Research Council (NHRC) with the support of Ministry of Health and Population (MoHP) and WHO is praise worthy. This survey report provides the information regarding the prevalence of NCD risk factors throughout the country which is crucial for policy makers and planners to develop and update national NCDs risk factors policies strategies and action plans. This document serves as reference material for policy makers and planners and decision makers of Government of Nepal for evidence-based public health intervention plan and programmes.

I would like to use this opportunity to extend my gratitude to all who have contributed to this survey. My sincere appreciation goes to WHO for providing the assistance to carry out such an important survey which will provide valuable information for programmes to prevent and control NCDs in our country. Finally, I deeply appreciate NHRC team for their effort for successfully completion of the survey and bringing such a valuable report for the country timely.

**Khaga Raj Baral**  
Secretary



## Foreword



Noncommunicable diseases (NCD) are a serious threat to the social and economic development of the WHO South-East Asia Region. Sixty-four per cent of all deaths in the Region are NCD-related, half of which occur to people between the economically productive ages of 30 and 70 years. The NCD burden is predicted to rise in the coming years, especially in low- and lower-middle-income countries. Since 2014, preventing and controlling NCDs has been one of the Region's Flagship Priorities.

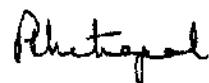
Quality and timely data on trends in NCD risk factors are essential to developing sound policy. Data on the implementation status of policies, and on coverage and impact of different interventions are also needed. Member States are required to report progress on key indicators to the UN General Assembly as part of specific global commitments for NCD control and prevention, as well as the Sustainable Development Goals.

Given the public health importance of addressing NCDs, WHO is actively supporting Member States in the Region to implement integrated adult risk factor surveys – known as WHO STEP surveys – under the global “STEPwise approach to NCD surveillance”. Since 2000, WHO has regularly updated a set of standardized tools that it has developed to meet the needs of NCD programmes. WHO continues to provide high-quality technical support to Member States to implement the WHO STEP surveys and has contributed to building country capacity in NCD surveillance.

I congratulate the Ministry of Health and Population of the Government of Nepal for regularly conducting STEP surveys. STEP surveys remain the best source of high-quality information on NCDs in most countries of the Region. Since Nepal began conducting STEP surveys in 2008, a wealth of information has been generated. I congratulate the National Health Research Council for implementing the 2019 Survey in a timely and efficient manner.

The results of the 2019 survey will be instrumental in evaluating the performance of Nepal's previous multisectoral action plan (2014–2020). They will also provide a baseline for Nepal's next multisectoral action plan (2021–2025). The survey findings suggest that action is required at several levels to achieve key NCD indicators and targets.

I have full confidence that the Ministry of Health and Population will fully institutionalize the WHO STEP surveys as part of NCD surveillance and the country's overall health information system. By ensuring that quality and timely data on NCDs are available, Nepal will ensure that it can meet today's challenges and anticipate and plan for tomorrow's. WHO will continue to support Nepal in its quest to prevent and control NCDs and build a healthier future for all.



Dr Poonam Khetrapal Singh  
Regional Director  
WHO South-East Asia Region





Government of Nepal  
**Nepal Health Research Council (NHRC)**

Estd. 1991

**Foreword**

Ref. No:

Noncommunicable diseases (NCDs) are currently the leading causes of death worldwide. Seventy-three percent (41 million) of all global deaths in 2017 were attributable to NCDs, with a higher burden in low- and middle-income countries. In Nepal, NCDs remain the main cause of morbidity and premature mortality.

WHO STEPS surveys are an integral part of nationwide NCD surveillance to track trends in key NCD risk factors such as tobacco use, alcohol consumption, excessive salt intake, low physical activity, overweight, unhealthy diet, raised blood pressure, raised blood glucose and cholesterol as well as health system response including service coverage and utilization. On national scale, this is Nepal's 3rd national STEPS survey. This survey aims to collect information on risks factors of NCDs from population aged 15-69 years old in Nepal.

Most of NCDs behavioural and biological risk factors in this survey are stagnant or slightly high in 2019 compared to STEPS 2013 findings. Risk factors such as tobacco use, alcohol consumption, raised blood pressure and blood sugar are more prevalent among male. Obesity is more prevalent among female. Consumption of fruits and green vegetables are below than WHO recommendation, while the salt intake level is higher than WHO recommendation ( $\leq 5\text{gm/day}$ ).

The findings of this study is expected to guide planning, implementation, monitoring and evaluation of NCD interventions in Nepal as well as to compare progresses made in relation to multisectoral action plan for 2014-2020. These findings may contribute for revising/updating multisectoral NCD action plan as well as inform policy makers to design evidence-based public health interventions to prevent and control the epidemics of NCDs. I hope that the findings and recommendations will be taken into consideration by the government and all stakeholders.

On the behalf of Nepal Health Research Council (NHRC), I would like to take this opportunity to express my profound gratitude to Ministry of Health and Population (MoHP) for making available financial resources to fund this survey, and also thank the World Health Organization (WHO) for providing technical and partial financial support for the survey. Finally, I would like to take this opportunity to express my gratitude to research team members Dr. Meghnath Dhimal, Mr. Bahugyan Bista, Mr. Surej Bhattarai and Ms. Sushma Sharma for their hard work and administrative and coordinative staffs Mr. Subodh Kumar Karka, Mr. Nirajay Kumar Shrestha and Mr. Bijay Kumar Jha for their support and coordination to complete the survey on time.

**Prof. Dr. Anjan Kumar Jha**  
Chairman



Nepal has completed the third round of Noncommunicable diseases (NCDs) Risk factors: STEPS survey in 2019. The survey collected data using the WHO STEP wise approach to Surveillance (STEPS) tool which is a simple, standardized method for collecting, analyzing and disseminating data for the NCDs and its risk factors.

The STEPS survey data can be used for not only monitoring NCD risk factors trends within Nepal, but also for making comparisons across countries in the Region. The population-based household survey of adults aged 15- 69 years collected data on socio demographic and behavioral information, physical and biochemical measurements.

The Nepal NCD STEPS survey 2019, indicates tobacco use is high among men in Nepal with nearly 50% of men aged 15-69 years using tobacco (smoke and smokeless). The survey also reports one third population was exposed to second hand smoke at home and two out of five at workplace. Data on unhealthy diet reported 97% of the population do not meet the WHO recommendation of consuming 5 servings of fruits and vegetables on a daily basis. Another concern is high level of salt consumption which is nearly double the WHO recommended maximum of 5gms per day. Elevated blood pressure is a major risk factor for heart diseases and stroke. Data from the STEPS survey show that in Nepal one fourth of the population suffer from hypertension.

I am pleased the survey was completed successfully and on time. I congratulate the Ministry of Health and Population, Nepal Health Research Council for their leadership in conducting the survey.

I am confident that the report will be useful for evidence-based policy decisions and directing policy and programs across the whole of government and whole of society for the prevention and control of NCDs.



Dr Jos Vandelaer  
WHO Representative to Nepal





**Government of Nepal**  
**Nepal Health Research Council (NHRC)**  
Estd 1991

Ref. No.:

Acknowledgements

Nepal Health Research Council (NHRC) is committed for promoting and coordinating health research for evidence informed decision making in the country. As a follow up of previous nationwide Noncommunicable Diseases (NCDs) Risk Factors: STEPS Survey 2013 of Nepal, this survey 2019 was conducted by Nepal Health Research Council (NHRC) with the support of Ministry of Health and Population (MoHP) and World Health Organization (WHO). I would like to acknowledge the effort of all the individuals involved in this survey. My special thanks go to the investigators of the project: Prof. Dr. Anjani Kumar Jha, then Executive Chairman of NHRC; Dr. Meghnath Dhimal, Chief of Research Section; Mr. Bishunguru Bista, Senior Research Officer and Mr. Saroj Bhattacharji, Research Officer of NHRC. I also acknowledge assistance of Ms. Sushma Sharma, Assistant Research Officer of the NHRC for her contribution to complete the survey.

I express my deep sense of appreciation to the steering committee and technical working group (TWG) members and other experts in the various fields for their valuable input during the various steps of survey especially for finalizing proposal and research tools, training of field staffs and participation in the workshop on data analysis and interpretation of findings. Similarly, I would like to extend my appreciation to Mr. Devendra Karmajit, Director of Central Bureau of Statistics (CBS) for his contribution on sampling design of the survey. In addition, I would like to thank former Research Officer of NHRC Mr. Achyan Raj Pandey for his contribution in survey design.

We are grateful to Ministry of Health and Population, Government of Nepal for continuous support on generating evidences on NCDs and their risk factors in Nepal. NHRC also highly appreciates the technical and financial support received from WHO at all stages of survey implementation. We are thankful to Dr. Jos Vandelaer, WHO representative to Nepal for providing overarching guidance and leadership and Dr. Thaksaphon Thamurangsi, Director, Noncommunicable Disease and Environment Health for his support. Dr. Manju Rani, Regional Advisor (Non-communicable diseases policy, governance and surveillance), WHO/SEARO, for

the overall technical assistance provided by WHO from sampling, survey design, questionnaire development, field training, data analysis and report writing. In addition, Naveen Agarwal (Surveillance Management Associate at WHO/SEARO) (support for procurement, household listing, questionnaire programming, field training and field data collection, management, analysis); Dr. Patricia Rarau (WHO HQ) (training of field enumerators); Dr. Stefan Savin (WHO HQ) (data analysis); Dr. Md. Khurshid Alam Hyder (WHO Nepal) and Dr. Loniim Prasai Dixit (WHO Nepal) (local coordination, protocol development, questionnaire development, field monitoring and supervision and report review) provided support for different aspects of the survey. Ms. Yvonne Y. Xu , Ms. Preetika D. Banerjee, Ms. Surabhi Chaturvedi, and Naveen Agarwal from WHO SEARO assisted in writing specific draft chapters of the report under the overall technical guidance of Dr. Manju Rani (WHO/SEARO). Dr Sudhami Bhagwati from WHO (Nepal) contributed to the final report by reviewing the chapters of the report.

Similarly I would like to thank the Field Research Assistants, who were involved in this survey and completed data collection timely for successful completion of the survey. I would also like to appreciate Mr. Bijay Kumar Jha, Training Officer, Mr. Anish Baral, IT person, Ms. Tamanna Neupane and Ms. Jenu K.C of NHRC who assisted during the survey. I would like to thanks Mr. Nirbhay Kumar Sharma, Deputy Administrative Chief and Mr. Subodh Kumar Karna, Deputy Chief Account Controller for their coordination and administrative support for handling all managerial and financial tasks.

The survey was possible through the cooperation we received from the provincial and local governments including Academies of Health Sciences; Medical Colleges; District Administration office; District (Public) Health Offices; Provincial Hospitals, and Health Posts. Further, I extend my special appreciation to Female Community Health Volunteers (FCHV) for supporting us on field activities. Finally, I extend my deep sense of appreciation to all the survey participants and data collectors for their valuable time and patience during the course of survey data collection.



Dr. Pradip Gyanwall  
Member-Secretary

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## ACRONYMS AND ABBREVIATION

BMI	Body Mass Index
BP	Blood Pressure
CBS	Central Bureau of Statistics
CI	Confidence Interval
CVD	Cardiovascular Disease
COPD	Chronic Obstructive Pulmonary Diseases
DALYs	Disability Adjusted Life Years
DM	Diabetes Mellitus
HED	Heavy Episodic Drinking
HTN	Hypertension
ISH	International Society of Hypertension
LMIC	Low and Middle Income Countries
MET	Metabolic Equivalents of task
MoHP	Ministry of Health and Population
NCD	Noncommunicable Disease
NHRC	Nepal Health Research Council
NRT	Nicotine Replacement Therapy
PCA	Principal Component Analysis
PDA	Personal Digital Assistance
PEN	Package of Essential Non communicable Disease
POCT	Point of Care Testing
PPS	Probability Proportionate to Size
PSU	Primary Sampling Unit
RA	Rheumatoid arthritis
SHSH	Second Hand Smoke at Home
WC	Waist Circumference
WHO	World Health Organization
WHR	Waist Hip Ratio





# Nepal STEPS Survey 2019

## Fact Sheet

The STEPS survey of noncommunicable disease (NCD) risk factors in Nepal was carried out from February to May 2019. The survey collected socio demographic and behavioral information (tobacco, alcohol, diet, physical activity). Physical measurements such as height, weight and blood pressure were done to estimate obesity and raised BP prevalence. Biochemical measurements were collected to assess blood glucose and cholesterol levels. The survey was a population-based household 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 5593 adults participated in the survey. The overall response rate was 86.4%. A repeat survey is planned for 2024.

Results for adults aged 15-69 years (incl. 95% CI)	Both Sexes	Males	Females
<b>Tobacco Use</b>			
Percentage who currently use tobacco (smoked/smokeless)	28.9 (26.3-31.5)	48.3 (43.5-53.1)	11.6 (9.8-13.5)
Percentage who currently use tobacco on daily basis	24.1 (21.8-26.5)	40.1 (35.4-44.7)	10.0 (8.4-11.6)
Percentage who currently smoke tobacco	17.1 (15.1-19.1)	28.0 (24.5-31.5)	7.5 (6.1-8.9)
Percentage who currently smoke tobacco daily	13.3 (11.4-15.3)	20.8 (17.4-24.1)	6.7 (5.4-8.1)
Percentage who currently smoke cigarettes (manufactured/hand rolled cigarettes)	14.8 (12.6-16.5)	24.6 (20.8-27.7)	6.2 (4.6-7.2)
Percentage who currently use smokeless tobacco	18.3 (15.8-20.7)	33.3 (28.8-37.8)	4.9 (3.3-6.5)
Percentage who currently use smokeless tobacco daily	15.3 (13.1-17.5)	28.2 (23.9-32.5)	3.8 (2.6-5.1)
Average age at initiation of smoking (years) among those who smoke daily	17.8 (17.1-18.2)	17.7 (16.8-18.1)	18.4 (17.3-19.2)
Percentage who currently use electronic cigarettes	0.8 (0.4-1.3)	1.7 (0.8-2.7)	0.0 (0.0-0.1)
<b>Alcohol Consumption</b>			
Percentage who are lifetime abstainers	72.2 (68.8-75.5)	56.0 (50.9-61.2)	86.5 (83.5-89.1)
Percentage who are former drinkers (drank in past but abstained in past 12 months)	4.0 (2.9-5.1)	5.3 (3.9-6.8)	2.7 (1.5-4.0)
Percentage who currently drink (drank alcohol in the past 12 months)	23.9 (21.0-27.0)	38.6 (34.0-43.5)	10.8 (8.5-13.6)
Percentage who currently drink (drank alcohol in the past 30 days)	20.8 (18.2-23.4)	34.4 (30.2-38.6)	8.8 (6.6-11.0)
Percentage who engage in heavy episodic drinking (6 or more drinks on any occasion in the past 30 days) (overall population)	6.8 (5.3-8.2)	12.4 (9.8-15.1)	1.7 (0.8-2.7)
Percentage who reported consuming unrecorded alcohol in past 7 days among current drinkers (past 30 days)	68.5 (62.2-73.8)	65.8 (58.6-72.0)	77.7 (70.0-84.7)

Results for adults aged 15-69 years (incl. 95 % CI)	Both Sexes	Males	Females
<b>Diet</b>			
Mean number of servings of fruit and/or vegetables consumed on average per day	2.0 (1.9-2.2)	2.1 (1.9-2.2)	2.0 (1.8-2.1)
Percentage who ate less than 5 servings of fruit and/or vegetables on average per day	96.7 (94.3-98.0)	97.0 (94.8-98.3)	96.3 (93.2-98.0)
<b>Salt</b>			
Percentage who always or often add salt or salty sauce to their food before eating or as they are eating	9.2 (7.5-11.2)	9.8 (7.6-12.6)	8.7 (6.9-10.8)
Percentage who always or often eat processed foods high in salt	19.5 (16.2-23.3)	21.1 (16.6-26.3)	18.1 (15.0-21.8)
Percentages who are doing something on regular basis to control salt intake (e.g. Avoid/minimize consumption of processed food, avoid eating food prepared outside of home etc.)	2.6 (1.7-3.8)	3.0 (1.7-5.1)	2.2 (1.5-3.2)
Mean intake of salt per day (in grams) (based on spot urine examination* <i>(based on intersalt equation for South-Europe)</i> )	9.1 (9.0-9.2)	9.6 (9.4-9.8)	8.7 (8.6-8.8)
<b>Physical Activity</b>			
Percentage with insufficient physical activity (defined as < 150 minutes of moderate-intensity activity per week, or equivalent) *	7.4 (5.7-10.1)	8.2 (5.5-11.6)	6.6 (5.2-10.0)
Median time spent in physical activity on average per day (in moderate-intensity minutes) (presented with inter-quartile range)	210 (90.0-394.3)	231.4 (98.6-420.0)	188.6 (90.0-368.6)
<b>Cervical Cancer Screening (women 30-49 years of age)</b>			
Percentage who ever had a test for cervical cancer			8.2 (6.3-10.6)
Percentage who had a test for cervical cancer in the last 5 years			5.9 (4.3-8.0)
Percentage of women (age 15-69 years) who received treatment because of test results			63.5 (41.8-80.7)
<b>Oral Health</b>			
Percentage who clean teeth once or more than once a day	89.9 (87.6-91.9)	90.0 (86.9-92.4)	89.9 (87.5-91.9)
Percentage who reported an issue (pain, swelling, bleeding or discomfort) with teeth/gum/mouth	14.3 (11.5-17.7)	11.4 (8.7-14.8)	17.0 (13.5-21.0)
Percentage of who saw a dentist in last 12 month	2.8 (2.1-3.7)	1.5 (0.9-2.4)	3.9 (2.9-5.4)
<b>Violence and injuries</b>			
Percentage involved in road traffic crash in the past 12 months	3.8 (2.6-5.3)	5.1 (3.4-7.5)	2.6 (1.7-4.0)
Percentage who wear seat belt <i>all the time or sometimes</i> when being a driver or passenger in a motor vehicle (among those who were in vehicle in the past 30 days)	4.1 (2.8-6.1)	5.7 (3.9-8.2)	2.6 (1.5-4.5)
Percentage who wore a helmet <i>all the time or sometimes</i> when drove or rode as a passenger on a motorcycle or motor-scooter	36.0 (30.0-42.5)	53.4 (45.8-60.7)	12.6 (8.4-18.6)
<b>Mental Health</b>			
Percentage who had some or high level of work/business stress	61.5 (56.9-66.0)	63.7 (58.3-68.8)	59.6 (54.5-64.3)
Percentage who had some or high level general stress at home	62.3 (57.8-66.7)	59.8 (54.3-64.9)	64.6 (60.0-69.0)
Percentage who had stressful life events in past year which disturbed a lot	11.3 (9.2-13.8)	11.0 (8.5-14.1)	11.6 (9.3-14.4)

Results for adults aged 15-69 years (incl. 95% CI)	Both Sexes	Males	Females
<b>Joint and back pain in last 12 months</b>			
Percentage who had pain, stiffness or swelling in or around a joint not related to injury and lasted for more than a month.	17.0 (14.3-20.2)	13.6 (11.0- 16.7)	20.1 (16.7-23.9)
Percentage who had back pain that prevented them from doing usual household chores or going for work in last 30 days	18.9 (16.2-21.9)	14.5 (11.9-17.6)	22.8 (19.6,26.4)
Percentage who had severe headache that prevented them from doing usual household chores or going out for work	15.2 (12.9-17.9)	10.7 (8.5-13.4)	19.2 (16.2-22.7)
<b>BMI and Obesity</b>			
Mean body mass index - BMI (kg/m <sup>2</sup> )	22.7 (22.5-23.0)	22.6 (22.2-23.0)	22.8 (22.6-23.1)
Percentage who are overweight and obese (BMI ≥ 25 kg/m <sup>2</sup> )	24.3 (21.6-27.2)	23.4 (19.9-27.3)	25.1 (22.2-28.2)
Percentage who are obese (BMI ≥ 30 kg/m <sup>2</sup> )	4.3 (3.5-5.2)	3.2 (2.3-4.5)	5.3 (4.2-6.5)
<b>Hypertension, Diabetes and raised cholesterol levels</b>			
Prevalence of raised BP: Percentage with raised BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg or currently on medication for raised BP)	24.5 (22.4-26.7)	29.8 (26.6-33.1)	19.7 (17.5-22.2)
Prevalence of raised blood sugar: Percentage with raised fasting blood glucose (fasting blood glucose ≥ 126 mg/dl) or currently on medication for raised blood glucose**	5.8 (4.3-7.3)	6.3 (4.6-8.5)	5.3 (4.1-6.8)
Percentage with raised total cholesterol (≥ 5.0 mmol/L or ≥ 190 mg/dl or currently on medication for raised cholesterol)	11.1 (9.6-12.6)	7.8 (6.2-9.7)	14.0 (12.0-16.1)
<b>Cardiovascular disease (CVD) risk</b>			
Percentage aged 40-69 years with a 10-year CVD risk ≥ 30%, or with existing CVD***	3.3 (2.4-4.1)	3.2 (1.9-4.5)	3.3 (2.2-4.5)
<b>Health system</b>			
Percentage of people (40-69 years of age) who ever got their BP measured from a health worker†	60.8 (56.0-65.5)	61.5 (55.7-67.1)	60.2 (55.0-65.1)
Percentage of people (40-69 years) who ever got their blood sugar measure from a health worker	21.2 (17.5-25.6)	23.4 (18.8-28.8)	19.2 (15.3-23.8)
Percentage of people measured to have raised BP and/or on medications who are on treatment/ medication	9.5 (7.5-12.0)	7.9 (5.5-11.4)	11.6 (9.1-14.7)
Percentage of people measured to have raised blood glucose and/on medications who were on treatment/medication	21.3 (15.1-29.1)	22.7 (14.7-33.4)	19.9 (13.2-28.9)
Percentage who are member of a health insurance scheme	6.9 (5.0-9.6)	7.8 (5.4-11.3)	6.1 (4.2-8.8)
Percentage who usually go to a government facility/provider for raised blood pressure	40.0 (32.6-47.7)	34.6 (25.4-45.1)	45.7 (36.6-55.1)
Percentage who usually go to government facility/provider for oral health issues	34.6 (26.2-44.0)	36.5 (21.0-55.5)	34.0 (25.0-44.4)

\* For complete definitions of insufficient physical activity, refer to the GPAQ Analysis Guide (<http://www.who.int/chp/steps/GPAQ/en/index.html>) or to the WHO Global recommendations on physical activity for health ([http://www.who.int/dietphysicalactivity/factsheet\\_recommendations/en/index.html](http://www.who.int/dietphysicalactivity/factsheet_recommendations/en/index.html))

\*\* [https://www.cliawaived.com/web/items/pdf/PTS-1765\\_Glucose\\_Cholesterol\\_Test\\_Insert~1068file1.pdf](https://www.cliawaived.com/web/items/pdf/PTS-1765_Glucose_Cholesterol_Test_Insert~1068file1.pdf)

\*\*\* A 10-year CVD risk of ≥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 >7.0 mmol/l (126 mg/dl).



# Nepal STEPS Survey 2019

## Tobacco Fact Sheet

The national noncommunicable disease (NCD) risk factor survey (WHO-STEP survey) in Nepal was carried out from February to May 2019. It was a population-based household survey of adults aged 15-69 years. A multistage cluster sample design was used to produce representative data for that age range in Nepal. A total of 5593 adults participated in the survey. The overall response rate was 86.4%. A repeat survey is planned for 2024.

The survey collected data on socio-demographic characteristics and on four major behavioral risk factors (tobacco, alcohol, diet, physical activity) and four physiological risk factors (overweight/obesity, raised blood pressure, raised blood sugar and cholesterol levels). This fact sheet summarizes the main tobacco indicators related to consumption patterns and tobacco policy. Data from periodic STEPS surveys can facilitate evaluation of existing tobacco-control policies and programs and track change over time.

### Highlights

#### TOBACCO USE

- 28.9% of adults 15-69 years of age (48.3% of men, 11.6% of women) were current users of tobacco, in any form. This is equal to 3.8 million adults.
- 17.1% of adults (28.0% of men, 7.5% of women) equivalent to 2.8 million adults were current smokers of tobacco.
- 18.3% of adults (33.3% of men, 4.9% of women) equivalent to 3 million adults were current users of smokeless tobacco.

#### CESSATION

- 1 in 5 current smokers (19.4%) and 17.9% of current smokeless users tried to stop smoking and use of smokeless tobacco, respectively in the last 12 months.
- 22.1% of smokers and 21% of smokeless tobacco users respectively reported being advised by a health care provider to stop smoking/use of smokeless tobacco in the last 12 months.

#### SECONDHAND SMOKE

- 22.5% of adults (3.7 million) were exposed to second-hand smoke at work place.
- 33.5% of adults (5.5 million) were exposed to second-hand smoke at home.

#### MEDIA

- 70.2% of adults noticed anti-cigarette smoking information on the television or radio.
- 44.8% of current smokers thought about quitting because of warning labels on cigarette packages.
- 20.9% of adults were exposed to tobacco advertising and promotions on any media, while 11.2% of adults noticed cigarette marketing in stores where cigarettes are sold.

#### E-CIGARETTES

- 11.4% of adults had ever heard about e-cigarettes, though only 47.5% of them correctly identified them when shown different pictures.
- 18.8% and 14.1% of adults who have ever heard about e-cigarette, respectively, reported ever and currently using them.

#### ECONOMICS

- Average monthly expenditure on manufactured cigarettes was Rs.1049.

Results for adults aged 15-69 years (incl. 95% CI)	Both Sexes	Males	Females
<b>Tobacco Use</b>			
<b>Current tobacco users</b> (smoked and/or smokeless) <sup>1</sup>			
Current tobacco users	28.9 (26.3-31.5)	48.3 (43.5-53.1)	11.6 (9.8-13.5)
Current daily tobacco users	24.1 (21.8-26.5)	40.1 (35.4-44.7)	10.0 (8.4-11.6)
<b>Current tobacco smokers</b>			
Current tobacco smokers	17.1 (15.1-19.1)	28.0 (24.5-31.5)	7.5 (6.1-8.9)
Current cigarette smokers <sup>2</sup>	14.5 (12.6-16.5)	24.2 (20.8-27.7)	5.9 (4.6-7.2)
Current daily tobacco smokers	13.3 (11.4-15.3)	20.8 (17.4-24.1)	6.7 (5.4-8.1)
Current daily cigarette smokers	11.6 (9.7-13.5)	18.6 (15.3-21.9)	5.4 (4.2-6.6)
Average age at initiation of tobacco smoking (years)	17.8 (17.1-18.2)	17.7 (16.8-18.1)	18.4 (17.3-19.2)
Average number of cigarettes smoked per day (among daily cigarette smokers)	6.5 (5.6-7.2)	6.4 (5.5-7.3)	6.7 (5.7-7.6)
<b>Current smokeless tobacco</b>			
Current smokeless tobacco users	18.3 (15.8-20.7)	33.3 (28.8-37.8)	4.9 (3.3-6.5)
Current daily smokeless tobacco users	15.3 (13.1-17.5)	28.2 (23.9-32.5)	3.8 (2.6-5.1)
<b>Former users / Never users</b>			
Former tobacco users <sup>3</sup>	4.5 (3.6-5.4)	5.1 (3.6-6.6)	3.9 (2.9-5.0)
Former tobacco smokers <sup>4</sup>	6.5 (5.1-7.5)	8.8 (6.5-10.5)	4.5 (3.3-5.5)
Never users	66.6 (63.9-69.4)	46.6 (41.7-51.5)	84.5 (82.1-86.8)
<b>Secondhand Smoke</b>			
Adults exposed to second-hand smoke at home*	33.5 (29.9-37.1)	35.8 (31.2-40.3)	31.5 (27.1-35.8)
Adults exposed to second-hand smoke at work place*	22.5 (19.6-25.5)	23.9 (20.4-27.3)	21.4 (17.7-25.1)
<b>Cessation</b>			
Current smokers who tried to stop smoking in past 12 months	19.4 (15.5-23.2)	19.3 (14.9-23.8)	19.4 (13.7-25.1)
Current users of smokeless tobacco who tried to stop smoking in past 12 months	17.9 (13.8-23.0)	19.3 (15.0-24.5)	9.7 (4.0-21.7)
Current smokers advised by a health care provider to stop smoking in past 12 months <sup>5</sup>	22.1 (15.7-28.4)	21.6 (14.1-29.0)	23.7 (15.3-32.1)
Current smokeless tobacco users advised by health care providers to quit smokeless tobacco	21.0 (15.0-28.6)	19.5 (13.8-26.9)	29.6 (14.4-51.2)

Results for adults aged 15-69 years (incl. 95 % CI)	Both Sexes	Males	Females
<b>Health Warnings</b>			
Current tobacco user who thought about quitting because of a warning label*	44.8 (38.1-52.2)	45.5 (38.1-53.6)	41.8 (32.0-52.5)
Adults who noticed anti-cigarette smoking information on the television or radio*	70.2 (75.0-82.8)	73.6 (76.1-85.2)	67.1 (73.1-81.4)
Adults who noticed anti-cigarette smoking information in newspapers or magazines*	43.6 (47.8-59.5)	50.3 (52.8-65.4)	37.6 (42.0-54.8)
<b>Tobacco Advertisement and Promotion</b>			
Adults who notices any advertisements or signs promoting any tobacco products on television or radio (or any media?)	14.3	15.8	13.1
Adults who noticed tobacco marketing in stores where tobacco products are sold*	11.2 (9.3-16.7)	13.6 (10.7-19.3)	9.1 (7.4-14.7)
Adults who noticed any cigarette promotions*	8.7 (5.7-11.8)	9.8 (5.8-13.9)	7.6 (4.8-10.4)
<b>Economics</b>			
Local Currency			
Average amount spent on 20 manufactured cigarettes		151.5	
Average monthly expenditure on manufactured cigarettes		1049.3	
Cost of 100 packs of manufactured cigarettes as a percentage of per capita Gross Domestic Product (GDP) [2018] <sup>6</sup>		11	

<sup>1</sup> Current use refers to daily and less than daily use. <sup>2</sup> Includes manufactured cigarettes and hand-rolled cigarettes. Adapted for other products as per country situation. <sup>3</sup> Current non-users. <sup>4</sup> Current non-smokers. <sup>5</sup> Among those who visited a health care provider in past 12 months. <sup>6</sup> World Bank, 2014 \* During the past 30 days. † Promotions include free cigarette sample, cigarettes at sale prices, coupons for cigarettes, free gifts upon purchase of cigarettes, clothing or other items with cigarette brand name or logo and cigarette promotions in mail. Adults refer to person's age 15-69 years. Data have been weighted to be nationally representative of all men and women age 15-69 years. \* The sample size "n" is less 50.



# Nepal STEPS Survey 2019

## Alcohol Consumption and Policy Fact Sheet

The STEPS survey of noncommunicable disease (NCD) risk factors in Nepal was carried out from February to May 2019. The survey collected socio demographic and behavioral information (tobacco, alcohol, diet, physical activity). Physical measurements such as height, weight and blood pressure were done to estimate obesity and raised BP prevalence. Biochemical measurements were collected to assess blood glucose and cholesterol levels. The survey was a population-based household 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 5593 adults participated in the survey. The overall response rate was 86.4%. A repeat survey is planned for 2024.

The survey collected data on socio-demographic characteristics and on four major behavioral risk factors (tobacco, alcohol, diet, physical activity) and four physiological risk factors (overweight/obesity, raised blood pressure, raised blood sugar and cholesterol levels). This fact sheet summarizes the main alcohol indicators related to consumption patterns and alcohol policy. Data from periodic STEPS surveys can facilitate evaluation of existing alcohol-control policies and programs and track change over time.

### Highlights

#### Alcohol consumption patterns among adults (15-69 years)

- 72.2% of adults (56% men and 86.5% women) were life-time abstainers, with significant differences between men and women. Only 4% of the adults were former drinkers (drank in past but did not consume in past 12 months).
- 23.9% of adults (38.6% of men, 10.8% of women) were current drinkers (consumed alcohol in the past 12 months). This was equivalent to 4.8 million adults (3.7 million men and 1.1 million women) in 2019.
- Almost 1 in 8 men (11.7%) drink daily or almost daily. This was equivalent to 1.4 million adults (1.1 million men and 0.3 million women).

#### Heavy episodic drinking

- 6.8% of adults (12.4% of men, 1.7% of women) engaged in heavy episodic drinking (consumed 6 standard drinks or 60g of pure alcohol or more drinks on any single occasion in the past 30 days). This was equivalent to 1.1 million adults in Nepal in 2019.
- More than one-fourth (28.4%) of current drinkers (32.2% men, 16.2% women) engaged in heavy episodic drinking.

#### Consumption of unrecorded alcohol

- Among current drinkers (past 30 days), 65.3% of men, 77.3% of women, and 68.5% overall reported consuming unrecorded alcohol in past 7 days.
- Unrecorded alcohol constitutes almost 66.3% of total alcohol consumed in the past 7 days. Majority of the unrecorded alcohol comprises of homebrewed spirits (*Aila/Raksi*) (57.4%) or wines (*Jaad*) (36.7%). Alcohol smuggled over the border constitutes 5.7% of total unrecorded alcohol.

#### Most common types of alcohol consumed

- Raksi* a traditional homebrewed spirit-was the most consumed alcoholic drink reported by 50.9% of people who consumed alcohol in past 30 days, followed by *Jaad* (home-brewed wine) (24.5%).

#### Access to alcohol

- Only 1 in 10 (11.8%) people who ever consumed alcohol perceived obtaining alcohol for drinking difficult or very difficult.
- Only 1 in 3 ever drinker (27.9%) perceived that alcohol has become less affordable than before.
- None of the underage respondents (15-18 years of age) who tried to buy alcohol reported that they were refused alcoholic beverages due to their age. The legal minimum purchasing age for alcohol is 18 years in Nepal.

### Exposure to advertising and marketing and anti-alcohol messages

- Nearly 1 in 5 respondents (18.7%) noticed advertisements promoting alcohol on the television, print media, radio etc., though a decree issued in 1999 bans alcohol advertising in all electronic media (TV and radio)
- More than 1 in 5 respondents (21.9%) who attended social events such as sports events, fairs, concerts, etc.) saw alcohol advertisements or got free beer/discounted alcohol sometimes/most of the times/always.
- Nearly 1 in 2 (47.9%) reported seeing or hearing any messages that discourage drinking alcohol.

### Drink-driving

- Only 3.9% percent of who drove a vehicle in the past 12 months reported being checked by a traffic police for alcohol while driving.
- Almost 17.2% of reported that they drove vehicle under the influence of alcohol in the past 30 days.

Results for adults age 15-69 years (ind. 95% CI)	Both Sexes	Males	Females
<b>Alcohol Use</b>			
<b>Abstainers</b>			
Life-time abstainers <sup>1</sup>	72.2 (68.7-75.5)	56.0 (50.9-61.2)	86.5 (83.5-89.1)
Former drinkers <sup>2</sup>	4.0 (2.9-5.1)	5.3 (3.9-6.8)	2.7 (1.5-4.0)
Abstainers in the past 12 months <sup>3</sup>	76.1 (73.0-79.0)	61.4 (56.5-65.9)	89.2 (86.4-91.5)
<b>Current drinkers</b>			
Percentage of persons who consumed alcohol in the past 12 months	23.9 (21.0-27.0)	38.6 (34.0-43.5)	10.8 (8.5-13.6)
Percentage of persons who consumed alcohol in the past 30 days	20.8 (18.3-23.4)	34.4 (30.2-38.6)	8.8 (6.6-11.0)
Percentage of persons who are daily or almost daily drinkers	7.0 (5.7-8.6)	11.7 (9.5-14.3)	2.9 (1.9-4.3)
<b>Heavy episodic drinking<sup>4</sup></b>			
Percentage of people who consumed 6 or more standard drinks on a single drinking occasion	6.8 (5.3-8.2)	12.4 (9.8-15.1)	1.7 (0.8-2.7)
Percentage of heavy episodic drinking among current drinkers (among current drinkers)	28.4 (23.2-34.2)	32.2 (26.7-38.2)	16.2 (9.5-26.4)
<b>Consumption of unrecorded alcohol<sup>5</sup></b>			
Percentage of people who consumed unrecorded alcohol in the past 7 days	14.3 (12.2 – 16.7)	22.6 (19.1-26.6)	6.8 (5.2- 9.0)
Percentage of current drinkers who drank unrecorded alcohol in the past 7 days	68.5 (62.2-73.8)	65.8 (58.6-72.0)	77.7 (70.0 -84.7)
Mean percentage of total unrecorded alcohol out of total alcohol drank in the last 7 days	66.3 (57.7-74.8)	63.0 (54.0-72.0)	77.5 (62.0-93.1)
Mean percentage of specific type of unrecorded alcohol out of the total unrecorded alcohol drinks consumed by current drinkers who drank unrecorded alcohol in the past 7 days			
Homebrewed spirits like <i>Aila, Raksi</i>	57.4 (49.3-65.5)	61.8 (52.8-70.9)	44.6 (34.1-55.0)
Homebrewed beer or wine, like <i>Jaad, Chyang, Tungba</i>	36.7 (28.7-44.8)	30.8 (22.9-38.7)	54.1 (43.5-64.7)
Alcohol brought over the border/from another country	5.7 (-1.9-13.4)	7.3 (-2.7-17.3)	1.1 (-.01-2.4)

<b>Results for adults age 15-69 years (ind. 95% CI)</b>	<b>Both Sexes</b>	<b>Males</b>	<b>Females</b>
Alcohol not intended for drinking, like alcohol-based medicines, like cough syrup, perfumes, after shaves	0.1 (0-0.2)	0.1 (-0.03-0.2)	0.1 (-0.06-0.3)
Others untaxed alcohol in the country Specify	0	0	0
<b>Type of alcohol most often consumed among those who reported consuming alcohol in past 30 days</b>			
Beer	16.8 (12.5-22.1)	20.7 (15.6-26.9)	3.0 (1.6-5.7)
Wine	1.7 (0.6-4.5)	1.9 (0.6-5.7)	0.9 (0.3-3.2)
Spirit (whiskey, vodka, gin)	5.3 (2.6-10.4)	6.6 (3.3-13.0)	0.7 (0.15-3.4)
<i>Jaad</i> (a traditional alcohol beverages-wine))	24.5 (18.4-31.9)	17.0 (12.1-23.2)	50.8 (39.9-61.6)
<i>Raksi</i> (a traditional alcohol beverage-spirit)	50.9 (44.2-57.6)	53.2 (45.9-60.3)	43.1 (33.3-53.4)
Other traditional ( <i>Aila/Tungba</i> )	0.8 (0.3-2.3)	0.6 (0.2-2.3)	1.4 (0.4-4.7)
<b>Alcohol dependence or problem drinking (past 12 months)</b>			
Percentage of current drinkers (past 12 months) who were not able to stop drinking once they started (daily or almost daily or weekly)	9.1 (6.7-12.4)	10.4 (7.4-14.3)	5.2 (3.0-8.8)
Percentage of current drinkers (past 12 months) who failed to do what was normally expected because of drinking (daily or almost daily or weekly)	4.3 (3.0-6.1)	4.9 (3.3-7.1)	2.4 (1.0-5.4)
Percentage of current drinkers (past 12 months) who needed a first drink in the morning to get going after a heavy drinking session (daily or almost daily or weekly)	4.4 (3.2-6.0)	4.7 (3.4-6.5)	3.3 (1.7-6.5)
<b>Harm from someone else drinking</b>			
Percentage of people who had family problems or problems with their partner due to someone else drinking in the past 12 months (daily or almost daily or weekly)	10.3 (8.5-12.4)	13.1 (10.4-16.4)	7.7 (6.1-9.7)
<b>Access to alcohol</b>			
Percentage of ever drinker who perceived obtaining alcohol for drinking difficult or very difficult	11.8 (8.4-16.2)	11.6 (7.8-16.7)	12.3 (7.3-20.1)
Percentage of ever drinker who perceived alcohol has become less affordable than before	27.9 (21.5-35.3)	28.9 (22.1-36.8)	24.8 (16.8-34.9)
Percentage of respondents 18 year or younger who were refused alcoholic beverages due to their age.	0	0	0
<b>Exposure to advertisements and marketing of alcohol</b>			
Percentage of persons who noticed any advertisements or signs promoting any alcoholic beverage on TV, newspaper/ magazines, radio, billboards, point of sale or local cinema/films	18.7 (14.3-24.1)	23.7 (18.0-30.5)	14.1 (10.5-18.7)
Percentage of persons who sometimes/most of the times/always see advertisements/free beer/alcohol or discounted sale at social events, fairs, concerts, community events	21.9 (17.4-27.3)	25.7 (20.4-31.8)	18.5 (14.1-24.0)
<b>Exposure to anti-alcohol messages</b>			
Percentage of persons who saw or heard any messages to discourage drinking alcohol on TV, radio, billboard, posters, newspapers, magazines, or movies, internet or social media	47.9 (42.0-53.9)	53.4 (46.9-59.8)	43.0 (37.0-49.2)

Results for adults age 15-69 years (incl. 95% CI)	Both Sexes	Males	Females
<b>Drunk-driving</b>			
Percentage of persons stopped/checkered by traffic police for alcohol while driving (among all population who drive)	3.9 (2.4-6.2)	5.8 (3.7-9.0)	0.7 (0.2-1.7)
Percentage of people who drove a vehicle after intake/under the influence of alcohol in past 30 days (among those who ever drank alcohol and who drive)	17.2 (11.9-24.3)	19.1 (13.3-26.7)	1.7 (0.4-6.5)
Percentage of people who had rode in a motorized vehicle where the driver had had 2 or more alcoholic drinks	8.9 (6.0-13.0)	13.8 (9.4-19.8)	4.3 (2.3-8.1)

<sup>1</sup> who have never consumed alcohol; <sup>2</sup> persons who ever drank alcoholic beverages but have not done so in the past 12 months; <sup>3</sup> includes both the lifetime abstainers and former drinkers. <sup>4</sup>Heavy episodic drinking is defined as consumption of 60 or more grams of pure alcohol (6+ standard drinks in most countries) on at least one single occasion in the 30 days prior to survey; <sup>5</sup> refers to alcohol that is not taxed in the country because it is usually produced, distributed and sold outside the formal channels under government control.

Data have been weighted to be nationally representative of all men and women age 15-69 years. \* The sample size "n" is less 50. Technical assistance for the survey was provided by the World Health Organization (WHO).

Data presented in this fact sheet relate only to selected alcohol indicators. Additional information on alcohol or other NCD risk factors from the survey is available from sources listed below.

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WHO Regional office for South East [[SEARSTEPS@who.int](mailto:SEARSTEPS@who.int)]

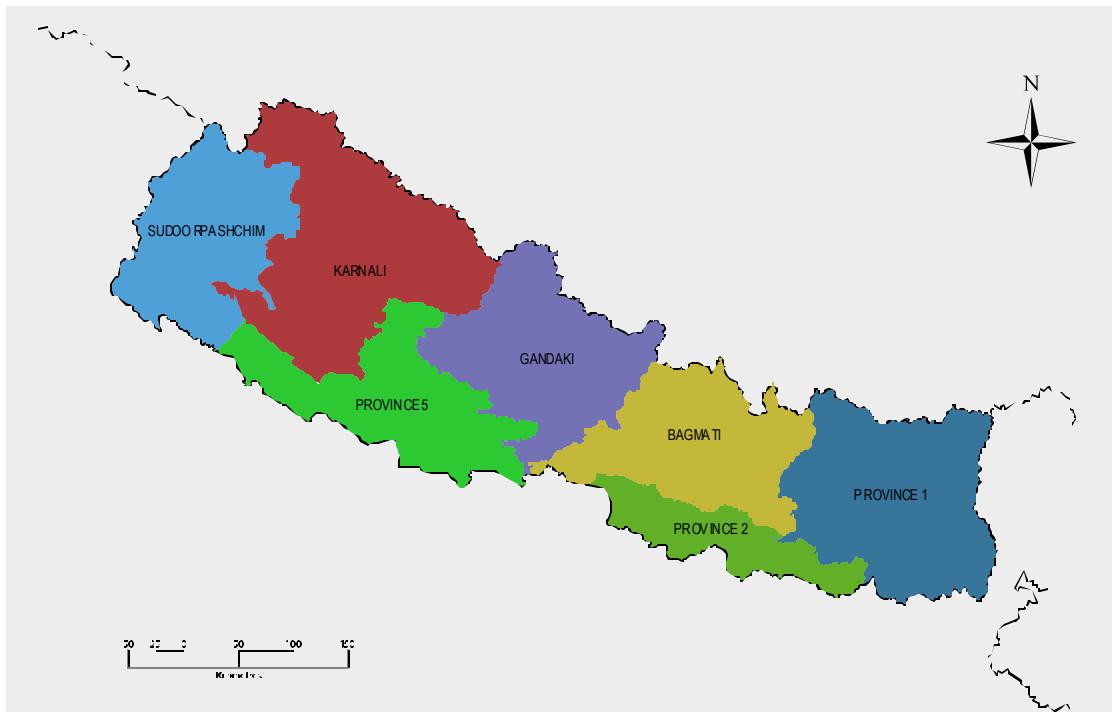
WHO STEPS Team [[Steps@who.int](mailto:Steps@who.int)]



World Health Organization

## CHAPTER 1

# INTRODUCTION



Nepal is a land locked country situated in Southern Asia between India and China. In the South lies flat river plains and in the north is the Himalayas . Nepal has an estimated total population of 28.1 million people<sup>1</sup> with 80.3% of the total population residing in rural areas in 2018<sup>2</sup>. Nepal's estimated Gross National Income per capita (GNI) was 960 (current USD) in 2018<sup>3</sup> and ranked 149 globally in United Nation's Human Development Index (0.574)<sup>4</sup>. Hinduism is the main religion followed by Buddhist, Muslim and Kirant. Nepal undergone significant change after the Constitution of Nepal was revised in September 2015 and led to administrative division of Nepal into 753 local government units under 7 Provincial governments and 1 central government. At the time of the writing of the report, only 3 provinces have established names: Gandaki (Province 4), Karnali (Province 6) and Sudoropashchim (Province 7). Local governments can be categorized into urban municipality (Metro city, sub-metro city, municipality) and rural municipalities and assume key responsibility for implementing and prioritizing national health policies and programs<sup>5</sup>. Nepal government introduced the National Health

- 1 United Nations. United nations world population prospects 2018. Available from <https://data.worldbank.org/indicator/SP.POP.TOTL?locations=NP>. Accessed Oct 22, 2019.
- 2 The World Bank. Rural population % of total population – estimates based on the United Nations Population Division's World Urbanization Prospects. Available from : <https://data.worldbank.org/indicator/SP.URB.TOTLN.ZS?locations=NP>. Accessed on Oct 22, 2019.
- 3 The World Bank. World Bank national account sdata, and OECD National Accounts data files.Available from: <https://data.worldbank.org/indicator/NY.ADJ.NNTY.PC.CD?locations=NP>. Accessed on Oct 22, 2019
- 4 United Nations Human Development Programme. Human development index and its components. Available from: <http://hdr.undp.org/en/2018-update>. Accessed on Oct 22, 2019.
- 5 Khanal P, Mishra SR. Federal governance and the undying parade for universal health coverage in Nepal. *Health Prospect*. 2019;18(1): 1-3. doi:10.3126/hprospect.v18i1.22856

Insurance Policy in 2013 including a voluntary health insurance plan that aims to fund the poor<sup>67</sup>. Currently existing government health services include tertiary level hospitals, regional and sub-regional hospitals, district hospitals, primary health care centres and health post.

## 1.1 Background

The global burden of noncommunicable diseases (NCDs) continues to increase, accounting for 73.4% (41 million) of all deaths in 2017 with the greatest burden occurring in developing countries with significant health, social and economic consequences<sup>8</sup>. In Nepal, NCDs are estimated to account for 66% of all deaths in 2016. Four main groups of NCDs—CVD (30%), cancers (9%), chronic respiratory diseases (4%), and diabetes mellitus (4%)—are responsible for majority of these NCD related deaths<sup>9</sup>.

The Sustainable Development Goals 3.4 targets to reduce by one-third premature mortality from NCDs and promote mental health and well-being<sup>10</sup>. This is further supplemented by the Global Action Plan for the Prevention and Control of NCDs 2013-2020 with 9 voluntary global targets to be attained by 2025 with 2010 as the reference year (**Figure 1.1**)<sup>11</sup>. Nepal has incorporated all 9 targets in its 5-year multisectoral action plan for 2014-2020<sup>12</sup>.

The key to controlling the global epidemics of NCDs is primary prevention based on comprehensive population-wide programmes. This requires the identification and surveillance of the most common NCD risk factors identified by the World Health Organization (WHO) which are shared between most common NCDs: tobacco use, harmful use of alcohol, unhealthy diet (low fruits and vegetables consumption, high salt intake), physical inactivity, overweight and obesity, raised blood pressure, raised blood glucose and cholesterol.

The WHO STEPS-wise approach to noncommunicable disease risk factor surveillance facilitates countries to track national NCDs status including the 25 key indicators (except the indicator on NCD mortality and per capita alcohol consumption) highlighted in the NCD Global Monitoring Framework which will help Nepal track progress and guide policy and program planning in NCD prevention and control<sup>13</sup>.

**Figure 1.1** Nine targets in Nepal Multisectoral Action Plan for the Prevention and Control of NCDs 2014-2020

- |   |  |
|---|--|
|    | A 25% relative reduction in risk of premature mortality from cardiovascular diseases, cancer, diabetes, or chronic respiratory diseases.   |
|    | At least 10% relative reduction in the harmful use of tobacco, as appropriate, within the national context.  |
|    | A 10% relative reduction in prevalence of sedentary behaviour.   |
|    | A 30% relative reduction in mean population intake of sodium.  |
|    | A 30% relative reduction in prevalence of current tobacco use in persons aged 15 years.  |
|    | A 25% relative reduction in the prevalence of raised blood pressure in adults (the prevalence of elevated blood pressure, according to national cut-off reference).                      |
|    | Halt the rise in diabetes and obesity.   |
|   | At least 50% of eligible people receive drug therapy and/or counseling (including pharmacotherapy) to prevent heart attacks and strokes.   |
|  | An 80% availability of the evidence-based medicines and essential medicines, including generic, required to treat major non-communicable diseases in both public and private facilities. |

- 6 Kandel N. Nepal Health Insurance Bill: Possible Challenges and Way Forwards. *J Nepal Med Assoc.* 2018;56(210):633-639. doi:10.31729/jnma.3600
- 7 Mishra SR, Khanal P, Karki DK, Kaalestrup P, Enemark U. National health insurance policy in Nepal: challenges for implementation. *Global Health Action.* 2015;8(1):28763. doi:10.3402/gha.v8.28763
- 8 Roth GA, Abate D, Abate KH, et al. Global, regional, and national age-sex-specific mortality for 282 causes of death in 195 countries and territories, 1980–2017: a systematic analysis for the Global Burden of Disease Study 2017. *The Lancet.* 2018;392(10159):1736-1788. doi:10.1016/S0140-6736(18)32203-7
- 9 Noncommunicable diseases country profiles 2018. Geneva: World Health Organization; 2018. License: CC BY-NC-SA 3.0 IGO.
- 10 United Nations General Assembly. Transforming our world: the 2030 Agenda for Sustainable Development [Internet] 2015 [Accessed on 2019 Oct 22]. Available from: <https://sustainabledevelopment.un.org/post2015/transformourworld>
- 11 World Health Organization. Global action plan for the prevention and control of NCDs 2013-2020. Geneva.
- 12 Multisectoral Action Plan for the Prevention and Control of Non Communicable Diseases (2014-2020). Kathmandu: Government of Nepal.
- 13 WHO (2017) WHO STEPS surveillance manual: The WHO STEPS wise approach to chronic disease risk factor surveillance. Geneva: World Health Organization

## **STEPS survey and NCD surveillance**

STEPS surveys are an integral part of nationwide NCD surveillance to track trends in key NCD risk factors and health system response including service coverage and utilization. As part of this surveillance system, this is Nepal's 3rd national STEPS survey conducted from since 2007. The previous two rounds were conducted in 2012-2013 and 2007-08, respectively<sup>14</sup>. In addition, Nepal conducted two subnational surveys before 2007. However, since the country has modified its federal structure, government is planning NCD related activities at the newly established provincial levels. Therefore, the 2019 STEPS survey also provides estimates for key indicators not only at the national level but also at provincial levels. Nepal Health Research Council (NHRC) in collaboration with Ministry of Health and Population (MOHP) and World Health Organization (WHO).

### **1.2 Objectives of STEPS Survey (2019)**

#### **General Objective**

- To assess the prevalence of selected NCD risk factors among 15-69 years old population in Nepal

#### **Specific Objective**

- To measure the prevalence of behavioral risk factors (tobacco use, harmful use of alcohol , low fruits and vegetable consumptions,average population salt intake, and physical inactivity)
- To assess the implementation of tobacco and alcohol- related policies
- To measure the prevalence of biological risk factors (raised blood pressure, overweight, obesity, raised blood glucose and total cholesterol)
- To assess responses of national health system in terms of coverage with early detection and treatment of key physiological risk factors (i.e. raised blood pressure, raised blood glucose and total cholesterol)
- To assess the oral health practices of the adult population
- To assess the stress level among the adult population (15-69 years of age)
- To measure the prevalence of low back and joint pain in adult population
- To assess the coverage, availability and use of cervical cancer screening/testing services and reasons for not getting screened or treated
- To assess the status of violence and injury level among 15–69 years aged population
- To assess the coverage of Health Insurance Scheme (SHI) among the adult population (15-69 years of age)

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<sup>14</sup> 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



## CHAPTER 2

# SURVEY METHODOLOGY

STEPS-2019 is national cross-sectional population-based household survey that used multi-stage cluster sampling design to sample households and eligible adult men and women (15–69 years of age) for questionnaire interview and physical examination (anthropometry, blood pressure measurement, blood glucose and cholesterol and urine sample for salt).

### 2.1 Survey population

Survey population included men and women aged 15–69 years who have been the usual residents of the household for at least six months and have stayed in the household the night before the survey. People with the following characteristics were not included:

- 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 too frail and mentally unfit to participate in the study
- Those with any physical disability
- Those unable or unwilling to give informed consent

### 2.2 Sample size

Sample Size:

To ensure generalization and reliability of the survey results to the entire target population in Nepal, the sample size calculator as recommended by WHO (sample size calculator STEPS) was used to derive a sample size. Considering the creation of new administrative divisions- 7 Provinces—a need was felt to generate the estimates for key indicators at the Province level in addition to generating reliable estimates at national level for men and women and for urban and rural municipalities. Hence, the sample size was calculated that is sufficient to produce reliable estimates for all the key indicators at Province level giving 7 strata at the first stage.

**1<sup>st</sup> Step:** Minimum sample size needed per Province (the sampling domain)

Minimum sample size was calculated using following formula where a conservative estimate of prevalence of 0.5 of key indicator was considered at the Province level.

$$n = \frac{z^2 p(1-p)}{d^2}$$

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 = Prevalence of 0.5 was considered for most indicators as the conservative estimate.

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

$$n = \frac{3.84}{0.05} \left( \frac{0.5}{0.5} \left( 1 - \frac{0.5}{0.5} \right) \right) = 384.16$$

The calculated sample size for each Province was n=384.16, without taking into account the non-response and design effect

**2<sup>nd</sup> Step:** adjusting for design effect and non-response:

In calculation of sample size, to achieve a more robust estimate, the sample size was adjusted for non-response (15%) and design effect of 2.

$$n = 384.16 / 0.85 * 2 = 903.9 \text{ per domain/Province}$$

3<sup>rd</sup> Step: Sample size at the national level: Furthermore, since the data is supposed to be analyzed in 7 domains, the sample size was multiplied by 7 and the final calculated sample size was rounded up to 6328.

$$n = 903.9 * 7 (\text{Provinces}) = 6327.34 \text{ (sample size at national level)}$$

One adult was sampled for each sampled household. 925 survey participants were sampled from each of seven Provinces with the total sample size of 6475 household adults at the national level. This sample size allows national estimated disaggregated by gender, residence and 4 main age groups, in addition to overall provincial level estimates.

### 2.3 Sampling strategy:

Sampling of Primary sampling units (clusters):

This national representative sample was selected through multistage cluster sampling. Sampling frame consisting of the distribution of old wards as in census 2011 was obtained from Central Bureau of Statistics (CBS). Then, in each of the Province, the old wards were compared with current classification of metropolitan, sub metropolitan, municipality and rural municipalities and recorded as per new classification which has been recently updated by the government of Nepal. The location of the new classifications were matched with the old wards and, finally, used as the sampling frame for selecting Primary Sampling Units (PSUs) for 2019 STEPS survey.

As a trade-off between survey costs and reducing the standard error, it was decided to sample 25 survey participants from each cluster, requiring sampling of 36.12 ~37 clusters in each of 7 Provinces i.e. 259 clusters at national level.

Within each Province, the numbers of clusters were assigned to the three sub-strata in metropolitan, sub metropolitan, municipality and rural municipality in proportion to the share of population in each of these 3 substrata in the total Province population.

Sampling of households and individuals from clusters:

A total of 25 households were sampled from each of the cluster. A sampling frame of all the households in the sampled PSUs was obtained through a complete household listing and mapping carried out in the sampled PSUs in September 6 to December 6 2018.

## **2.4 Household listing and mapping**

Sampling frame for selection of households from each PSU was prepared by conducting household listing and mapping. The team of enumerators visited the sampled PSUs and carried out a complete mapping of all the households in the PSU. If the sampled cluster were large, (if the population exceeds 300), cluster was segmented. In that case, field team started from northeast corner of each PSU and prepared an enumeration area of 300 households with at least one person aged 15 years or more. Household listing questionnaire was used to list all of the household's members in selected PSUs. The listing was carried out electronically using Android ODK software. Mapping was done along with household listing. Drawing a location map of the cluster as well a detailed sketch map of all structures residing in the cluster was done. These materials guided the interviewers to return to the pre-selected households for interview.

The lists of the households so prepared from all the sampled PSUs served as the sampling frame for the selection of households in the next stage. From the prepared list, 25 households per PSU were sampled using equal systematic random sampling after determining the sampling interval by dividing the number of listed household by 25 and by randomly selecting the starting number between 0 and the sampling interval.

From each of the selected household, one adult member was sampled randomly for participation in the survey using the android tablet.

## **2.5 Questionnaires: Data collection tools**

The survey was conducted using the standardized WHO NCD STEPS questionnaire version 3.2. The questionnaire consisted of a number of core, expanded and country specific questions that were modified to suit local needs. Nepal included all core modules and some of the optional modules such as, tobacco policy, violence and injury, oral health, and cervical cancer screening. In addition, Nepal included an alcohol policy module and household asset module (as part of demographic information) in technical consultation with WHO Regional office for South-east Asia. Several country-specific questions such service utilization and sources of care for management of hypertension diabetes mellitus and cholesterol were included in consultation with WHO regional office for South-east Asia in almost all the modules to assess the new policies and programs that have evolved in Nepal over the years. Apart from WHO STEPS instrument modules, the survey also included a country-specific module to assess the stress level and joint and back pain. After the questionnaire were translated and administered in local Nepali language.

The survey process consisted of three steps for measuring the NCDs risk factors.

**Step I** included administration of a questionnaire to elicit

- Demographic information: date of birth/ age, sex, ethnicity, marital status, years at school, primary occupation and possession of specific household assets (to compute household wealth index as a proxy for economic status in place of income/expenditure).
- Tobacco use and related policies
- Alcohol consumption and related policies
- Fruit and vegetable consumption
- Dietary salt consumption practices, knowledge, and perceptions
- Physical activity levels in three key domain (work, commute and leisure) and sedentary habits
- Mental stress, musculoskeletal pain (joint pain, and back pain) and membership in any health insurance scheme (country-specific module)
- Oral health
- Cervical cancer screening
- Violence and injury
- History of raised blood pressure and raised blood glucose, and sources of care and reasons for non-treatment

**STEP II** included physical measurements: weight, height, waist/hip circumference and Blood pressure, heart rate. These measurements were carried out at the home of the survey participants immediately after conclusion of the STEP 1.

**STEP III** included biochemical measurements: fasting blood glucose, total cholesterol and urine sample for testing of sodium, potassium and creatinine levels. The blood tests were carried out the next day at a common place for all the participants of a cluster. Urine samples were sent to a regional lab for testing.

## 2.6 Data Collection Technique

Each field survey team was provided the list of sampled households along with the detailed map of the cluster. Field survey teams visited the sampled households and were followed up at least twice in case of non-availability of the participants on the first visit. A respondent who could not be contacted even after the second attempt was counted as a non-response.

An interview tracking form was completed to record brief information about the respondent. If the sampled household member was present on the first visit, s/he was requested to participate in the survey and written informed consent was obtained. If s/he was not available at home during the first visit, a second visit was made. Once the consent was obtained, the STEP I and II were completed, urine container with QR code was given to the participant. The questionnaires were administered by trained interviewers and data collection was done digitally using android application of STEPS i.e. android tablets. Data from the tablets were submitted to cloud-based server after completing the data collection. Assistive pictorial show cards were shown to the participants during the interview to provide visual reference including various tobacco, alcohol products, servings of different fruits and vegetables and corresponding servings sizes (one standard serving of fruit or vegetables equals 80 grams), various salty sauces and processed foods, various levels of physical activity and sedentary activities (Annex III).

After completing STEPS I and II, a feedback form was given to participant which included information on their height, weight, hip and waist circumferences, blood pressure (third reading) and heart rate (third reading).

An appointment/clinic card was also given to every participant for biochemical measurement containing fasting instruction. This card contained the appointment date, time and place for blood glucose measurement. On the given date and time, the enumerators made biochemical assessment (fasting blood glucose and lipid) using Cardiocheck™. Participants were instructed to fast overnight for 12 hours and diabetic patients on medication were requested to bring their medicine/insulin with them and take their medicine after providing the blood sample. To ensure high response rate for STEP3, the enumerators called the participants on the day of testing if he/she failed to come as per the appointment.

Similarly for purpose of population salt estimation urine containers with QR code pasted on them were provided to participants to collect spot urine. The instruction for spot urine collection was given and asked them to bring the urine sample with them to the appointment for blood testing the next morning.

## 2.7 Physical measurements: Anthropometry and Blood pressure

### Anthropometry

Height, weight, hip and waist circumference were measured for all sampled individuals who gave their consent for STEP 2.

*Height* was measured with a portable standard stature tape (Seca, Germany). For the height measurement, participants were asked to remove footwear (shoes, slippers, sandals) and any hat or hair ties. Participants were requested to stand on a flat surface facing the interviewer with their feet together and knees straight. They were asked to look straight ahead and not tilt their head up, making sure that their eyes are at the same level as their ears. Height was recorded in centimeters.

*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 idly 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 them. 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

Blood pressure was measured with a digital, automated blood pressure monitor (OMRON digital device) with an universal size cuff. 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 were requested to rest for three minutes between each reading. The mean of the second and third readings was calculated. The sphygmomanometer cuff was placed on the left arm while the participant rests 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 is 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.

## 2.8 Biochemical measurements: Blood sugar and lipids measurement

#### Blood sugar and lipid

After STEP 1 and STEP 2 of data collection at sampled individual home, biochemical assessments were performed the next day at a designated place of the PSU for blood glucose and total cholesterol, measured through dry chemistry using CardioChek PA Analyser as recommended and supported by WHO. Concentrations of glucose, total cholesterol were measured in capillary whole blood. Fasting samples were taken to measure raised blood glucose. Participants were instructed to fast overnight for 12 hours at the time of household visit for Step 1 and 2.

*\*Note: The methods adopted for measurements of blood sugar and cholesterol for 2019 is different in comparison to 2013<sup>1</sup> STEPS survey. In 2013 measurements of cholesterol was carried out by clinical diagnostic laboratory methods i.e. wet methods. However, in 2019, we used CardioChek PA point-of-care testing (POCT) for analyzing blood glucose and lipids i.e. dry methods.*

*CardioChek PA has clear advantages over the laboratory-based approach for delivering population based health care screening programs<sup>2</sup>. CardioChek PA is easy to use and rapid determination of lipid value that can be used for the application of clinical screening anywhere<sup>234</sup>. For NCDs STEPS survey, besides Nepal, many countries have adopted CardioChek PA for population based screening of glucose and cholesterol levels<sup>567</sup>.*

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- 1 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
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  - 6 Gebreyes, Y. F., D. Y. Goshu, et al. (2018). "Prevalence of high blood pressure, hyperglycemia, dyslipidemia, metabolic syndrome and their determinants in Ethiopia: Evidence from the National NCDs STEPS Survey, 2015." *PloS one* **13**(5): e0194819.
  - 7 Nahimana, M.-R., A. Nyandwi, et al. (2018). "A population-based national estimate of the prevalence and risk factors associated with hypertension in Rwanda: implications for prevention and control." *BMC public health* **18**(1): 2.

## 2.9 Estimation of 24-hour salt intake based on sport urine testing

The STEPs survey utilizes spot urine sample as a proxy to 24h urine samples for the estimation of mean population salt intake. WHO has long supported the use of 24-hour urine sample as the preferred method for the assessment of population mean salt intake, despite so, the challenges faced during sample collection due to high participant burden has significantly reduced the use of the tool. The relative convenience of spot urine samples has provided a more appealing alternative. Current literature supports the use of spot urine samples to estimating mean population salt intake<sup>8</sup>. Spot urine collection was done to identify the level of sodium (Na), potassium (K) and creatinine.

### Spot urine sample collection process

Urine sample were collected from all participants age 15-69 years who consented to STEP 3-biochemical measures component of the survey. Urine samples were self-collected by participants at the night of the survey interview at home before fasting for blood sample collection the next day during their scheduled appointment. The participants were requested to void into the urine containers provided, fill half of the container and record time of collection. Instructions were given to store the sample in a cool, dark place without direct sunlight before they brought the sample container to the collection centre the next morning during their appointment. The collected urine sample was stored in dark place in normal room temperature until they were transported to the lab.

Laboratory setup was done in every Province headquarters and nearly located places (**Figure 2. 1**). Urine samples were matched with participants using QR codes attached to each urine sample container that corresponds to respondent's unique ID. Determination of Na and K in urine is carried with Ion-Selective Electrodes in an Automated Analyzer. Similarly, determination of creatinine was carried out using semi-automated creatinine analyzer. The unit of measurements for Na and K was mmol/L, while creatinine was mg/dl.

At time of analysis of data, participants were excluded if they were pregnant; were fasting before collecting the urine sample; have contaminated urine samples with blood.

**Figure 2.1** Laboratory location used for urinary sample analysis and corresponding analyzers used for analysis

Province	Hospital Name	Na, K analyzer	Creatinine analyzer
Province 1 and 2	Koshi Provincial Hospital, Biratnagar	Jokoh, Japan	Standbio, USA
Province 3	Nepal Health Research Council, Kathmandu	Jokoh, Japan	Standbio, USA
Gandaki Province	Pokhara Academy of Health Sciences, Pokhara	Jokoh, Japan	Standbio, USA
Province 5	Health Post, Butwal	Jokoh, Japan	Standbio, USA
Karnali Province	Karnali Provincial Hospital	Jokoh, Japan	Standbio, USA
Sudoorpasschim Province	Seti Provincial Hospital	Jokoh, Japan	Standbio, USA

<sup>8</sup> Petersen, K. S., J. H. Y. Wu, et al. (2017). "Estimating mean change in population salt intake using spot urine samples." Int J Epidemiol 46(5): 1542-1550.

## 24-h salt intake estimation

Three main studies developed the estimation of 24-h urinary sodium intake from spot urine samples that are used in our STEPS survey: Kawasaki<sup>9</sup>, INTERSALT<sup>10</sup> and Tanaka<sup>11</sup>. However, limited evidence support the preferential use of one equation over another in a given population/context. Nepal estimated the 24 hours salt intake for the first time, and it was not included in 2013 survey. For this survey, Nepal used the INTERSALT Southern European equation to estimate 24 hour mean salt intake.

### INTERSALT

#### For North America (HQ):

Male:

$$\left( 23.51 + 0.46 \times Naspot \left( \frac{mmol}{L} \right) \right) - 3.09 \times Crspot \left( \frac{mmol}{L} \right) - 4.16 \times BMI \left( \frac{kg}{m^2} \right) + 0.26 \times Age(year)$$

Female:

$$\left( 3.74 + 0.33 \times Naspot \left( \frac{mmol}{L} \right) \right) - 2.44 \times Crspot \left( \frac{mmol}{L} \right) - 2.42 \times BMI \left( \frac{kg}{m^2} \right) - 2.34 \times Age(year) - 0.03 \times Age^2(year)$$

#### For Southern Europe:

Male:

$$\left( 20.861 + 0.45 \times Naspot \left( \frac{mmol}{L} \right) \right) - 3.09 \times Crspot \left( \frac{mmol}{L} \right) - 4.16 \times BMI \left( \frac{kg}{m^2} \right) - 0.22 \times Age(year)$$

Female:

$$\left( 21.90 + 0.33 \times Naspot \left( \frac{mmol}{L} \right) \right) - 2.44 \times Crspot \left( \frac{mmol}{L} \right) + 2.42 \times BMI \left( \frac{kg}{m^2} \right) + 2.34 \times Age(year) - 0.03 \times Age^2(year)$$

#### For Eastern Europe:

Male:

$$\left( 39.58 + 0.45 \times Naspot \left( \frac{mmol}{L} \right) \right) - 3.09 \times Crspot \left( \frac{mmol}{L} \right) + 4.16 \times BMI \left( \frac{kg}{m^2} \right) + 0.22 \times Age(year)$$

Female:

$$\left( 17.02 + 0.33 \times Naspot \left( \frac{mmol}{L} \right) \right) - 2.44 \times Crspot \left( \frac{mmol}{L} \right) + 2.42 \times BMI \left( \frac{kg}{m^2} \right) + 2.34 \times Age(year) - 0.03 \times Age^2(year)$$

### Tanaka

$$21.98 \times \left( \frac{Naspot \left( \frac{mmol}{L} \right)}{Crspot \left( \frac{mg}{dL} \right) * 10} \times PrUCr24h \left( \frac{mg}{day} \right) \right)^{0.392}$$

$$PrUCr24h = 14.89 \times Weight(kg) - 16.14 \times Height(cm) - 2.01 \times Age(year) - 2244.15$$

9 Kawasaki, T., K. Itoh, et al. (1993). "A simple method for estimating 24 h urinary sodium and potassium excretion from second morning voiding urine specimen in adults." Clinical and experimental pharmacology and physiology 20(1): 7-14.

10 Elliott, P., I. J. Brown, et al. (2013). "Elliott et al. Respond to "Quantifying Urine Sodium Excretion"." American Journal of Epidemiology 177(11): 1196-1198.

11 Tanaka, T., T. Okamura, et al. (2002). "A simple method to estimate populational 24-h urinary sodium and potassium excretion using a casual urine specimen." Journal of human hypertension 16(2): 97.

### **Kawasaki**

$$16.3 \times (NasSpot \left( \frac{mmol}{L} \right) / (CrSpot \left( \frac{mg}{dl} \right) \times 10)) \times PrUCr24h(mg/day)^{0.5}$$

$$PrUCr24h = 15.12 \times Weight(kg) + 7.39 \times Height(cm) - 12.63 \times Age(year) - 79.90(Male)$$

$$PrUCr24h = 8.58 \times Weight(kg) + 5.09 \times Height(cm) - 4.72 \times Age(year) - 74.50(Female)$$

Additional information that are required by the equations include respondent weight, height, age, sex. Participants whose height was less than 100 cm or above 270 cm; weight was less than 20kg or above 350 kg were excluded. When conversion of creatinine from mg/dl to mmol/L was called for, creatinine in mg/dl was multiplied with a conversion factor of 0.0884. The equations given above compute 24 hour ‘sodium’ intake, which is then converted to ‘salt’ intake by the division of 17.1 (or multiplication of 2.54/1000\*23) as a conversion factor to obtain the final estimated 24-hour salt intake in grams.

## **2.10 Quality control and pretest**

This study adopted the validated WHO STEPS instrument version 3.2. The English version of the instrument was translated into Nepali. Pretest was conducted with technical support of a team from Nepal Health Research Council (NHRC). About 8 households from kritipur municipality were selected for pretests. Feedbacks from pretests were then collected and used for finalization of questionnaire, field procedures, and show-cards and for finalization of an overall data collection Guideline for STEPS. The revised instruments were also endorsed by the Steering Committee which comprises of experts in the field of non-communicable disease prior to use in the field.

## **2.11 Field Staff and Field work**

### **Field Staff**

Sixty field research assistants with a background of bachelor’s degree in public health, nursing, laboratory, and health sciences were mobilized. These 60 field research assistants participated in a four-day-long training workshop provided by WHO technical experts (from HQ, South-East Asia Regional office) from January 15 to January 18, 2019 at NHRC, Kathmandu, Nepal.

### **Field work**

The field work was carried out between Feb 9, 2019 to May 8, 2019. Sixty enumerators were divided into 30 teams comprising two enumerators in each. To retain the enumerators, till last of the survey, team was mobilized from very difficult train to relatively easier ones. Data collection was started from Sudoor pashchim Province (relatively difficult terrain compared to other Province), as the team completed their assigned PSUs, they were informed about the next PSUs (assigning both easy and difficult PSUs equally). Any technical and field related issues were solved by STEPS team. Frequent monitoring and supervision was done during data collection period from NHRC and WHO Country Office, Nepal.

## **2.12 Data processing and analysis**

### **Data processing**

The survey data was entered directly in the ODK software on the android tablets. As soon as data entry for STEPS 1 and 2 and STEPs 3 was completed, data were sent electronically and stored in ONA data base server. The same applied to urine test results. Furthermore, field team uploaded the data on daily basis to the server and the data were downloaded at central office for consistency check. The central data management team checked

the data for any inconsistencies and incompleteness. The enumerators were alerted and advised in every step of data collection and provided guidance if any inconsistency was noted and persisted. The data from server were downloaded into Microsoft Excel® files. Each survey participants had a unique identifier QR-code and personal identification number (PID) which was used to merge data for steps 1,2,3 and urine testing results. Once the survey was completed the data were cleaned and analyzed according to guidelines of WHO STEPS wise approach to surveillance. For the validity of study, all steps were followed as per the guideline of WHO STEPS wise approach to surveillance.

### **Weighting of data**

Data weighting was carried out to represent the target population. Weight is calculated with technical support of WHO experts. Thus, sample weighting and adjustments were carried out for probabilities of selection of PSUs, selection of households and non-response rate using 2011 population for Nepal retrieved form CBS.

### **Data analysis:**

Data analysis was primarily performed using STATA version 15.0 and Epi Info version 3.4 with appropriate methods for the complex sample design of the survey. The prevalence and measures of central tendency of NCD risk factors were estimated. Outcome measures (prevalence and mean variance) and differences between groups were calculated with a 95% confidence interval. Data analysis and report writing was carried out by NHRC STEPS team with technical support of WHO Regional office for South-east Asia. WHO regional office provided the standardized table templates for organizing the results as well as for the main chapters and provided the data analysis program files to compute the main indicators in both epi-info as well in STATA (do files).

\*Note: Bar diagram presented in whole reports for age, education and wealth index is displayed as increasing order which means:

*Increasing age: 15-24, 25-39, 40-54, and 55-69 years*

*Increasing level of education: None less than primary, primary, secondary, and more than secondary*

*Increasing level of wealth: Lowest, second, middle, fourth, and highest*

*Similarly, the province name that were assigned before the date 15<sup>th</sup> December, 2019 were only consider in the report*

## **2.13 Response rates**

Amongst the initially planned 6475 sample size, 1 PSU with 25 participants was dropped, leaving 6450 as our total sample size.

Total Sample size = 6450	Number of participants	Response rate
STEP 1	5593	86.7%
STEP 2	5582	86.5%
STEP 3	5350	82.6%

## **2.14 Ethical considerations**

The study was approved by the Ethical Review Board of Nepal Health Research Council. Written informed consent was obtained from each of participant. Participants were informed regarding their right to withdraw from the survey at any time without penalty and issues concerning confidentiality and consent will be upheld in accordance with ethical research standards. Data obtained from the survey participants will not be used for any other purpose than to inform national NCD policy and programs. Participants were also informed about their anthropometry and test results (BMI, BP, fasting blood glucose and total cholesterol). Participants with out of range values were advised and referred to nearby health facilities for further evaluation and necessary care.



## CHAPTER 3

# CHARACTERISTICS OF PARTICIPANTS AND HOUSEHOLDS

### Key Findings

- *Age:* half of all participants were less than 40 years of age.
- *Gender:* 64.3 % of participants were women and 35.7% were men.
- *Marital status:* 81.67% of women and 73.4% of men were currently married, while 14.6% of women and 25.2% of men have never married.
- *Education:* 39.7% of participants have no education or have completed less than primary level, and only 15.3% have attained higher than secondary-level of education.
- *Occupation:* 14.7% of women and 53.5% of men were currently employed either in government or private jobs.
- *Ethnicity:* 46.3% of participants belonged to disadvantaged groups (Dalits, disadvantaged *Janajati* and disadvantaged non-dalit *Tarai* caste groups), 5.2% to religious minorities and 33.6% to upper caste groups.
- *Household wealth:* A vast majority (91.2%) of households in Nepal have access to electricity, and a similar proportion

### 3.1 Basic characteristics of survey participants

The 2019 STEPS Survey interviewed 3,595 women and 1,998 men age 15-69 years (**Table 3.1**). More than half of the participants were less than 40 years of age. Younger age groups participants (15-39 years) were more educated than older age groups. A majority of participants belonging to 25-54 years were employed (**Table 3.2**). While one-third of participants belonged to upper-caste groups, more than 40% of participants belonged to disadvantaged groups—*dalits* (10.5%), disadvantaged *Janajati* (18.2%) and disadvantaged non-*Dalit Tarai* caste groups (17.6%). Five percent of participants belonged to religious minorities (**Table 3.5**).

A majority of women (81.7%) and men (73.4%) were currently married, while 14.6% of women and 25.2% of men were never married. Nearly four percentage of women and 1.5% of men were divorced, separated or widowed (**Table 3.1**).

Almost 54% of participants lived in municipalities, while 8.9% of participants lived in metropolitan or sub-metropolitan states and 37.2% of participants lived in rural municipalities.

### 3.2 Education

Nearly 40% of adults (46.3% of women and 32.2% of men) reported none or less than primary level of education. Over 40 % of adults reported secondary (24.9%) or higher than secondary level of education (15.3%) (**Table 3.1**).

#### Patterns by background characteristics (**Table 3.2**)

- *Age and educational level:* Younger age cohorts had fewer participants with none or less than primary education (11.7% in 15-24 years) compared to older age groups (80.1% in 55-69 year age group).

- *Household wealth and educational level:* The likelihood of no or less than primary education decreased with increasing wealth from 57.2% of participants in lowest wealth quintile to 20.2% in the highest wealth quintile. Higher wealth quintiles had more number of participants with secondary and more than secondary level of education.
- *Residence and educational level:* Adults who lived in rural municipalities were more likely to report lower education levels. 42.6% of adults in rural municipalities reported no or less than primary education compared to 36.8% in metropolitan/sub-metropolitan areas.

### 3.3 Employment

More than half of men (53.5%) and 14.7% of women—overall 33% were currently employed either as government (1.6% overall), non-governmental (8.2%) or self-employed (23.1%). 4% of women and 8.4% of men were unemployed. 68.4% of women and 19.8% of men reported as homemakers (**Table 3.2**).

#### Patterns by background characteristics (**Table 3.2**)

- *Age, sex and occupational status:* Participants at the extremes of age groups i.e. 15-24 years and 55-69 years were less likely to report being employed. Highest proportion of participants reported being employed in 25-39 years age group followed by 40-54 years age group. More men were employed (53.5%) than women (14.7%).
- *Household wealth and occupation status:* The likelihood of being employed increased with increasing wealth from 19.7% of participants in lowest wealth quintile to 46.4% in the highest wealth quintile. The reverse relationship was seen with being a home-maker.
- *Residence and occupational status:* Adults who lived in rural municipalities were less likely to report being employed. The likelihood of being employed also varied by Province from 27.5% in Province 1 to 36.8% in Province 5.

### 3.4 Household characteristics and assets

The survey collected data on type of household roof, access to electricity, and selected household durable goods (mobile phones, televisions, radio) and means of transportation to assess the overall household wealth. A vast majority (91.2%) of households in Nepal have access to electricity (82.2% in rural municipalities and 99.8% in metropolitan or sub-metropolitan areas (**Table 3.3**). A variety of roofing materials are used in Nepalese households—the most common being metal/galvanized sheets (42.7%), cement (30.3%) and ceramic tiles (10.4%), thatched/palm leaves (6.6%).

#### *Household consumer goods:*

Almost 9 in 10 households (89.6%) have at least one mobile phone. In addition to the mobile phones, 5.7% of households also have fixed land-line telephones (18.6% in metropolitan areas and 1.7% in rural municipalities). Overall nearly 60% of households each reported to own a TV and radio, while the ownership of TV is much higher in metropolitan areas compared to municipalities (87.3% versus 41.8%), differences in radio ownership are less stark by residence (73.8% versus 51.9%). 11.4% of households reported having a computer, much higher in metropolitan areas than in other areas (**Table 3.3**).

### 3.5 Household wealth index

Household wealth assessed on the basis of selected household characteristics (e.g. type of roof, access to electricity), means of transportation used and possession of selected consumer goods was used as indicator of economic status rather than direct assessment of household income or other traditional measures of income—consumption/expenditure levels, as the former is easier to assess in household surveys and was found to be

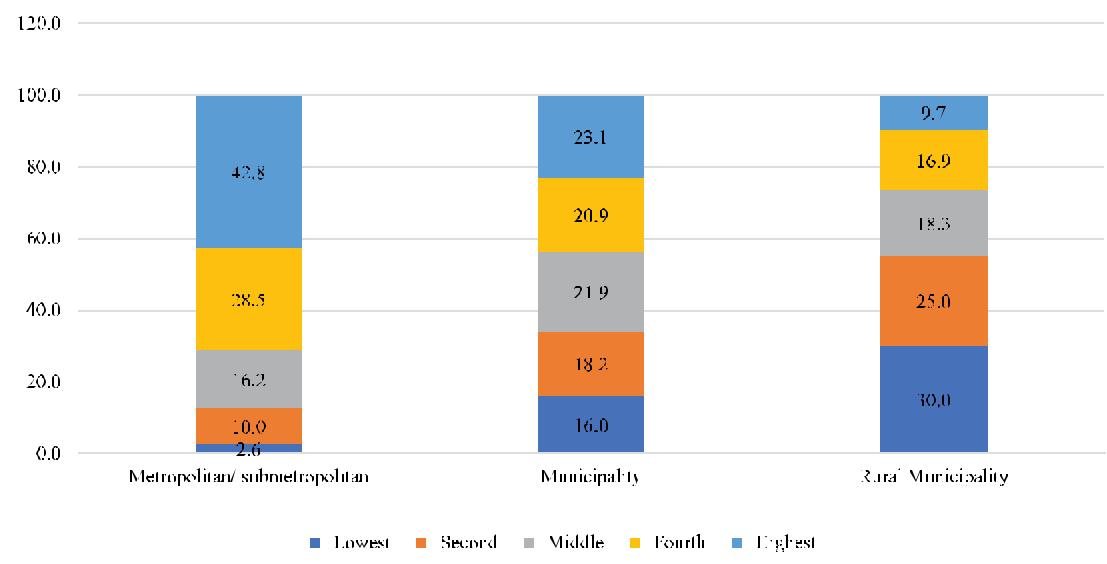
a valid marker of economic status<sup>1</sup>. Household wealth index has been used as a key stratifier to assess socio-economic differentials in prevalence of NCD risk factors and care-seeking behaviors.

*Computation of household wealth index:*

Households were given scores based on the number and kind of consumer goods they owned ranging from a television to a bicycle or a car and housing roof characteristic. These scores are derived using Principal Component Analysis (PCA). National wealth quintiles are compiled by assigning the household score to sample individuals, ranking them by his/her household score, and then dividing the distribution into five equal categories, each comprising 20% of the population.

While 42.8% of individuals living in metropolitan/submetropolitan areas were categorized under the highest wealth quintile, only 9.7% from rural municipalities were in the lowest wealth quintile. Province 2 and 3 have the highest proportion of individuals in the highest wealth quintile and lowest proportion was observed in Karnali Province and Sudurpashchim Province (**Table 3.4**).

**Figure 3.1** Distribution of sampled individuals by wealth quintile and residence

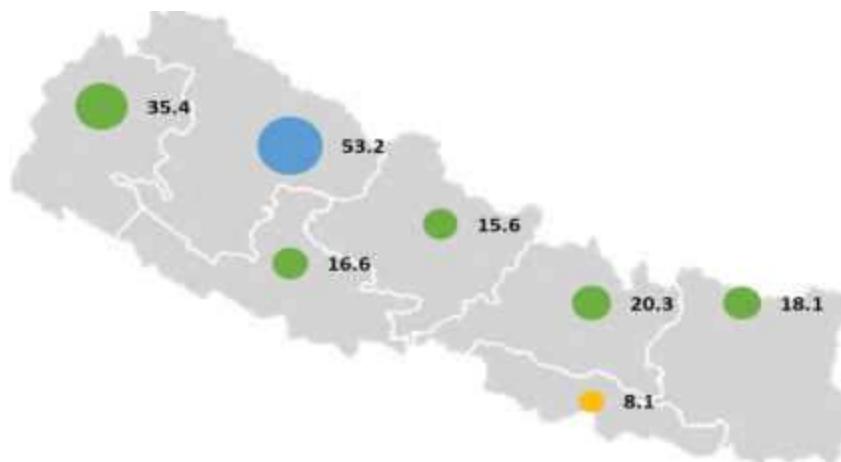


<sup>1</sup> Filmer, D. and L. Pritchett. 1988. "Estimating wealth effects without expenditure data—or Tears: An application of education enrolments in States of India." World Bank Policy Research Working Paper No 1994. Washington DC: World Bank Development Economics Research Group.

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**Figure 3.2** Percent of households in the poorest quintile by Province

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## **LIST OF TABLES:**

For more information on physical activity, see the following tables:

**Table 3.1 Background characteristics of participants by sex**

**Table 3.2 Educational and occupation status of participants**

**Table 3.3 Characteristics of sampled households**

**Table 3.4 Household Wealth quintiles**

**Table 3.5 Ethnicity**

**Table 3.1 Background characteristics of participants by sex**

Percent distribution of participants age 15-69 years by selected background characteristics, [Nepal STEPS, 2019]

Background characteristic	Women		Men		Total	
	weighted percent	N	weighted percent	N	weighted percent	N
<b>Age</b>						
15-24	26.5	568	27.5	275	27.0	843
25-39	40.2	1472	37.1	615	38.7	2087
40-54	20.7	965	21.0	609	20.8	1574
55-69	12.6	590	14.4	499	13.5	1089
<b>Residence</b>						
Metropolitan/ submetropolitan	8.4	429	9.5	276	8.9	705
Municipality	54.0	1791	53.7	964	53.8	2755
Rural Municipality	37.6	1375	36.8	758	37.2	2133
<b>Province</b>						
Province 1	18.2	519	18.4	285	18.3	804
Province 2	18.2	450	20.9	353	19.5	803
Province 3	15.3	457	17.2	302	16.2	759
Gandaki Province	8.1	526	8.1	267	8.1	793
Province 5	21.5	529	19.5	268	20.6	797
Karnali Province	5.8	547	5.4	261	5.6	808
Sudurpashchim Province	12.9	567	10.6	262	11.8	829
<b>Marital status</b>						
Never married	14.6	288	25.2	250	19.5	538
Currently married	81.7	3067	73.4	1685	77.8	4752
Ever married <sup>4</sup>	3.8	239	1.5	63	2.7	302
<b>Education</b>						
No education	46.3	2000	32.2	792	39.7	2792
Primary	19.2	627	21.1	424	20.1	1051
Secondary	20.1	622	30.3	466	24.9	1088
More than secondary	14.4	345	16.4	316	15.3	661
<b>Wealth quintile</b>						
Lowest	22.6	1149	17.1	504	20.0	1653
Second	21.5	696	18.3	366	20.0	1062
Middle	20.4	604	19.7	345	20.1	949
Fourth	17.9	540	22.5	338	20.1	878
Highest	17.6	606	22.4	445	19.9	1051
<b>Total (15-69)</b>		3595		1998		

<sup>1</sup> Government/Non-Government/Self-Employed; <sup>2</sup> Able to work/Unable to work; <sup>3</sup> Non-paid, Retired, Others, Refused <sup>4</sup> Separated/Divorced/Widowed

**Table 3.2 Educational and occupation status of participants**

Percent distribution of educational and occupational status of participants age 15-69 years by selected background characteristics, [Nepal STEPS, 2019]

Background characteristic	Education			Occupation			Number of adults			
	No education	Primary	Secondary	More than secondary	Employed <sup>1</sup>	Student	Homemaker	Unemployed <sup>2</sup>	Others <sup>3</sup>	
<b>Age</b>										
15-24	11.7	25.3	39.2	23.8	20.0	50.0	25.4	4.3	0.3	843
25-39	33.5	20.5	28.1	17.9	42.1	2.0	48.6	6.3	0.6	2087
40-54	61.2	17.5	13.5	7.9	38.7	0.1	54.4	5.3	1.2	1574
55-69	80.1	12.6	5.0	2.3	23.5	0.2	63.2	10.1	2.9	1089
<b>Sex</b>										
Women	46.3	19.2	20.1	14.4	14.7	12.4	68.4	4.0	0.4	3595
Men	32.2	21.1	30.3	16.4	53.5	16.5	19.8	8.4	1.6	1998
<b>Residence</b>										
Metropolitan/ submetropolitan	36.8	10.6	30.7	21.9	35.0	17.0	33.9	12.2	1.3	705
Municipality	38.1	20.6	26.4	15.0	34.1	13.4	46.4	5.0	1.0	2755
Rural Municipality	42.6	21.7	21.4	14.3	30.8	15.0	47.0	6.2	0.9	2133
<b>Province</b>										
Province 1	33.9	26.5	27.8	11.8	27.5	15.9	48.3	7.2	0.7	804
Province 2	47.7	15.9	20.2	16.2	33.6	9.8	51.0	4.1	1.1	803
Province 3	38.4	17.8	23.8	20.0	33.3	12.2	41.4	11.3	1.8	759
Gandaki Province	29.1	25.2	28.2	17.5	35.0	14.6	44.7	4.0	1.6	793
Province 5	42.8	19.3	23.5	14.5	36.8	14.5	43.6	4.5	0.5	797
Karnali Province	33.4	19.3	29.3	18.0	28.6	21.7	44.8	4.4	0.5	808
Sudurpashchim Province	42.0	18.5	27.8	11.7	33.6	18.1	42.1	5.3	0.7	829

	<b>Marital status</b>					
	Never married	Currently married	Ever married <sup>4</sup>			
Never married	8.4	22.7	40.6	28.4	18.3	67.1
Currently married	45.9	45.9	19.9	21.7	37.3	1.5
Ever married <sup>4</sup>	86.3	86.3	6.5	4.7	15.4	2.5
<b>Wealth quintile</b>						
Lowest	57.2	18.6	17.8	6.4	19.7	11.6
Second	44.8	24.0	22.6	8.7	30.5	16.3
Middle	43.4	22.3	23.6	10.7	30.0	16.2
Fourth	32.8	21.0	30.1	16.2	38.2	13.5
Highest	20.2	14.6	30.4	34.8	46.4	14.0
<b>Total (15,69)</b>	<b>39.7</b>	<b>20.1</b>	<b>24.9</b>	<b>15.3</b>	<b>32.9</b>	<b>14.3</b>
						<b>5.593</b>

<sup>1</sup> Government/Non-Government/Self-Employed; <sup>2</sup> Able to work/Unable to work; <sup>3</sup> Non-paid, Retired, Others, Refused<sup>4</sup> Separated/Divorced/Widowed

**Table 3.3 Characteristics of sampled households**

Percentage of households having different roof types and household possessions by residence and household wealth quintile, [Nepal STEPS, 2019]

Household characteristic	Residence					Wealth quintile					Total	
	Metropolitan / submetropolitan		Municipality	Rural municipality	Lowest	Second	Middle	Fourth	Highest	weighted percent	unweighted number	
	Weighted number	Unweighted number	Weighted number	Unweighted number	Weighted number	Unweighted number	Weighted number	Unweighted number	Weighted number	Unweighted number		
<b>Roofing material</b>												
No roof	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	1	462
Thatched/Palm leaf	0.3	4.9	10.6	13.4	6.9	5.5	4.6	2.5	6.6	6.6	43	
Rustic mat	0.0	0.3	0.6	1.0	0.7	0.1	0.1	0.0	0.0	0.4		
Bamboo	4.1	2.1	3.4	3.1	4.3	4.1	1.8	0.5	2.8	137		
Wood Planks	2.7	0.8	0.4	1.0	0.9	0.7	0.7	0.7	0.8	33		
Cardboard	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	4	
Metal/Galvanized sheet	14.7	42.7	49.3	55.6	59.8	49.2	38.4	10.1	42.7	2263		
Wood	0.2	0.8	0.8	0.5	0.8	1.1	0.9	0.2	0.7	58		
Calamine/cement fiber	5.4	6.5	3.3	6.7	4.8	5.5	6.3	2.7	5.2	309		
Ceramic tiles	14.5	10.5	9.3	11.6	12.1	10.3	11.8	6.3	10.4	694		
Cement	58.0	31.4	22.0	6.9	9.2	23.4	35.3	76.9	30.3	1580		
Roofing singles	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	2		
<b>Household possessions</b>												
Electricity	99.8	96.0	82.2	67.9	91.5	97.7	99.3	99.7	99.7	91.2	4873	
Radio	73.8	62.0	51.9	49.6	52.7	51.8	65.2	77.2	77.2	59.3	3287	
Television	87.3	66.2	41.8	11.4	37.4	69.2	79.4	97.8	97.8	59.0	2882	
Landline	18.6	6.7	1.4	0.0	0.6	0.3	1.8	26.5	26.5	5.7	392	
Mobile phone	92.9	92.8	84.3	74.4	85.3	93.2	96.5	98.8	98.8	89.6	4866	
Computer	22.0	14.5	4.3	0.7	2.1	5.2	8.0	41.2	41.2	11.4	617	
Refrigerator	22.9	19.3	6.5	0.0	0.0	3.2	14.1	57.2	57.2	14.9	839	
Inverter	16.9	9.6	9.1	3.8	6.0	2.9	5.8	31.9	31.9	10.0	559	
Bed	85.9	90.2	84.2	67.5	85.7	91.8	93.8	99.1	99.1	87.6	4613	
Sofa	42.6	28.5	11.6	0.1	2.8	12.5	28.0	74.3	74.3	23.5	1269	
Table	84.3	72.8	65.4	16.7	67.2	80.6	91.6	99.5	99.5	71.1	3662	

Fan	84.5	68.5	40.2	3.8	31.0	73.0	91.8	97.4	59.4	2783
Chair	87.9	82.7	75.6	34.4	81.9	90.2	96.8	99.3	80.5	4145
Watch / Clock	87.2	69.2	71.5	36.7	61.1	72.3	90.8	97.4	71.6	3774
Dhiki / lantoo	8.9	22.3	24.9	42.2	28.7	20.8	12.1	6.5	22.1	1502
<b>Means of transport</b>										
Bicycle	60.3	53.5	44.1	12.4	35.0	66.2	76.1	63.2	50.6	2010
Motor cycle / Scooter	46.0	31.3	23.2	0.5	6.1	18.6	45.7	77.3	29.6	1246
Car/Truck/Jeep/Traector	4.8	5.1	4.7	0.6	1.0	2.7	4.8	15.5	4.9	209
Animal drawn cart	41.4	64.4	73.8	91.5	81.6	78.2	54.2	23.3	65.8	3604
Ownership of domestic animal <sup>1</sup>	40.9	66.2	77.2	93.9	85.6	79.5	56.8	24.0	68.0	3722

<sup>1</sup> Cow / Buffalo / Goat

**Table 3.4 Household Wealth quintiles**

Percent distribution of the sampled individuals in different wealth quintiles by residence and Province, [Nepal STEPS, 2019]

Residence / Province	Wealth quintile				
	Lowest	Second	Middle	Fourth	Highest
<b>Residence</b>					
Metropolitan/ submetropolitan	2.6	10.0	16.2	28.5	42.8
Municipality	16.0	18.2	21.9	20.9	23.1
Rural Municipality	30.0	25.0	18.3	16.9	9.7
<b>Province</b>					
Province 1	18.1	24.0	22.8	19.0	16.1
Province 2	8.1	13.7	21.0	31.4	25.7
Province 3	20.3	18.3	15.2	13.4	32.8
Gandaki Province	15.6	23.1	23.4	20.2	17.7
Province 5	16.6	20.1	19.4	22.8	21.1
Karnali Province	53.2	23.9	11.6	6.6	4.8
Sudurpashchim Province	35.4	22.4	23.8	13.6	4.8

Table 3.5 Ethnicity

Percent distribution of the sampled individuals by ethnicity, residence and Province [Nepal STEPS, 2019]

Residence/Province		Ethnicity				Total		
Residence	Province	Dalit	Disadvantaged <i>Jangati</i>	Disadvantaged Non- <i>Dalit tarai</i>	Religious Minorities	Relatively advantaged <i>Jangati</i>	Upper caste	Total
Residence								
Metropolitan/ submetropolitan		5.1	18.1	8.6	23.6	10.1	34.5	100.0
Municipality		13.0	15.9	19.5	2.4	14.7	34.2	100.0
Rural Municipality		8.3	21.6	17.0	5.0	15.6	32.6	100.0
Province								
Province 1		7.1	32.5	19.0	0.9	16.0	24.6	100.0
Province 2		8.6	1.9	50.2	9.1	7.6	21.6	100.0
Province 3		5.5	21.8	5.4	0.1	31.4	35.8	100.0
Gandaki Province		15.3	14.9	3.1	0.2	32.5	34.1	100.0
Province 5		12.3	20.0	13.2	15.8	7.8	30.8	100.0
Karnali Province		23.7	9.7	0.6	0.1	6.5	59.4	100.0
Sudurpashchim Province		13.6	21.5	3.8	0.1	4.2	56.8	100.0
Total (%)		10.5	18.2	17.6	5.2	14.6	33.6	100.0
Total(N)		766	951	689	168	899	2114.0	5587

## CHAPTER 4

# TOBACCO

### Key Findings

#### • Tobacco use

- o In 2019, 28.9% of adults aged 15-69 years (48.3 % of men, 11.6% women) currently used either smoked tobacco or smokeless tobacco products.
- o 17.1% of adults (28.0 % men, 7.5% women) were current tobacco smokers and 18.3% (33.3 % men, 4.9% women) were current users of smokeless tobacco products and 6.5% of adults used both smoke and smokeless tobacco products.
- o Between 2013 and 2019 ST EPS survey, no significant change was observed in overall tobacco use and in use of smoking or smokeless tobacco products.

#### • Tobacco use status

- o Smoked tobacco - 76.4% adults never smoked tobacco, 6.5% smoked formerly (4.4%-daily and 2.1%-non-daily) and 17% were current smokers (13.3% -daily and 3.7%-non-daily).
- o Smokeless tobacco - 80.8% never used smokeless tobacco, 1% used formerly (0.7%-daily and 0.3%-non-daily) and 18.3% were current users (15.3%-daily and 3%-non-daily).
- o No significant change in former tobacco use (either smoked or smokeless) was observed between 2013 and 2019.

#### • Type of Tobacco products used

- o Cigarettes and bidis were the most commonly used smoked tobacco product used by 86.7% and 23.8% of adults, respectively, were the most popular products across all the adults (15-69 years), who were current smokers.
- o Smokeless tobacco products – 71.4% of the current users of smokeless tobacco aged 15-69 years, used Surti or khaini. This was followed by 45.3% of the users consuming gutkha.

#### • Age at initiation of tobacco use

- o The average age at initiation of smoking tobacco in Nepal is 17.8 years (men-17.7 years, and women-18.4 years).
- o While the overall age at initiation of tobacco smoking did not change much between 2013 and 2019 (18.1 years in 2013 to 17.8 in 2019), it seems to have increased among women (17.7 years in 2013 and 18.4 years in 2019), and decreased for men.

#### • Tobacco cessation and cessation methods

- o Among the current users of tobacco (15-69 years) - 19.4% of smokers and 17.9% of smokeless tobacco users have tried to stop smoking and smokeless tobacco use, respectively.
- o 22.1% of current smokers of tobacco have received advice to quit smoking and 21% of current users of smokeless tobacco have received advice to stop using smokeless tobacco products
- o Most of the tobacco users who tried to quit did so unassisted, only 1.2% and 3.9%, respectively reported using NRT and traditional medicines.
- o Between 2013 and 2019, the proportion of current smokers who attempted quitting declined from 26.1% to 19.4%, while the proportion of current smokers who were advised to quit by health care providers remained unchanged at low levels of 22%.

- **Second hand smoke**
  - 33.5% of all adults, aged 15-69 years, were exposed to second hand smoke at home (SHSH) and 66.2% of them were exposed on a daily basis.
  - Amongst the adults who visited different public places, 22.5% of adults were exposed to second hand smoke at work, 68.5% at restaurants, 49.8% in public transport, 7.5% in schools and universities and 1.6% at healthcare facilities.
  - Between 2013 and 2019, while the second-hand exposure at home decreased from 36.1% to 33.5%, and at work from 37.2% to 22.5%.
- **Graphic health warning on tobacco package**
  - 75.7% of adults noticed the health warnings on tobacco packages. Amongst the current users who noticed these health warnings, 44.8% thought of quitting because of the large health warnings.
- **Exposure to tobacco advertising and promotion and anti-tobacco messages**
  - 11.3% of adults were exposed to tobacco advertising on television, 10.3% through on radio, 7.4% from newspapers and 4.5% on internet/websites.
  - Of all the adults, 59% noticed anti-tobacco messages on television, 58.1% noticed on radio, 43.5% noticed in newspapers and magazines and 24.4% on internet/websites
- **Economic aspects of tobacco use**
  - In Nepal, the average number of cigarettes smoked per month per smoker was 151 and monthly expenditure about Rs. 1049.3. The annual expenditure as a percentage of GDP per capita was 11%.

## 4. Introduction

Tobacco use is a leading modifiable behavioural risk factor contributing to NCDs. Tobacco use kills more than 8 million people each year. More than 7 million of those deaths are the result of direct tobacco use while around 1.2 million are the result of non-smokers being exposed to second-hand smoke.<sup>1</sup> In 2003, WHO Framework Convention on Tobacco Control (WHO FCTC) was the first evidence based treaty developed for tobacco control and currently there are 180 signatories, including Nepal, to the convention. In 2007, MPOWER (Figure 4.1) policy package was developed and adopted by countries to end the tobacco epidemic and to enable implementation of WHO FCTC. As a signatory to FCTC, Nepal has also taken steps to monitor tobacco use and prevention policies, protect people from tobacco smoke, offer assistance in quitting, raise awareness about the dangers of tobacco and curtail the creation of new demand by enforcing bans on advertisements and by raising taxes on various tobacco products.

Strengthening the implementation of WHO FCTC is recognised as an important means to achieve SDG 3 – Good health and well-being. Furthermore, Nepal has also set a target of 30% relative reduction in prevalence of current tobacco use in persons aged 15+ years by 2025 in its current multisectoral action plan (2014-2020) aligned with target set in WHO's Global Action plan for the prevention and control of NCDs.<sup>2 3</sup>

**Figure 4.1 MPOWER Policy Package**



1 (WHO report on the global tobacco epidemic 2019, 2019)

2 Against a baseline in 2010.

3 (Global action plan for the prevention and control of NCDs 2013-2020, 2013)

Tobacco use and Tobacco policy are standardized modules in STEP survey. This chapter focuses on indicators related to tobacco use and tobacco policy implementation in Nepal. This data will help Nepal to analyse the trends across various stratification – gender, age, wealth quintile and geographic regions, which can then strengthen the various programs designed for the implementation of the tobacco control programs and policies.

### **Current relevant policies and programs in Nepal for tobacco control**

- Tobacco Product Control and Regulatory Bill (TPCRB) in 2011
- Multisectoral Action Plan for the Prevention and Control of Non-Communicable Diseases (2014-2020)

## **4.1 Tobacco use**

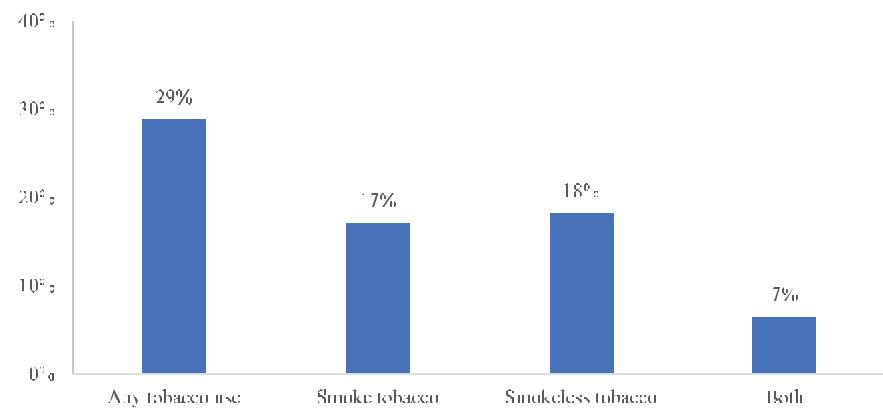
The tobacco-related questions recommended for the STEPS approach were based on the core tobacco module of STEPS Survey and were aligned with the Tobacco Questions for Surveys (TQS). The participants were men and women between the ages of 15-69 years, and the analysis has been presented for the said age group, unless otherwise stated.

### **4.1.1 Tobacco use, smoked tobacco, smokeless tobacco use**

The prevalence of tobacco use has been estimated by asking all adults if they currently smoked any tobacco products (cigarettes, *bidis*, cigars, pipes, *hukahs*, or *tamakhus*) or used any smokeless tobacco products (snuff, chewing tobacco, nasal snuffs, *khaini*, *surti*, *gutkha*)

- In 2019, the prevalence of tobacco use (tobacco product of any kind) amongst all adults was 28.9%;
- 17.1% of all adults reported current use of any smoked tobacco product and 18.3% reported current use of any smokeless tobacco product;
- 6.5% of participants used both smoke and smokeless tobacco products (**Figure 4.2**).

**Figure 4.2** Percent of adults(15-69 years) that currently use any tobacco product, smoke tobacco, smokeless tobacco and use both smoked and smokeless tobacco, Nepal STEPS Survey, 2019

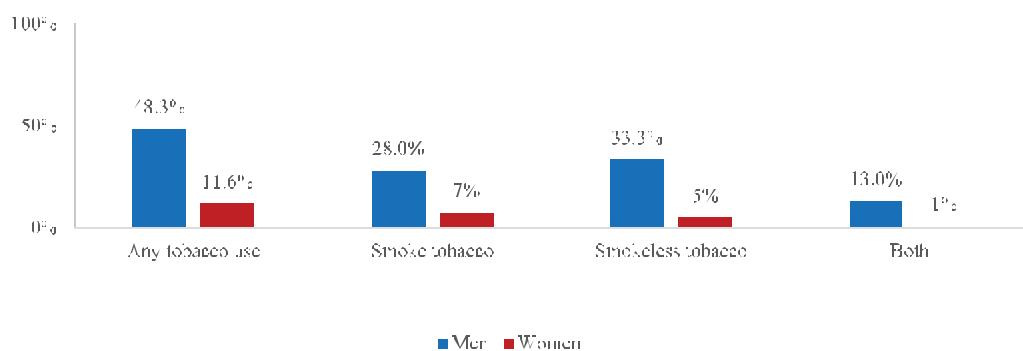


### **Patterns by background characteristics**

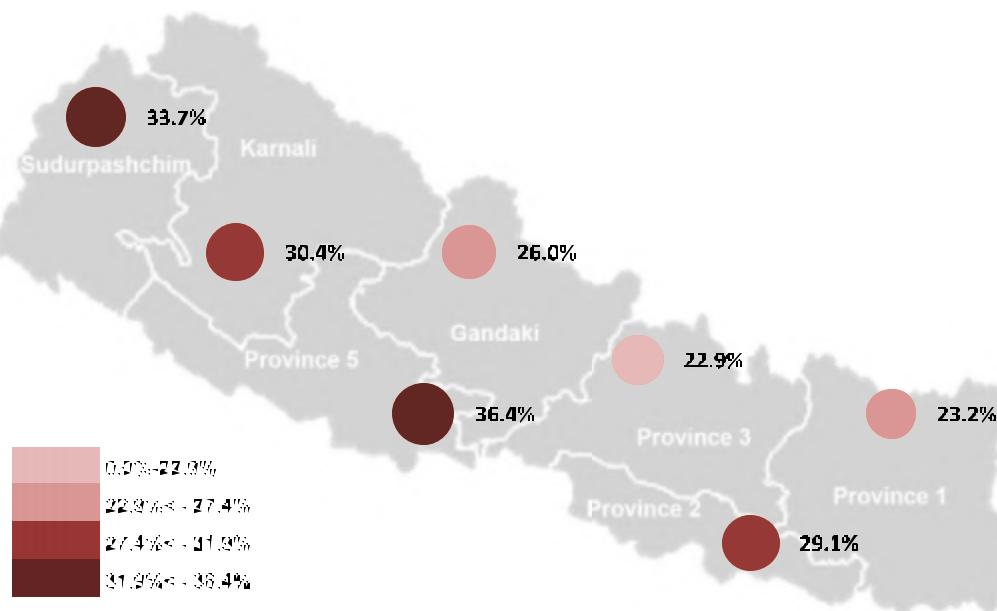
- The reported current tobacco use increased with age, lowest among 15-24 years of age (15.1%) and increasing to 42.7% among 55-69 years of age. Similar patterns were seen with use of both smoked and smokeless tobacco.
- Prevalence of any tobacco use was significantly higher among men (48.3%) than women (11.6%). Similar differentials were observed for smoked and smokeless tobacco (**Figure 4.3**).

- Rural municipalities had a higher prevalence of any tobacco use, 31.7% as compared to metropolitan/sub metropolitan regions, 24.6%.
- Province 1 & 3 had the lowest prevalence of any tobacco use, compared to the national average of 28.9%. Province 5 had the highest prevalence of any tobacco use, 36.4% (**Figure 4.4**).
- The reported tobacco use decreased with increase in education levels, with highest usage amongst people with no or less than primary education (34.3%), decreasing to 21% for people with more than secondary education. Similar patterns were seen with both use of smoked and smokeless tobacco.
- The reported tobacco use decreased with an increase in wealth, the highest amongst those belonging to the lowest wealth quintile (33.4%) and lowest amongst those in highest wealth quintile (25.3%). Similar patterns were seen with both use of smoke and smokeless tobacco (**Figure 4.5**).

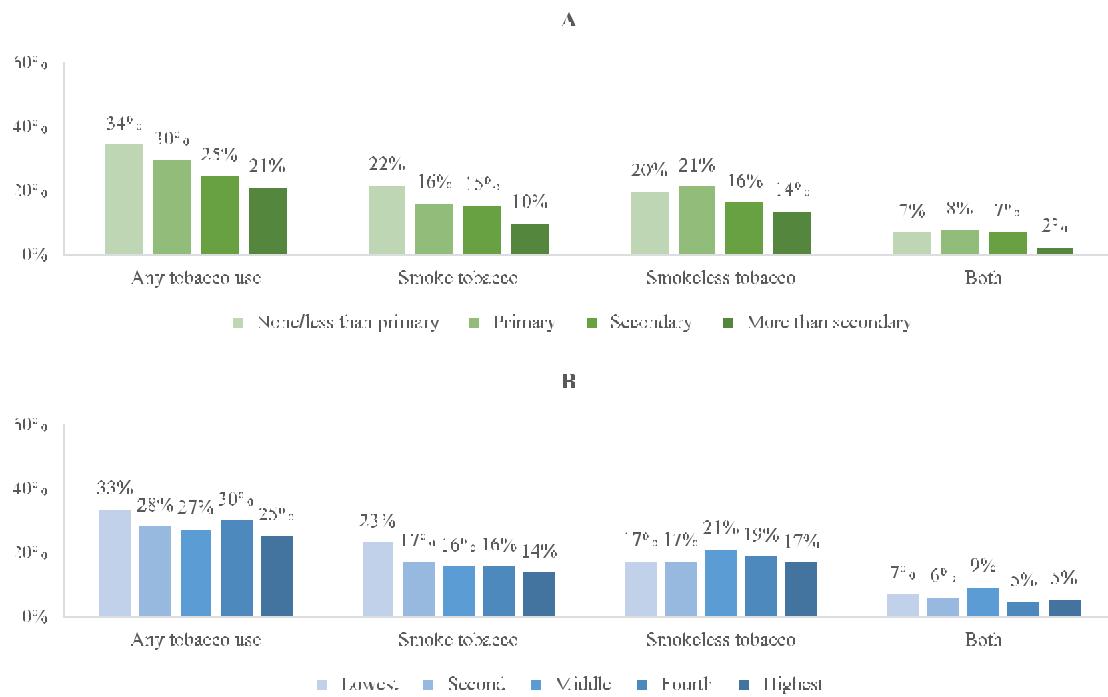
**Figure 4.3** Prevalence of tobacco use amongst men and women aged 15-69 years, Nepal STEPS survey, 2019



**Figure 4.4** Tobacco use amongst population aged 15-69 years, across the Provinces of Nepal, Nepal STEPS survey, 2019



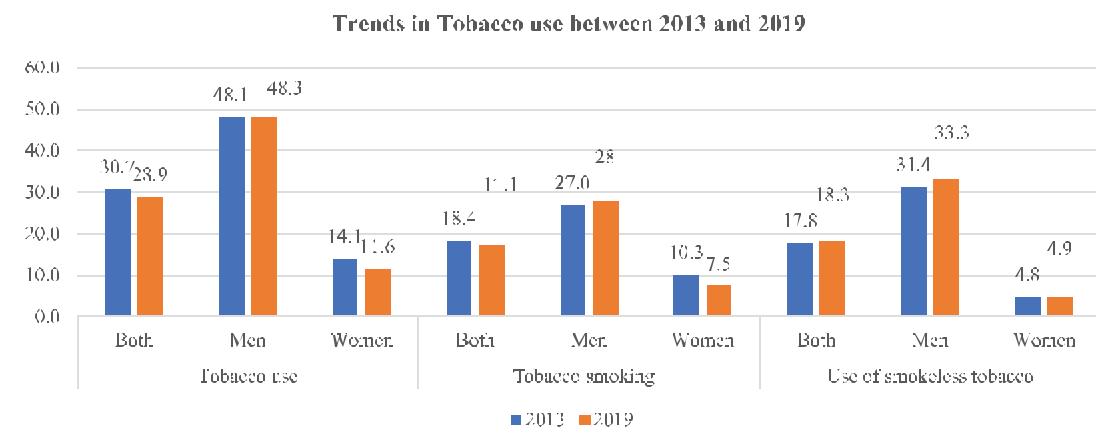
**Figure 4.5** Differentials in tobacco use amongst adults, aged 15-69 years, by levels of education (A) and by wealth (B), Nepal STEPS survey, 2019



#### Trends in tobacco use between 2013<sup>4</sup> and 2019:

Tobacco use did not change much between 2013 and 2019 (Figure 4.5a) either for smoked or smokeless tobacco or among women or men.

**Figure 4.5a** Trends in tobacco use by sex between 2013 and 2019 Nepal STEPS Surveys, 2013 and 2019



## 4.2 Tobacco use status - current, former, and never

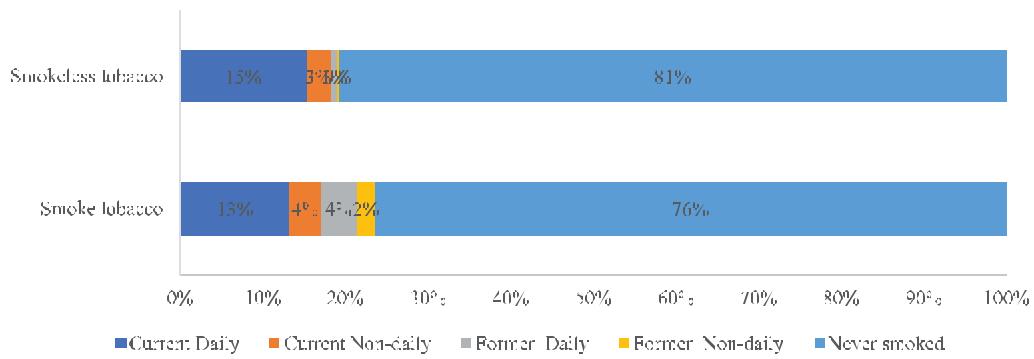
All adults, aged 15-69 years were asked if they were current users of smoked tobacco and of smokeless tobacco products, respectively. Those that answered in the affirmative were then further enquired if they smoked tobacco

4 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

or used smokeless tobacco products on a daily basis. The participants, who were not current users, were asked about their former tobacco use status (separately for smoked and smokeless products) and the frequency of use in the past (daily or non-daily).

76.4% adults never smoked tobacco, 6.5% smoked formerly (4.4%-daily and 2.1%-non-daily) and 17% were current smokers (13.3%-daily and 3.7%-non-daily). A majority of the adults, (80.8%) never used smokeless tobacco, 1% used formerly (0.7% daily and 0.3% non-daily) and 18.3% were current users of smokeless tobacco (15.3% daily and 3% non-daily) (**Figure 4.6**).

**Figure 4.6** Tobacco use status - current, former and never, by smoke and smokeless tobacco product, Nepal STEPS survey, 2019

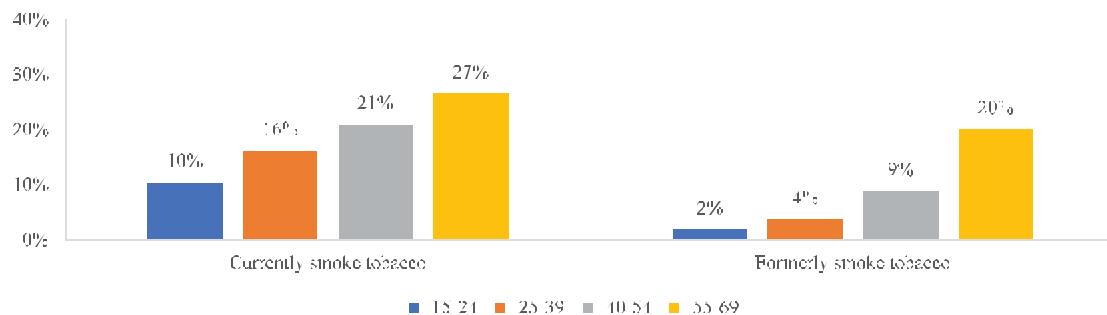


#### 4.2.1 Tobacco smoking status – current, former, and never (Also see Figure 4.6)

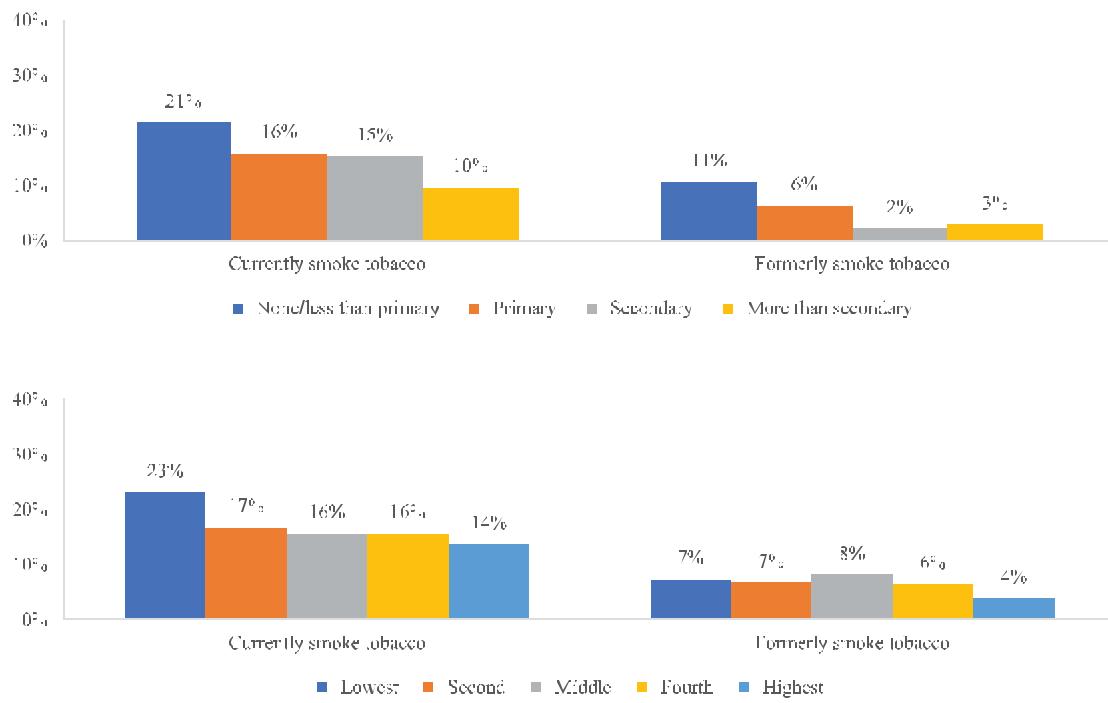
##### Patterns by background characteristics

- With an increase in age, the proportion of adults that currently smoked or were former smokers increased (**Figure 4.7**); the proportion of adults who never smoked decreased with increasing age, 87.7% of adults in the age group 15-24 years had never smoked tobacco, as compared to 53.4% in the older age group of 55-69 years (**Table 4.2.1**).
- 88.1% of women never smoked, compared to 63.3% of men; a higher proportion of adults living in metropolitan-sub-metropolitan areas never smoked as compared to rural municipality (83.7% versus 76.8%) (**Table 4.2.1**).
- With increasing levels of education and wealth, there is a decline in the proportion of adults who currently smoked daily or formerly smoked (daily and non-daily), correspondingly the percentage of adults who never smoked increases with an increase in levels of education and wealth (**Figure 4.8**).

**Figure 4.7** Differentials in prevalence of current and former smoking by age, Nepal STEPS Survey, 2019



**Figure 4.8** Differentials in prevalence of current and former smoking, amongst adults age 15-69 years—by levels of education (A) and by wealth (B), Nepal STEPS Survey, 2019

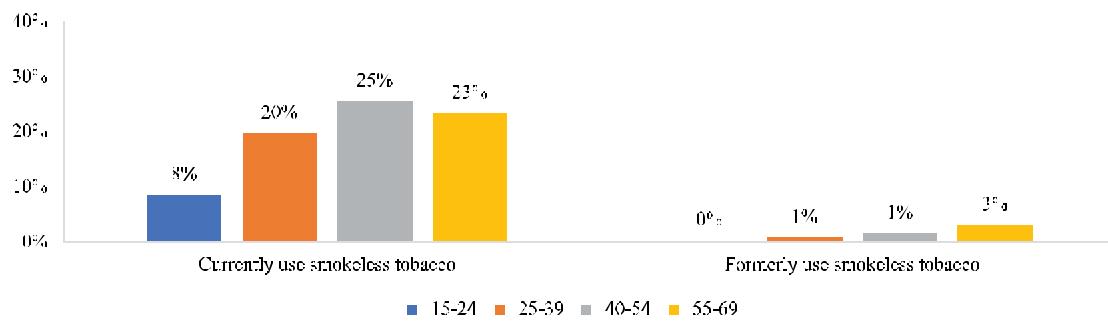


#### 4.2.2 Smokeless tobacco use status – current former and never (Also see Figure 4.6)

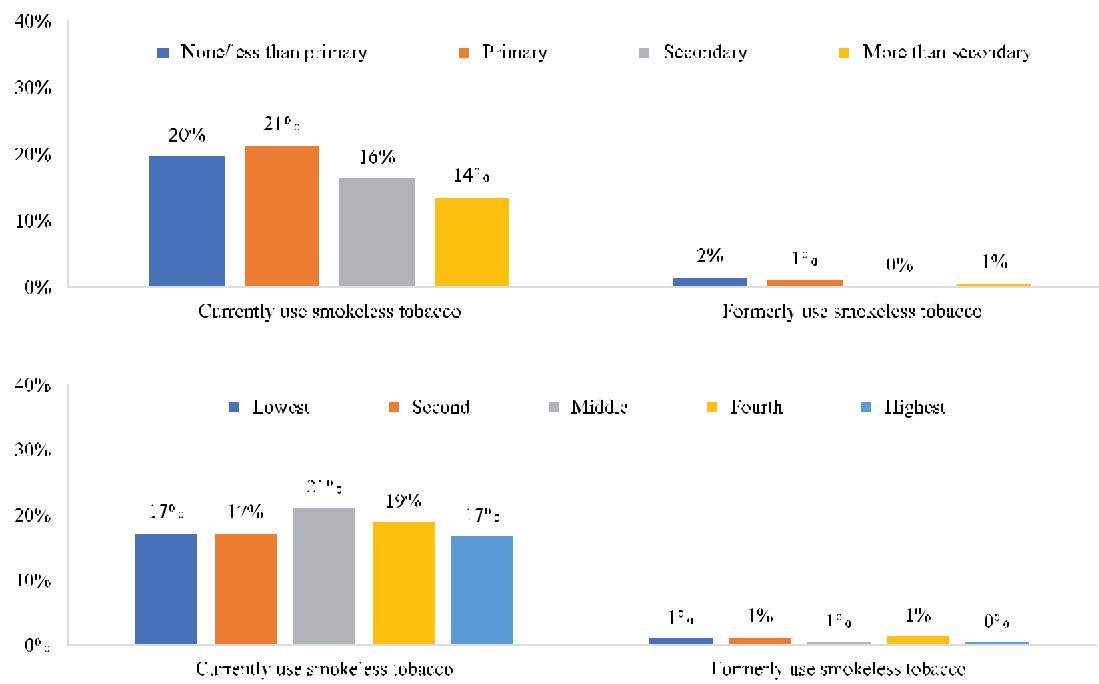
##### Patterns by background characteristics

- With increasing age, the percentage of smokeless tobacco use increased, with lowest being, 6.2% among age group of 15-24 years and highest being 18.8% in the older age group of 55-69 years (**Figure 4.9**).
- 28.2% of men use smokeless tobacco daily, compared to only 3.8% of women.
- With an increase in levels of education, the proportion of adults who use smokeless tobacco declined 17% of adults with no or less than primary education used smokeless tobacco daily, whereas only 11.2% of adults with more than secondary education used it on a daily basis (**Figure 4.10**). There weren't any significant trends in use of smokeless tobacco or adults who never smoked with an increase in household wealth (**Figure 4.10, Table 4.2.2**).

**Figure 4.9** Differentials in current and former use of smokeless tobacco by age, Nepal STEPS survey, 2019



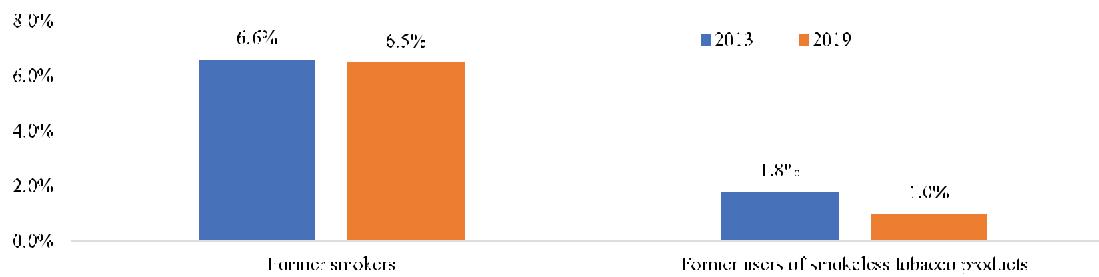
**Figure 4.10** Differentials in current and former use of smokeless tobacco, amongst adults age 15-69 years— by levels of education (A) and by wealth (B), Nepal STEPS survey, 2019



#### Trends in former use of smoked and smokeless tobacco products between 2013<sup>4</sup> and 2019

Similar to the current tobacco use, no significant change was observed between 2013 and 2019 in the prevalence of former users of either smoked or smokeless tobacco products (**Figure 4.10a**).

**Figure 4.10a** Change in former use of tobacco products between 2013 and 2019, Nepal STEPS Survey 2013 and 2019



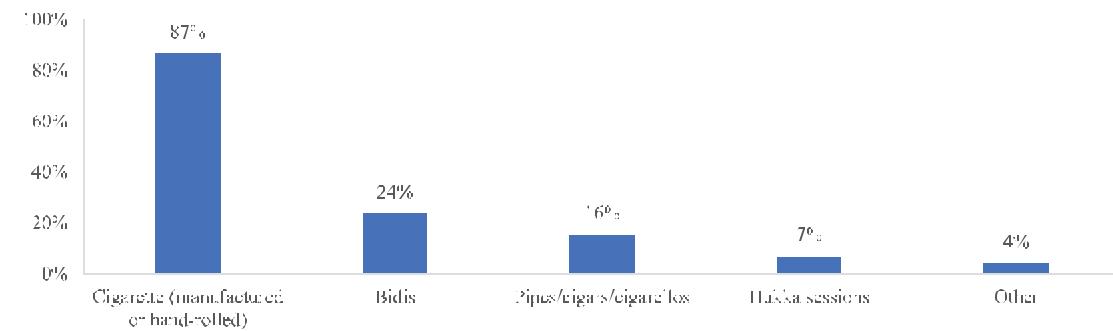
### 4.3 Types of Tobacco products use

STEPS Survey collected the data on different types of tobacco products used (smoke and smokeless) on a daily or a weekly basis. The product mix was analysed both for all the participants and amongst the current tobacco users (**Table 4.3.1 and 4.3.2**).

#### 4.3.1 Tobacco products smoked

Information was elicited on daily/weekly use of cigarettes (manufactured and hand rolled), pipes, cigars, bidis, and hukka. Cigarettes and bidis were the most commonly used smoked tobacco products reported by 86.7% and 23.8% of current tobacco smokers, respectively (**Figure 4.11**).

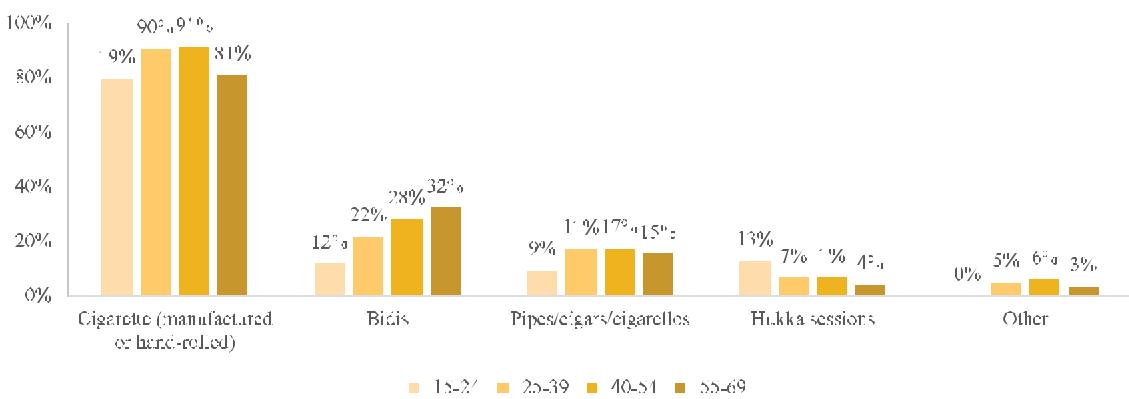
**Figure 4.11** Use of different tobacco smoking products amongst current smokers, aged 15-69 years, Nepal STEPS Survey, 2019



#### Patterns by background characteristics

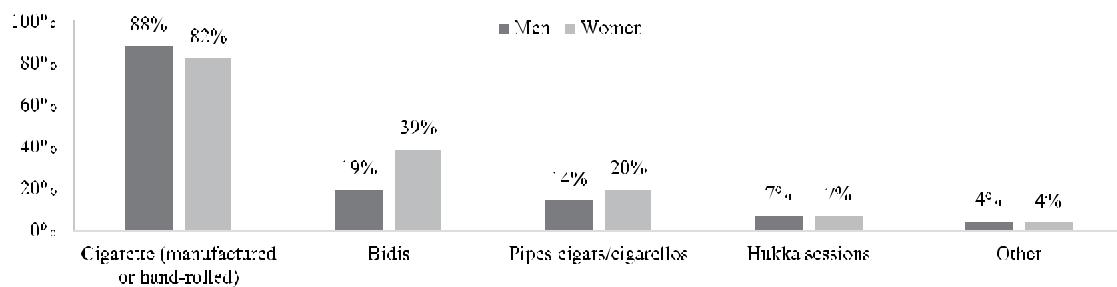
- Among current tobacco users, cigarettes were the most commonly smoked tobacco product across all ages. Usage of hukkah was interestingly much higher in younger age group (12.6% among 15-24 year old) compared to in the older age groups (3.9% among 55-69 years old) (**Figure 4.12**).

**Figure 4.12** Differentials in use on different smoking tobacco products, amongst current tobacco smokers, age 15-69 years, by age, Nepal STEPS survey, 2019



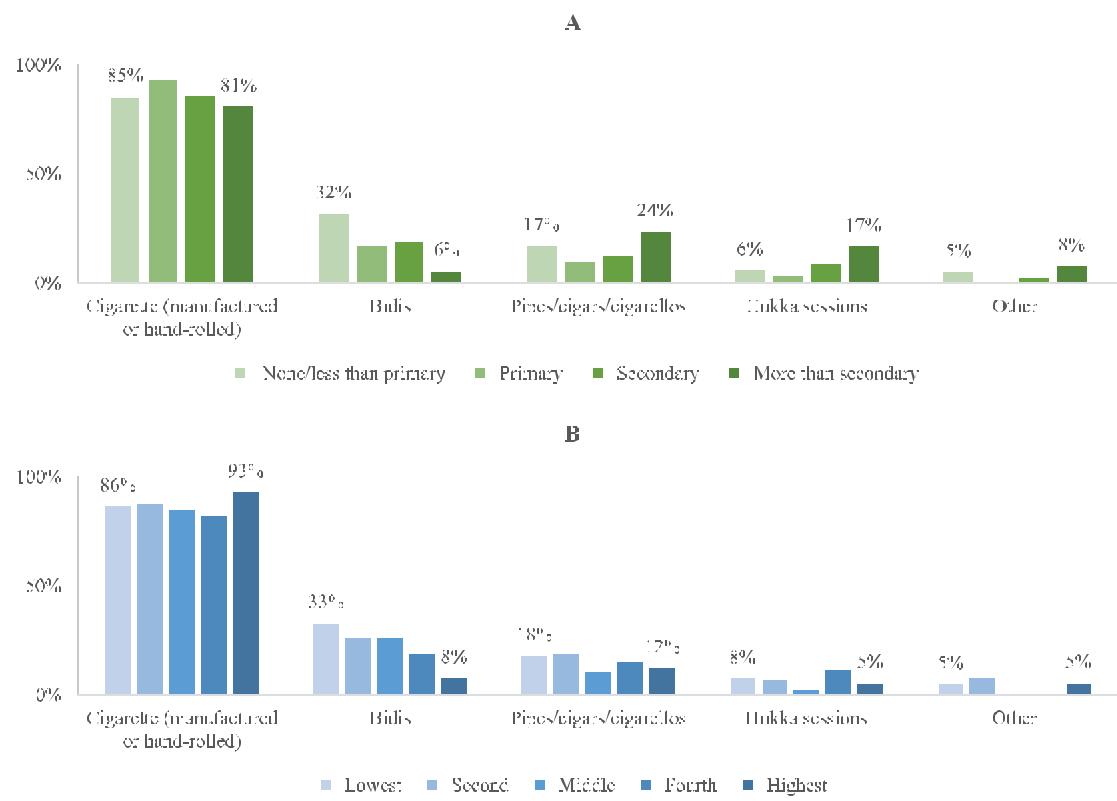
- While, cigarettes were the most popular smoking tobacco products used by both men (88%) and women (82%), 39% of women smokers used bidis compared to 19% of men smokers
- While, cigarettes were the most commonly used product across all wealth quintiles (>80%) and levels of education, the use of bidis declined with increasing levels of education and wealth and use of pipes, and hukka increased (**Figure 4.13**)
- While, cigarettes were the most commonly used product across all wealth quintiles (>80%) and levels of education, the use of bidis declined with increasing levels of education and wealth and use of pipes, and hukka increased (**Figure 4.14**).

**Figure 4.13** Differentials in use of different smoking tobacco products among current tobacco smokers (15-69 years) by sex, Nepal STEPS survey, 2019



Note 3: The total across different products may not add to 100% due to dual use

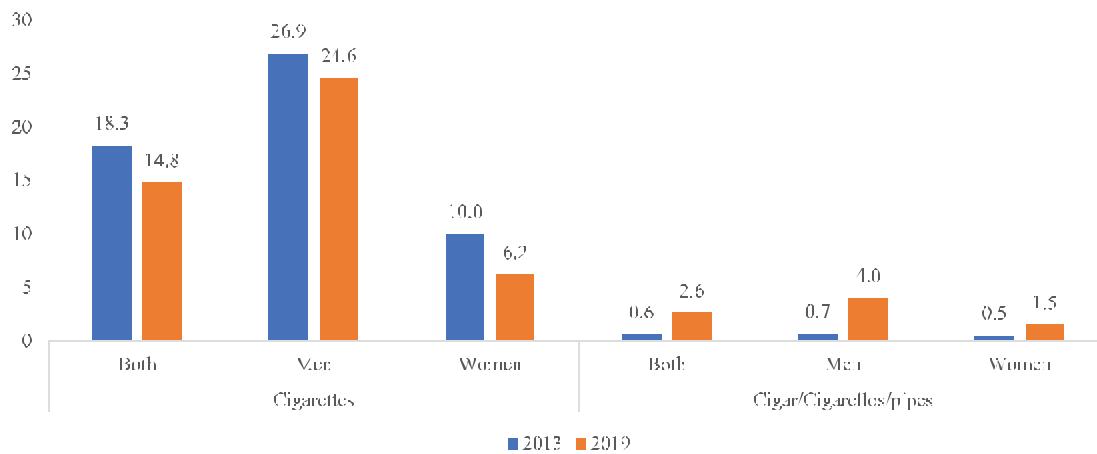
**Figure 4.14** Differentials in use of different smoking tobacco products, amongst current tobacco smokers, age 15-69 years, by levels of education (A) and wealth (B), Nepal STEPS Survey, 2019



#### Changes in use of different smoked tobacco products between 2013<sup>4</sup> and 2019

The 2013 STEPS survey had not specifically asked for use of bidis and hukka. Hence, changes were examined in use of only cigarettes and cigars/cigarettes/pipes. The use of cigarettes seems to have declined, especially among women, but the use of pipes/cigars/cigarettes seems to have increased (Figure 14.4a).

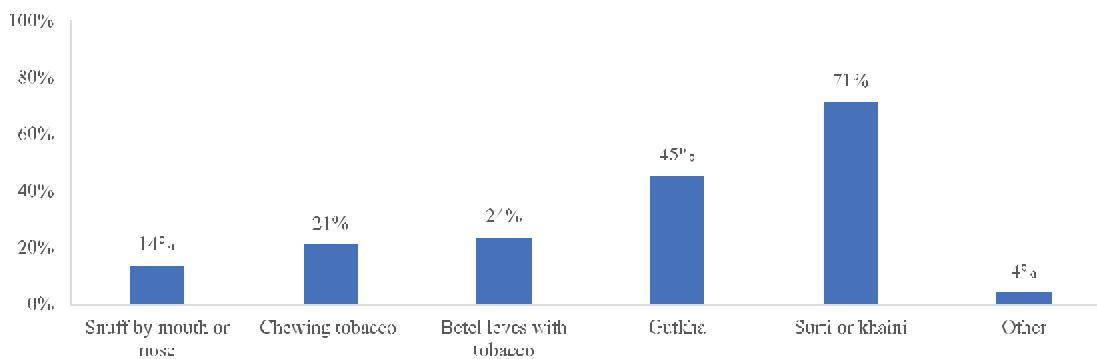
**Figure 4.14 a** Percent of adults (15-69 years) reporting use of different smoked tobacco products in 2013<sup>4</sup> and 2019, Nepal STEPS Surveys 2013 and 2019



#### 4.3.2 Smokeless Tobacco products

Information was elicited on use of *Gutkha*, *Surti* or *khaini*, betel leaves with tobacco, chewing tobacco and snuff by mouth or nose. 71% of the current users of smokeless tobacco aged 15-69 years, reported use of *Surti* or *khaini*. This was followed by 45% of the users consuming *gutkha* (Figure 4.15).

**Figure 4.15** Percent of adults (15-69 years) reporting use of different smoked tobacco products in 2013<sup>4</sup> and 2019, Nepal STEPS Surveys 2013 and 2019



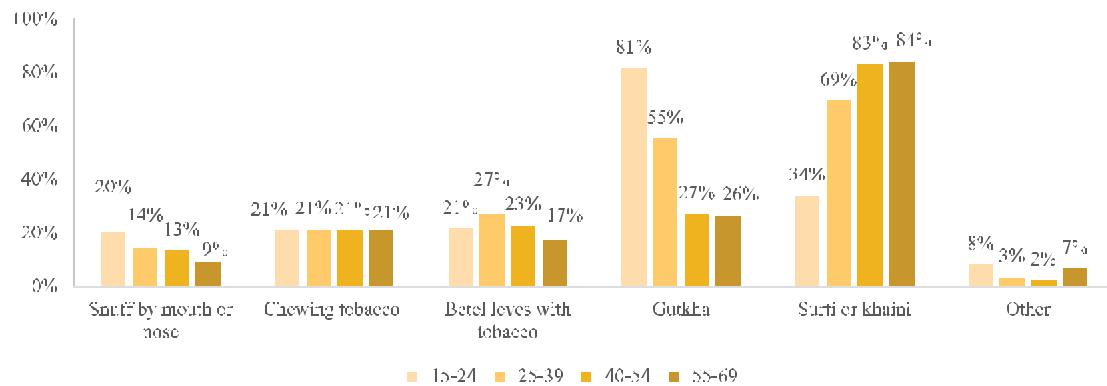
#### Patterns by background characteristics

- The use of *surti* or *khaini* increased with increasing age of smokeless tobacco users with lowest consumption in adults aged 15-24 years, (33.9%) and highest in adults aged 55-69 years (84.1%)
- The use of *gutkha* and snuff by mouth or nose declined with an increase in age (Figure 4.16).
- 73% of men who used smokeless tobacco products, used *surti* or *khaini* compared to 64% of women. Consumption of all the other smokeless tobacco products, by women was less than 16% (Figure 4.17)<sup>5</sup>.
- Percent of current smokeless users that consumed *surti*, *khaini* or chewing tobacco declined with increase in levels of education, however, reverse trend was seen with use of *gutkha* and snuff by mouth or nose (Figure 4.18).

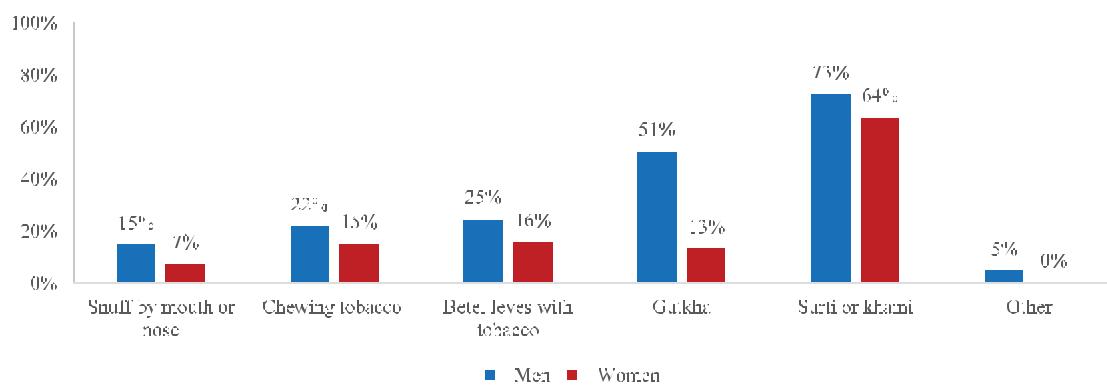
<sup>5</sup> In general, 48% of men use a currently use any tobacco products compared to only 12% of women. Hence the above numbers should be considered in light of this information. Please see Table 4.1

- With an increase in household wealth there is an increase in use of *gutkha*, a slight increase in use of betel leaves with tobacco, and a decline in use of chewing tobacco (**Figure 4.18**).

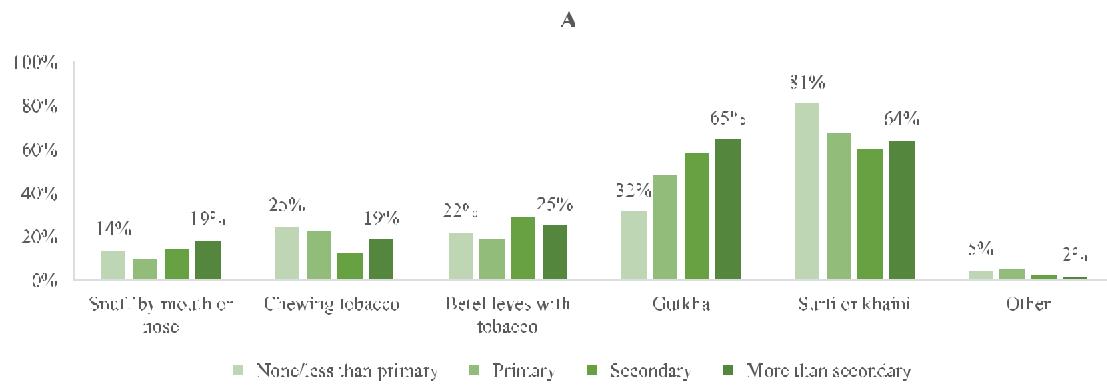
**Figure 4.16** Differentials in use of different smokeless tobacco products, amongst current smokeless tobacco users by age, Nepal STEPS Survey, 2019

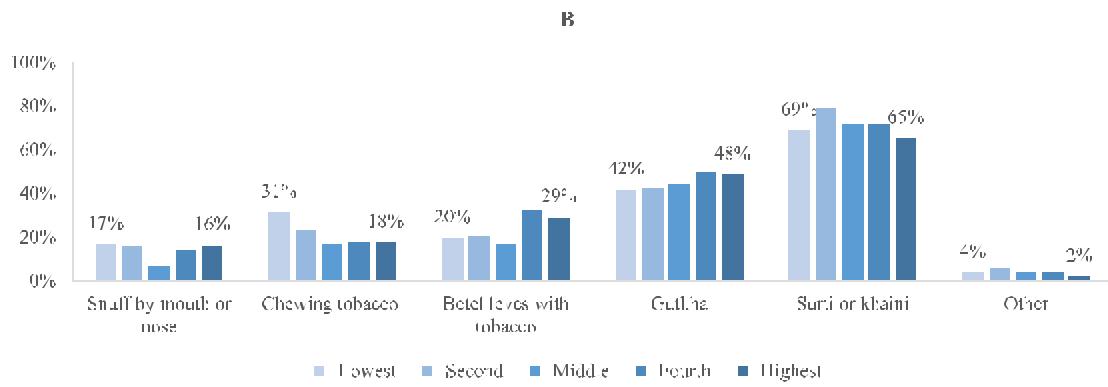


**Figure 4.17** Percentage of men and women (15-69 years), who currently use different smokeless tobacco products, Nepal STEPS Survey, 2019



**Figure 4.18** Differentials in use of different smokeless tobacco products, amongst current smokeless tobacco users, aged 15-69 years, by levels of education (A) and wealth (B), Nepal STEPS Survey, 2019





#### 4.4 Age at initiation of tobacco use

Reducing initiation in adolescents is critical to reducing the prevalence of tobacco, since youngsters are particularly vulnerable to nicotine addiction and adverse effects of tobacco.<sup>6</sup> In LMIC, about 90% of smokers begin to consume tobacco before the age of 18 years and because of the strongly addictive nature of tobacco use, smoking during adolescence tends to track into adulthood<sup>7</sup>.

In addition to long-term consequences of tobacco use in terms of increased risk of different non-communicable diseases, smoking at a young age also increases the risk of many diseases among adolescents including respiratory illness, asthma, and reduced pulmonary function.<sup>8</sup> Article 16 of FCTC requires parties to prohibit the sales of tobacco products to or by persons under the age set by domestic law, national law or 18 years, as well as other measures limiting the access of underage persons to tobacco products.

In STEPS Survey, all adults, 15-69 years that reported currently smoking any tobacco product were asked about the age at which they started smoking. The average age at initiation of smoking tobacco in Nepal was 17.8 years (17.7 years for men and 18.4 years for women). The median age, or the age by which 50% of current smokers started smoking was 17 years, for both men and women.

##### Patterns by background characteristics

- It is noteworthy that the age of initiation for population between 15-24 years (population growing up post the enforcement of TPCRB, 2011) was around 16 years (**Figure 4.19**).
- With increasing levels of education and wealth the mean and median age at initiation of smoking increased (**Figure 4.20**).

##### Trends in age of initiation of smoking between 2013<sup>4</sup> and 2019

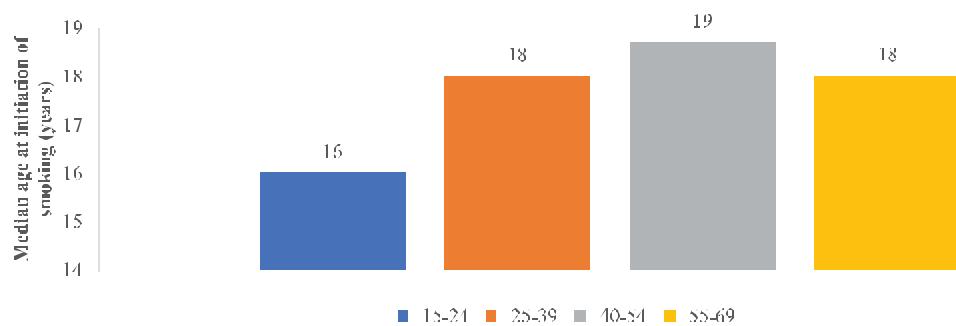
While the mean and median age of initiation of smoking increased for women, it declined for men between 2013 and 2019 (**Figure 4.20a**).

6 (Marcon A, 2018)

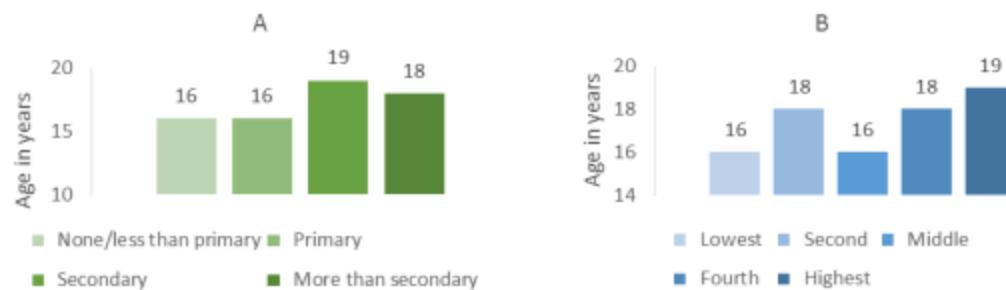
7 (Bo Xi , 2016)

8 ibid

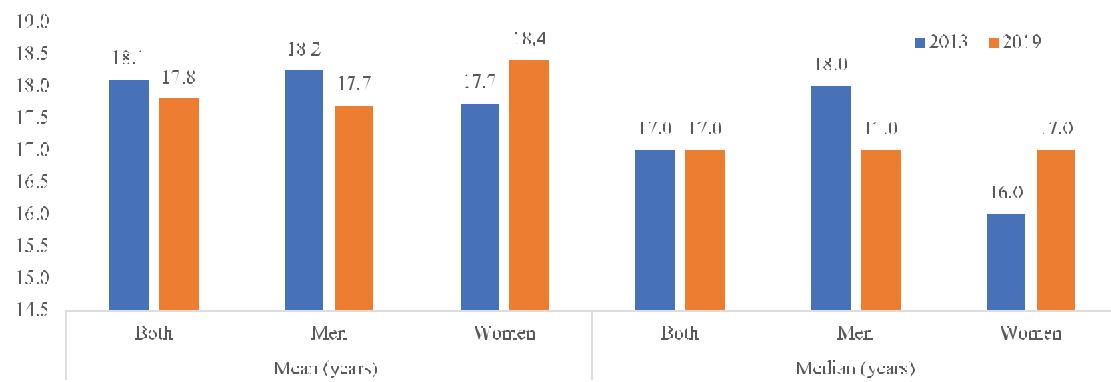
**Figure 4.19** Differential in median age at initiation of smoking, by age, Nepal STEPS Survey, 2019



**Figure 4.20** Differential in median age at initiation of smoking, by levels of education (A) and wealth (B), Nepal STEPS Survey, 2019



**Figure 4.20a** Change in mean and median age at initiation of smoking, between 2013 and 2019, Nepal STEPS survey 2013 and 2019



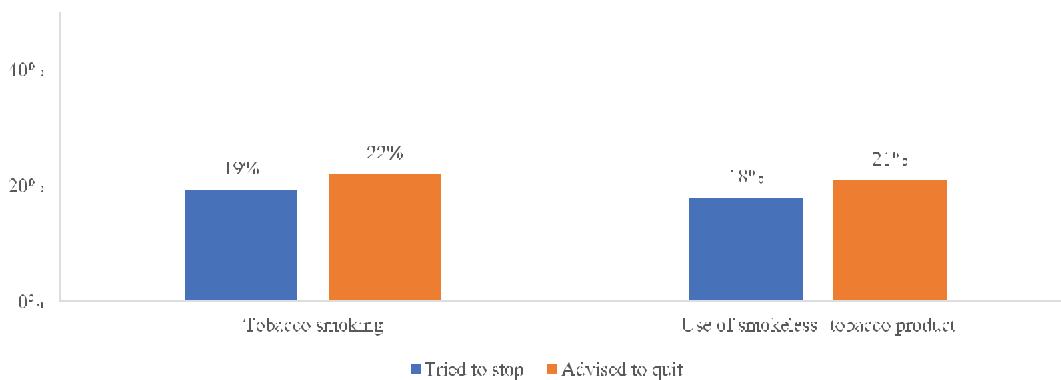
## 4.5 Tobacco cessation

Article 14 of FCTC concerns the provision of support for reducing tobacco dependence and cessation, including counselling, psychological support, nicotine replacement, and education programmes. To assist the population in quitting smoking, the most effective combination of interventions is face-to-face behavioural support together with combination nicotine replacement therapy (NRT).<sup>9</sup> Nonetheless, a brief advice from a health-care worker, telephone helplines, automated text messaging, printed self-help materials are recommended health-care interventions to promote and assist smoking cessation.<sup>11</sup> Among the current users of tobacco, the survey asked if they tried to stop smoking/use of smokeless tobacco products in the past 12 months, and if yes, what did they do to stop smoking or use of smokeless tobacco –tried to quit without assistance, counselling by any health worker, NRT, traditional medicines and a telephone support line etc.

Among the current users of tobacco - 19.4% of smokers and 17.9% of smokeless tobacco users had tried to stop smoking. 22.1% and 21% of current smokers and current users of smokeless tobacco, respectively received advice to quit tobacco use (**Figure 4.21**).

In addition, most adults who attempted to quit, tried to quit without assistance (86.5%). Only 14.2% of current smokers who attempted to quit reported using counselling by any health care providers, following by use of traditional medicines (3.9%) and Nicotine replacement therapy (1.2%) (**Table 4.5.1**).

**Figure 4.21** Percentage of current tobacco users (15-69 years) who tried to quit tobacco use and who have been advised to quit by a health care provider (among those visited a provider in last 12 months), Nepal STEPS survey, 2019



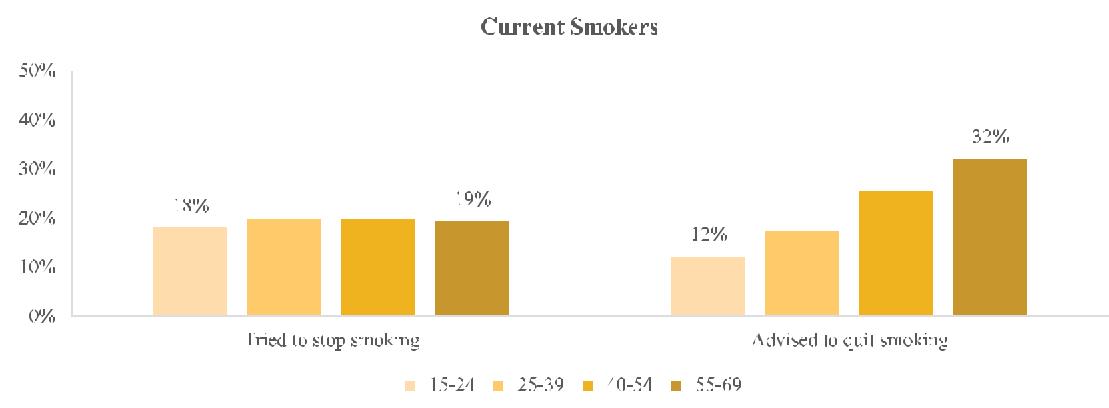
### Patterns by background characteristics

- The percentage of current tobacco smokers, who tried to quit didn't vary significantly with age. However, with an increase in age, an increasing proportion of current tobacco smokers received advice to quit smoking, the highest being 32% of current tobacco smokers in the age group 55-69 years compared to 12% of smokers in age group 15-24 years (**Figure 4.22**).
- With an increase in age, there was an increase in the proportion of current smokeless tobacco users who tried to quit and who received advice from health care providers (**Figure 4.23**).
- While most people, who attempted quitting, tried to do so without any assistance, counselling by any health care worker was the most used method for cessation with an increase in age, more tobacco users used counselling by any health worker to assist their quit attempts (13% of adults in 15-24 years age group versus 17% of adults in age group 55-69 years) (**Figure 4.24**).
- A much higher proportion of current tobacco users (19.6%) in rural municipalities who tried to quit, reported using counselling by any healthcare workers compared to only 5.1% users in metropolitan/sub-metropolitan regions.

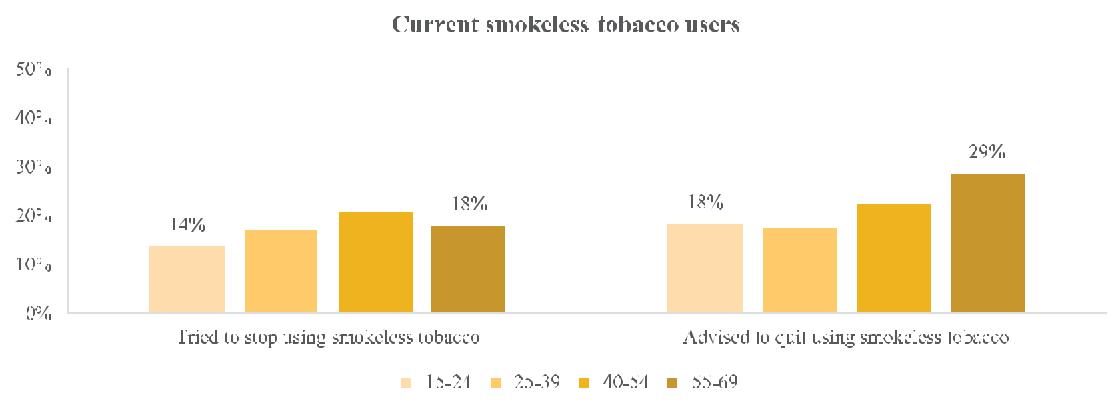
<sup>9</sup> West R, Raw M, McNeill A, Stead L, Aveyard P, Bitton J, et al. Health-care interventions to promote and assist tobacco cessation: a review of efficacy, effectiveness and affordability for use in national guideline development. *Addiction*. 2015;110(9):1388-403.

- With an increase in the levels of education, a higher proportion of current tobacco users sought counselling by any health workers to help quit tobacco use (**Figure 4.25**). No significant differentials were found with an increase in household wealth.

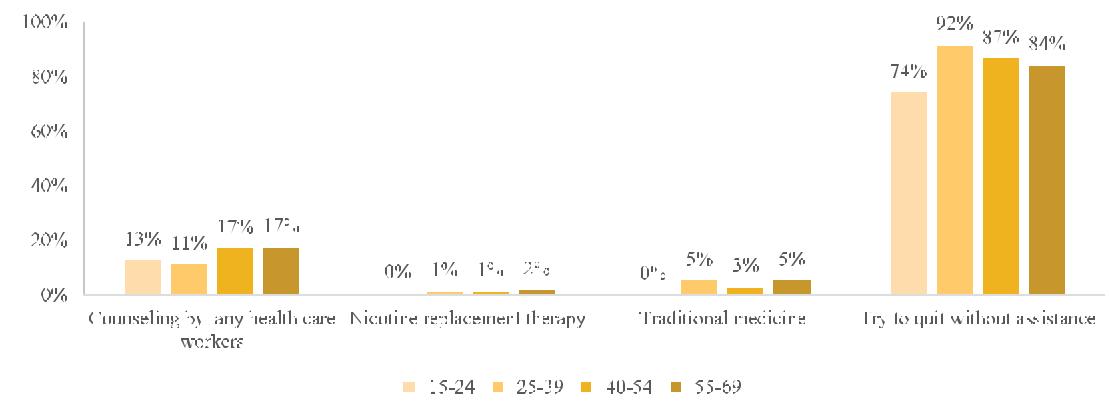
**Figure 4.22** Differentials in tobacco cessation (attempt to stop and advice received to quit), by age, Nepal STEPS Survey, 2019



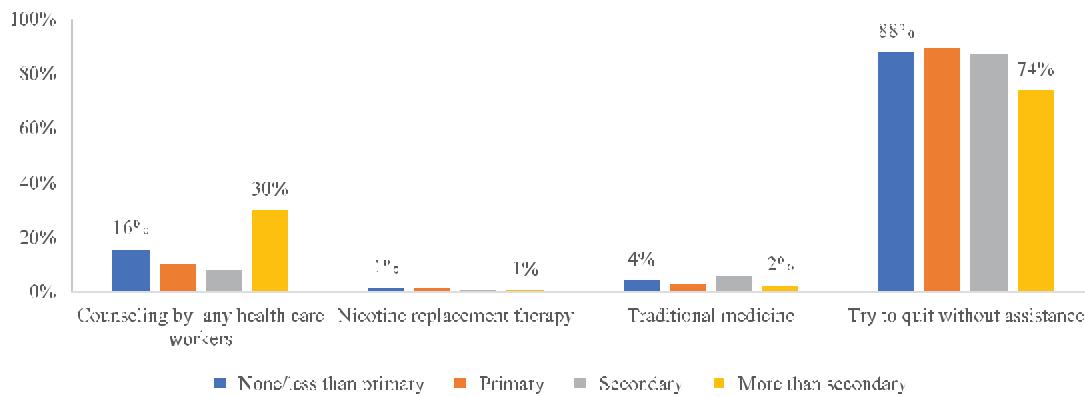
**Figure 4.23** Differentials in tobacco cessation (attempt to stop and advice received to quit), among current smokeless tobacco users by age, Nepal STEPS Survey, 2019



**Figure 4.24** Differentials in use of different methods of cessation by current tobacco users who have tried to quit tobacco use, by age, Nepal STEP Survey, 2019



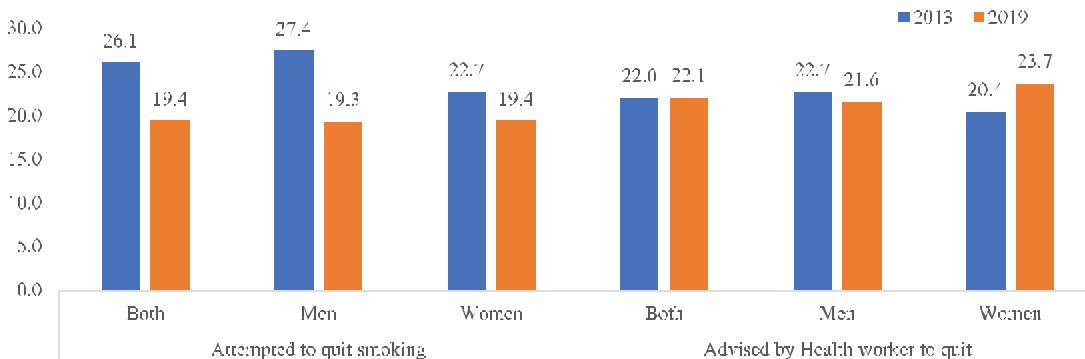
**Figure 4.25** Differentials in use of different methods of cessation adopted by current tobacco users who have tried to quit tobacco use, by levels of education, Nepal STEPS survey, 2019



#### Changes in cessation efforts between 2013<sup>4</sup> and 2019

No information was elicited in cessation attempts and advice for smokeless tobacco in 2013 survey. In addition, the 2013 survey did not ask about method of quitting. For smoking, the percentage of current smokers who attempted to quit in the past 12 months declined slightly between 2013 and 2019. In addition, the percentage of current smokers who were advised to quit smoking during the visit to a health care provider remained unchanged at low-levels around 22% (Figure 4.25a).

**Figure 4.25a** Percent of current smokers that attempted quitting smoking and advised to quit smoking by Health Worker in 2013 and 2019, Nepal STEPS survey, 2013 and 2019



#### 4.6 Second hand smoke

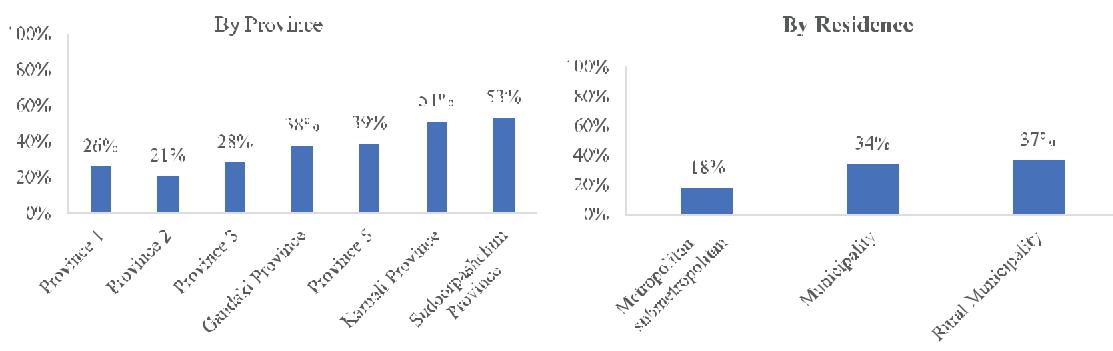
Article 8 addresses the adoption and implementation of effective measures to provide protection from exposure to tobacco smoke in indoor workplaces, public transport, indoor public places and, as appropriate, other public places. In Nepal, by law, all public places are supposed to be completely smoke-free; at least 90% of the population should be covered by complete subnational smoke-free legislation. STEPS survey asked all participants if in the past 30 days, anyone smoked at home in their presence. The survey also asked the participants if they experienced second hand smoke in the past 30 days, at the indoor place of their work or at restaurants, health care facilities, schools/university or public transportation visited or used by them.

33.5% of all adults were exposed to second hand smoke at home (SHSH) and 66.2% of these were exposed on a daily basis. 22.5% of all adults were exposed to second hand smoke at work, 68.5% at restaurants, 49.8% in public transport, 7.5% in schools and universities and 1.6% at healthcare facilities (Table 4.6.2).

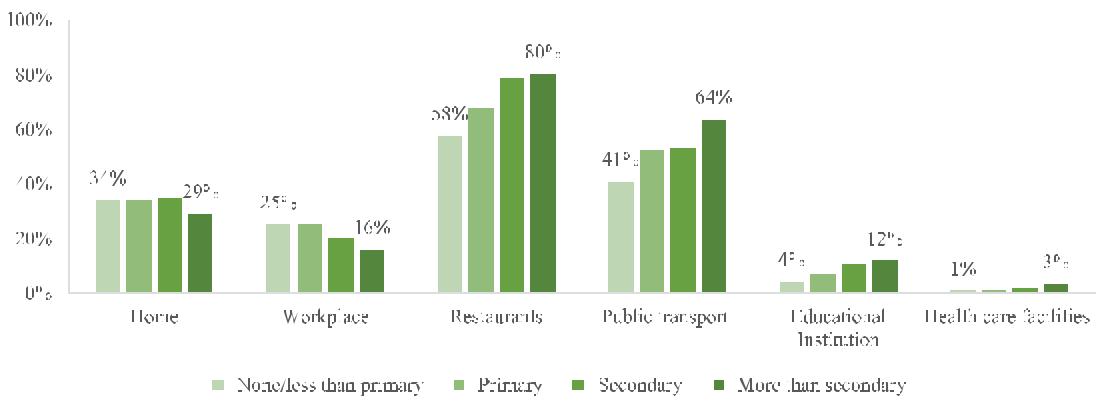
### Patterns by background characteristics<sup>10</sup>

- A higher proportion of residents in rural municipality (36.5%) were exposed to SHSH, compared to 17.6% of residents in metropolitan/sub-metropolitan regions. Similarly, Province 2 residents are less exposed to SHSH (21%), compared to (53.3%) of residents in Sudoorpaschim Province and (51%) of residents in Karnali Province (**Figure 4.26**).
- With an increase in levels of education and wealth, there is a decline in proportion of adults exposed to SHS at home and at work place; however, this trend is reversed when considering restaurants, public transportation, and educational institutions (**Figure 4.27 & Figure 4.28**).
- Restaurants and public transport were the biggest avenues for second hand smoke in public places.

**Figure 4.26** Differentials in exposure to second hand smoke at home and outside, by residence and Province, Nepal STEPS Survey, 2019

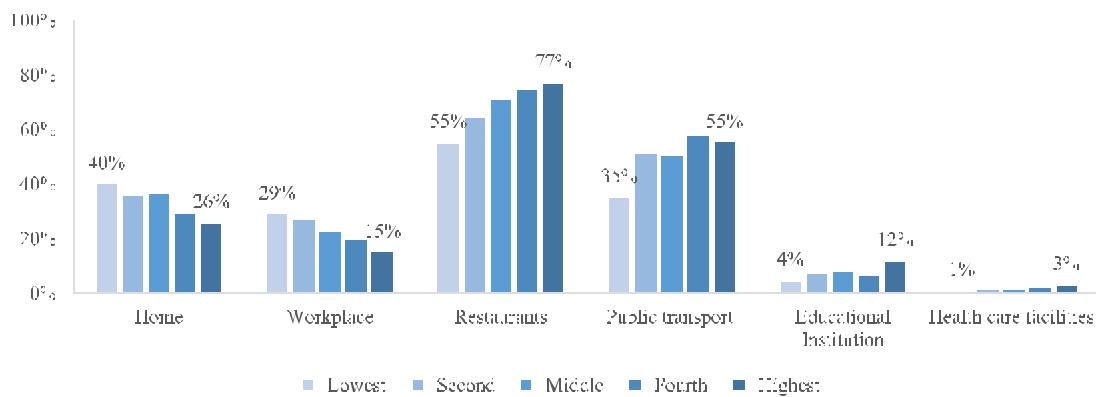


**Figure 4.27** Differentials in exposure to second hand smoke at home and outside, by levels of education, Nepal STEPS Survey, 2019



10 These are for exposure in the total population/all participants

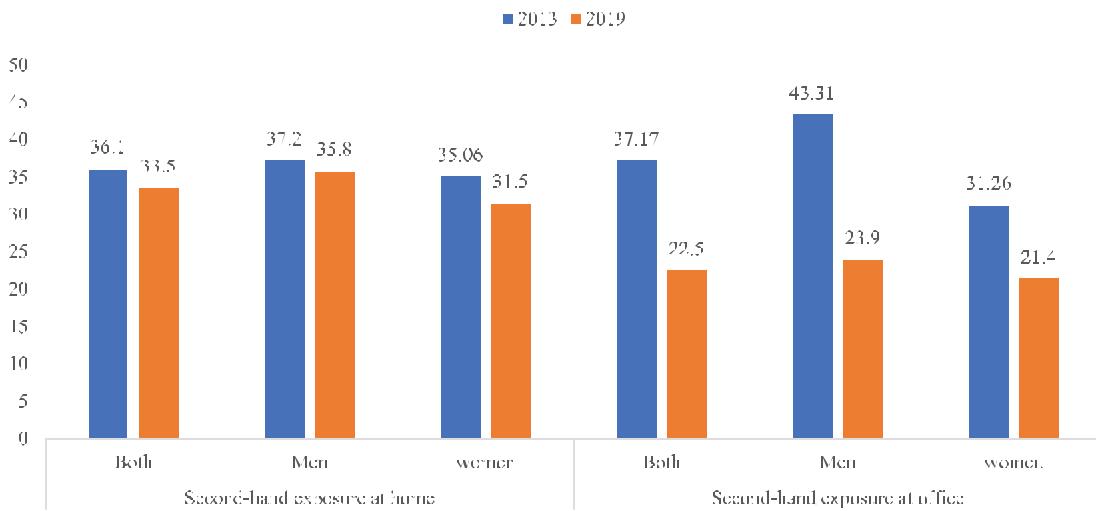
**Figure 4.28** Differentials in trends on exposure to second hand smoke at home and outside, by wealth<sup>12</sup>, Nepal STEPS Survey, 2019



#### Changes in second-hand exposure to tobacco smoke between 2013<sup>4</sup> and 2019

The 2013 survey only elicited exposure to SHSH and at indoor office place. In addition, the question asked to elicit this second-hand exposure is different in 2013 (enquired the exposure in the last 7 days) and 2019 (enquired the exposure in the last 30 days) and hence the results should be interpreted keeping in mind this change in question. There seems to be some evidence of decline in second hand exposure to tobacco smoke at home and work, though the decline seems to be much more for “indoor work place” than for home (**Figure 4.28a**).

**Figure 4.28a** Change in percentage of adults (15-69 years) reporting exposure to second hand smoke at home and work between 2013 and 2019, Nepal STEPS Surveys 2013 and 2019



#### 4.7 Graphic health warning on tobacco package

Article 11 of FCTC requires each of the parties to prohibit misleading tobacco packaging and labelling; ensure that tobacco product packages carry large health warnings and messages describing the harmful effects of tobacco use; ensure that such warnings cover 50% or more, but not less than 30%, of principal display areas and that they are in the Parties' principal language. In 2014, Nepal enacted the tobacco packaging and labelling

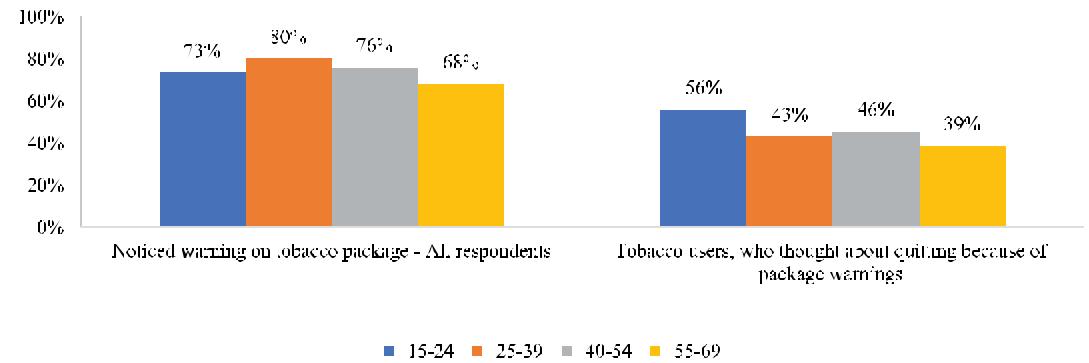
legislation which made it mandatory to cover 90 percent of the surface area (front and back) of packages of tobacco products (smoke and smokeless) with health warnings in text and graphic format.

STEPS survey asked all participants if they noticed health warnings on smoke and smokeless tobacco products in the past 30 days. Furthermore, for the current tobacco users, an additional question was asked about their intent to quit upon noticing these health warnings. 75.7% of all adults reported noticing the warnings on tobacco packages. Amongst the current users who noticed these health warnings, 44.8% thought about quitting because of the package warnings (**Table 4.7**).

#### Patterns by background characteristics

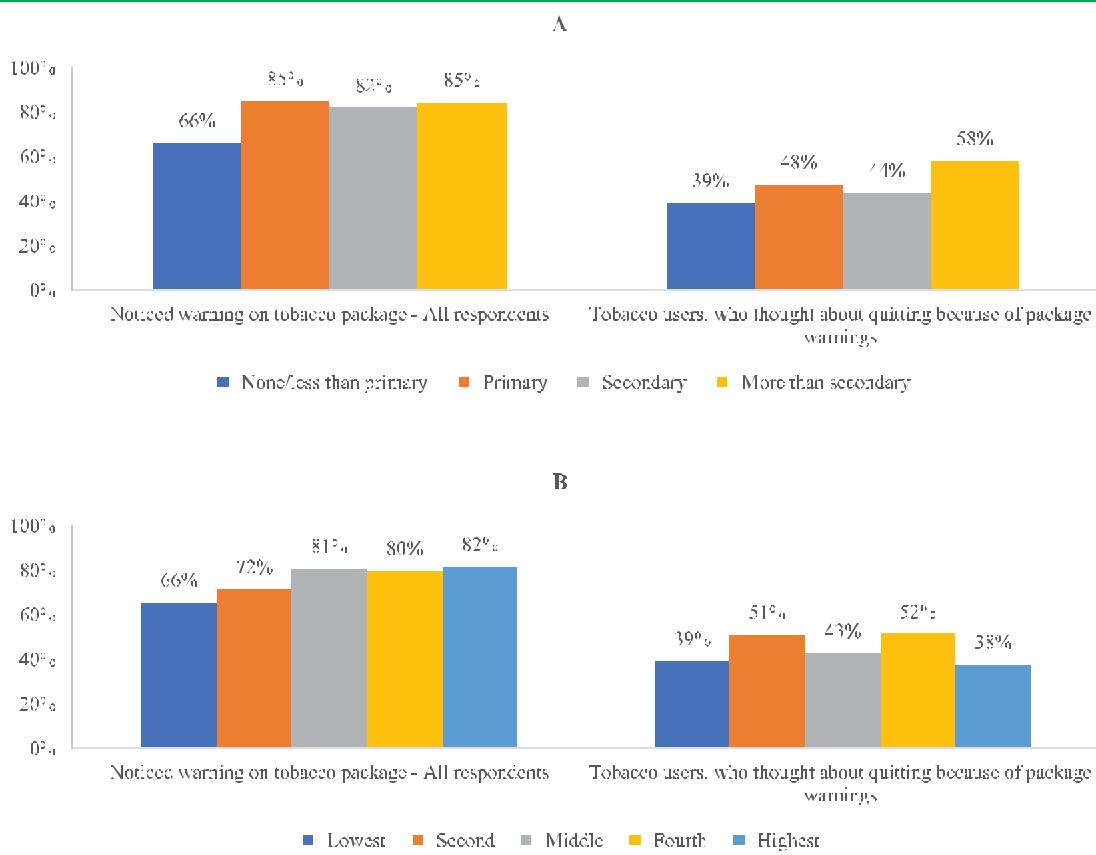
- The proportion of adults that noticed warning on tobacco packages declined with increase in age. And the proportion of current tobacco users who thought of quitting because of the package warning decreased with age (55.8% of current users 15-24 years of age compared to 38.6% among 55-64 years old) (**Figure 4.29**).
- Current tobacco users in rural areas, who noticed package health warnings, thought of quitting much more often than in metropolitan/sub-metropolitan (55.3% versus 23%).
- The proportion of adults that noticed the package health warning messages increased with an increase in levels of education. Similarly, the proportion of current tobacco users who thought of quitting because of the package health warning increased with education (58.3% of users with more than secondary education compared to 39.4% of users with no or less than primary education). (**Figure 4.30**).
- The proportion of adults that noticed warning on tobacco packages increased with an increase in household wealth. However, no significant trend was observed with change in wealth in the intention to quit tobacco use because of these warnings (**Figure 4.30**).

**Figure 4.29** Differentials in propensity to notice warning on tobacco packages and thoughts for quitting because of warning, by age, Nepal STEPS Survey, 2019



11 Outside includes work, restaurants, public transport, school/universities, and health care facilities

**Figure 4.30** Differentials in propensity to notice warning on tobacco packages and thoughts of quitting because of warning, by levels of education (A) and wealth (B), Nepal STEPS Survey, 2019



#### 4.8 Exposure to tobacco advertising and promotion Versus Exposure to anti-tobacco messages

Article 12 of FCTC focuses on provision of anti-tobacco messages - education, communication, training and public awareness, concerns raising public awareness of tobacco control issues through all available communication tools, such as media campaigns, educational programmes and training. Article 13 of FCTC requires parties to undertake a comprehensive ban of all tobacco advertising, promotion and sponsorship. STEPS collected information by asking all participants if in the past 30 days, they saw any promotions for tobacco products and also, if they noticed information about the dangers of using tobacco products.

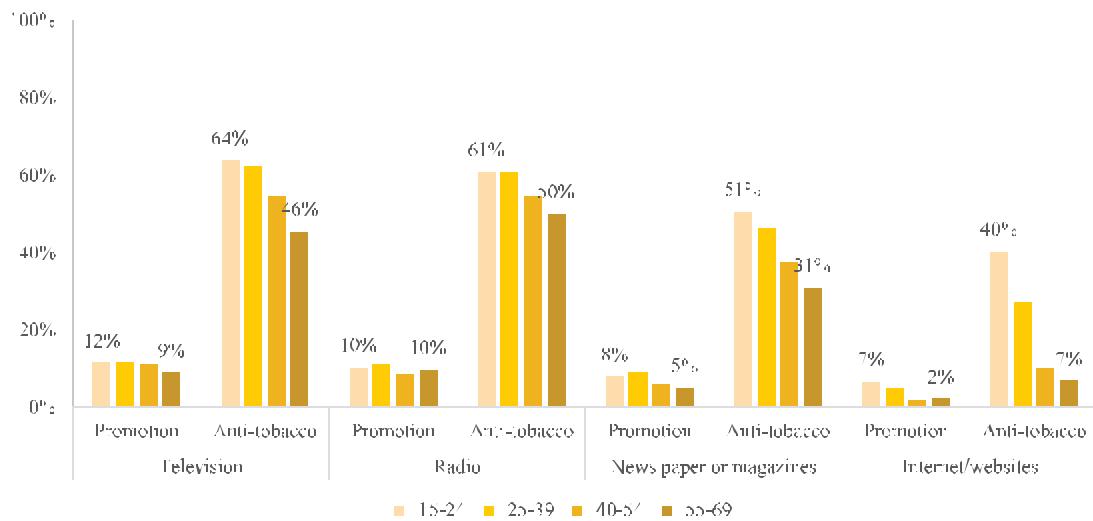
Of all the participants, 59% noticed anti-tobacco messages on television, 58.1% noticed on radio, 43.5% noticed these in newspapers and magazines and 24.4% on internet/websites (**Table 4.8.2**).

On the other hand, 11.3% of adults were exposed to tobacco advertising on television, 10.3% on radio, 7.4% in newspapers and 4.5% on internet/websites (**Table 4.8.1**).

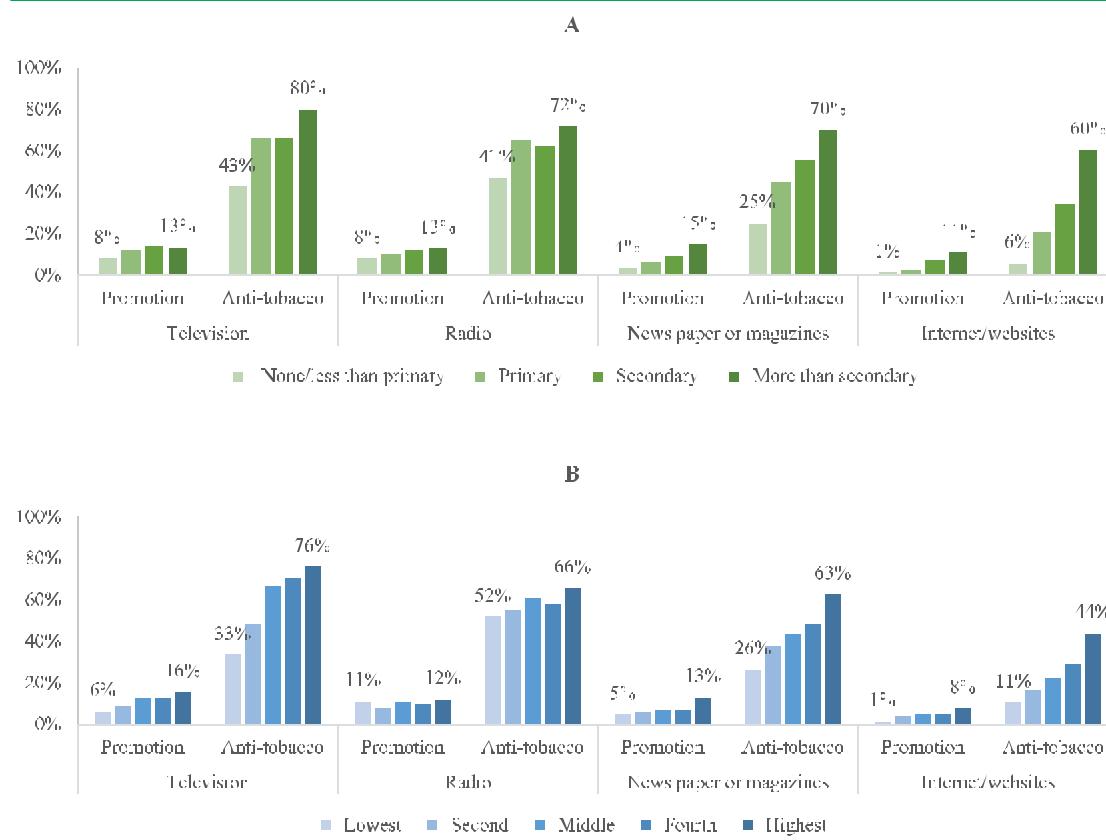
##### Patterns by background characteristics

- The level of exposure to tobacco advertisement and promotions messages is significantly lower as compared to exposure to anti-tobacco messages across all background characteristics.
- With an increase in age the exposure to anti-tobacco messages decreases. The exposure to advertisement and tobacco promotions also declines with increasing age (**Figure 4.31**).
- With an increase in levels of education and wealth, exposure to tobacco advertisement and promotions and anti-tobacco messages increased through all forms of media, including internet/websites (**Figure 4.32**).

**Figure 4.31** Differentials in exposure to tobacco advertisements or promotions and exposure to anti-tobacco messages through various forms of media, by age, Nepal STEPS Survey, 2019



**Figure 4.32** Differentials exposure to tobacco advertisements or promotions and exposure to anti-tobacco messages through various forms of media, by levels of education (A) and wealth (B), Nepal STEPS Survey



## 4.9 Economic aspects of tobacco use

Article 6 of FCTC encourages price and tax measures as effective means to reduce the demand for tobacco. These include tax increases that result in an increase of the sales price of tobacco products; and prohibiting or restricting sales of tax- and duty-free tobacco products. Raising taxes recommended as one of the most-cost-effective intervention under FCTC (article 6) as well as for overall NCD prevention and control. An international benchmark was set at 75% of taxes as proportion of final retail price.

STEPS collected data on how many manufactured cigarettes the participants smoked weekly/daily, and about their last purchase – number of cigarettes and amount paid for them to calculate the total monthly expenditures incurred on cigarette smoking.

On average, a cigarette smoker smoked 151 cigarettes per month and spent on average Rs. 1049 Nepali rupees per month. The average price of cigarettes was estimated to be about 151.5 Nepali rupees for twenty cigarettes. Taking into account the 2018 GDP per capita, the average expenditure per year on cigarettes amounted to 11% as a percentage of GDP per capita. In addition, the percentage of GDP required purchasing 100 packs of 20 cigarettes each was 13.6%.

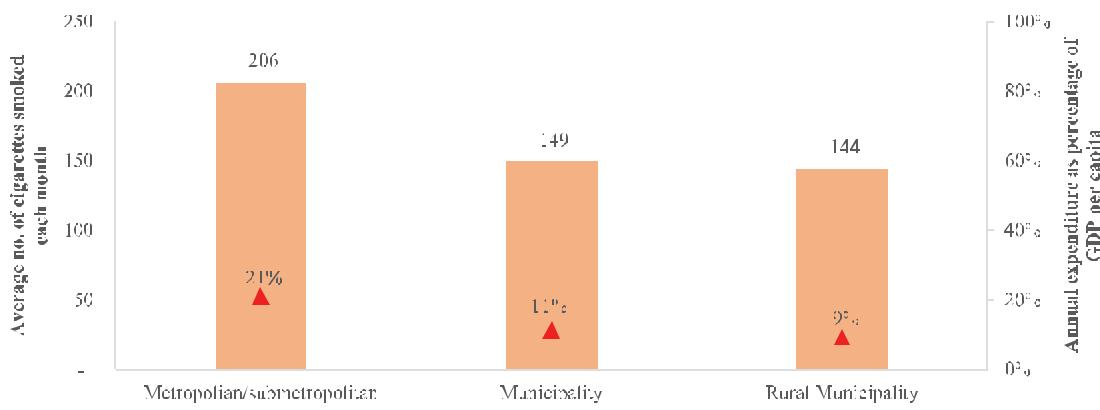
### Patterns by background characteristics

- The average number of cigarettes smoked per person per month and the monthly expenditure increased with increasing age (**Figure 4.33**).
- Average number of cigarettes smoked per person/month was much higher in metropolitan/sub-metropolitan region than in rural municipalities (206 versus 144). Similarly, the monthly expenditure in metropolitan/sub-metropolitan region was Rs. 1953, compared to Rs. 862 in rural municipality (**Figure 4.34**).
- While the average number of cigarettes smoked per person/month decreased with increase in levels of education and wealth, no consistent trends were seen in monthly expenditure with education or household wealth (**Figure 4.35**).

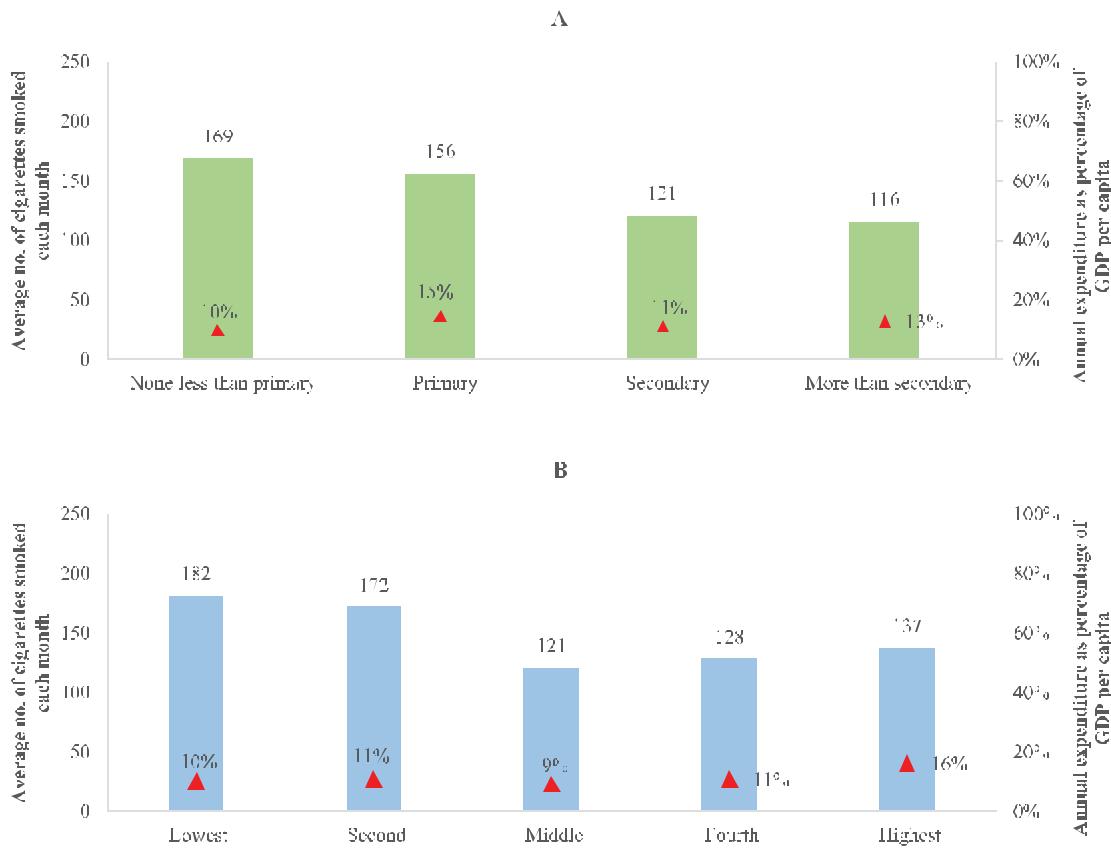
**Figure 4.33** Differentials in average number of cigarettes smoked per month, per person and annual expenditure on cigarettes, by age, Nepal STEPS Survey, 2019



**Figure 4.34** Differentials in average number of cigarettes smoked per month, per person and annual expenditure on cigarettes, by residence, Nepal STEPS Survey 2019



**Figure 4.35** Differentials in average number of cigarettes smoked per person per month and annual expenditure on cigarettes, by levels of education (A) and wealth (B), Nepal STEPS Survey, 2019



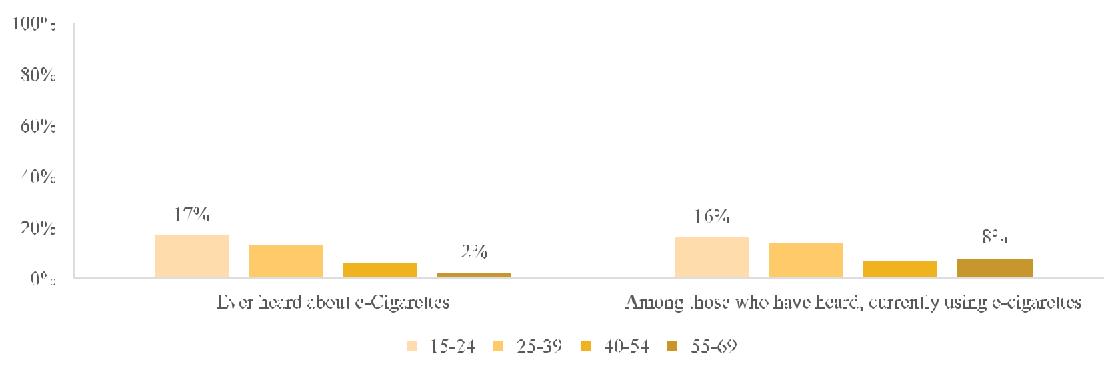
## 4.10 Electronic cigarettes

Electronic cigarettes include any product that uses batteries or other methods to produce a vapour which contains nicotine. They have various other names such as e-cigarette, vape-pen, e-shisha, e-pipes. All participants were asked if they had heard of e-cigarette, and if they had, they were asked if they have ever used it or were using it at the time regularly. 11.4% of all adults (15-69 years) reported that they have heard of e-cigarette and 14.1% amongst them were using the product.

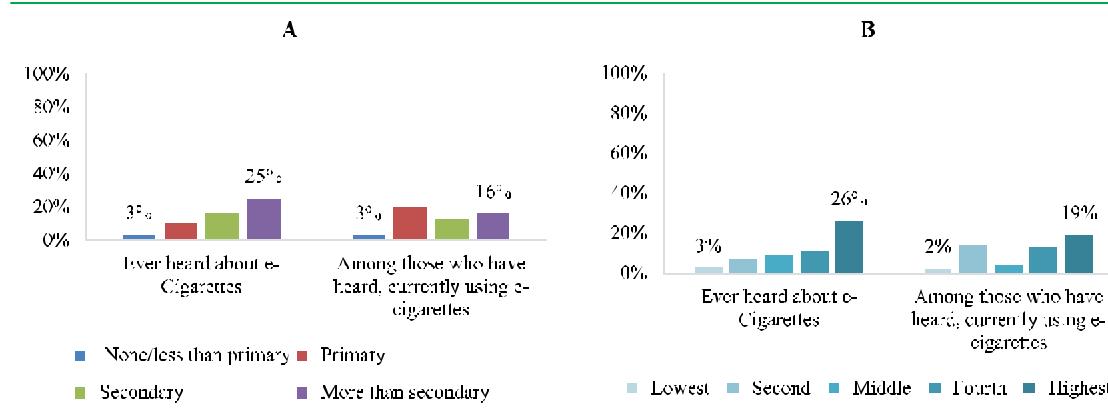
### Patterns by background characteristics

- Awareness and usage of e-cigarettes decline with age. While 16.9% of 15-24 years old have heard about e-cigarettes, only 2.4% of 55-69 years have heard about them. Similar pattern was observed with use of e-cigarettes (**Figure 4.36**).
- Awareness and usage were much higher amongst men (18.8%, 16.9%), compared to women (4.7%, 3.8%). Awareness about cigarettes was much higher in metropolitan/sub-metropolitan region as compared to rural municipality.
- While there is an increase in the awareness about e-cigarettes with an increase in levels of education, there isn't a significant increase in its usage.
- With an increase in wealth, the awareness and usage of e-cigarettes increased as well - 26.3% of all participants belonging to the highest wealth quintiles had heard of e-cigarettes, and of them, 19% were using the product. 2.7% of the participants belonging to the lowest wealth quintile had ever heard about e-cigarettes and only 2.5% of them were using the product (**Figure 4.37**).

**Figure 4.36** Differentials in awareness and usage of electronic cigarettes, by age group, Nepal STEPS survey, 2019



**Figure 4.37** Differentials in awareness and usage of electronic cigarettes, by levels of education (A) and wealth (B), Nepal STEPS survey, 2019





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**Table 4.1 Tobacco use: all participants**

Percentage of people age 15-69 who currently use any tobacco product, any smoked, smokeless tobacco product by background characteristics, Noncommunicable Disease Risk Factors STEPS Survey, Nepal, 2019

Background characteristics	Currently use any tobacco product	Currently smoke any tobacco product	Currently use any smokeless tobacco product	Currently use both smoking and smokeless tobacco product	Number of participants
<b>Age</b>					
15-24	15.1	10.4	8.4	3.7	843
25-39	28.7	16.3	19.5	7.1	2087
40-54	38.1	21.1	25.4	8.3	1574
55-69	42.7	27.0	23.2	7.5	1089
<b>Sex</b>					
Men	48.3	28.0	33.3	13.0	1998
Women	11.6	7.5	4.9	0.8	3595
<b>Residence</b>					
Metropolitan/Submetropolitan	24.6	12.5	15.9	3.8	705
Municipality	27.6	17.2	16.7	6.3	2755
Rural Municipality	31.7	18.1	21.1	7.5	2133
<b>Province</b>					
Province 1	23.2	10.4	16.6	3.8	804
Province 2	29.1	13.9	23.3	8.1	803
Province 3	22.9	18.8	8.1	4.1	759
Gandaki Province	26.0	18.9	11.1	4.0	793
Province 5	36.4	17.6	26.9	8.1	797
Karnali Province	30.4	21.6	17.2	8.4	808
Sudurpashchim Province	33.7	26.4	16.8	9.5	829
<b>Education</b>					
None/less than primary	34.3	21.6	19.7	7.0	2792
Primary	29.5	16.0	21.3	7.8	1051
Secondary	24.6	15.4	16.4	7.2	1088
More than secondary	21.0	9.8	13.6	2.4	661
<b>Wealth quintile</b>					
Lowest	33.4	23.2	17.3	7.1	1653
Second	28.2	17.1	17.2	6.1	1062
Middle	27.5	15.7	21.1	9.3	949
Fourth	30.0	15.8	18.9	4.7	878
Highest	25.3	13.8	16.8	5.3	1051
<b>Age (previous, 2013)</b>					
15-29	18.8	11.7	11.5	4.5	1466
30-44	32.4	17.6	22.7	7.9	2039
45-69	42.3	25.8	24.9	8.4	2088
Total (15-39)	23.1	13.9	15.0	5.7	2930
Total (40-69)	39.9	23.4	24.5	8.0	2663
<b>Total (15-69)</b>	<b>28.9</b>	<b>17.1</b>	<b>18.3</b>	<b>6.5</b>	<b>5593</b>

**Table 4.2.1 Tobacco smoking status (current, former, never)**

Percentage of adults age 15-69 years who currently use any tobacco product daily or non-daily, percentage who formerly smoked tobacco daily or non-daily, and percentage never smoker among all participants and among current smokers by background characteristics, Noncommunicable Disease Risk Factors STEPS Survey, Nepal, 2019

Background characteristics	Among all participants						Number of participants	Number of former smokers	Number of non-daily smokers			
	Currently smoke tobacco			Never smoked tobacco								
	Daily	Non-daily	Formerly smoke tobacco	Daily	Non-daily	Total						
<b>Age</b>												
15-24	6.5	4.0	0.5	1.4	87.7	100.0	843	61.9	68			
25-39	11.8	4.4	1.8	2.0	80.0	100.0	2087	72.9	27.1			
40-54	17.5	3.4	6.2	2.7	70.2	100.0	1574	83.6	16.4			
55-69	24.5	2.1	17.0	3.1	53.4	100.0	1089	91.9	8.1			
<b>Sex</b>												
Men	20.7	7.1	5.5	3.4	63.3	100.0	1998	74.2	25.8			
Women	6.7	0.7	3.4	1.1	88.1	100.0	3595	90.0	10.0			
<b>Residence</b>												
Metropolitan/ submetropolitan	9.6	2.9	2.3	1.4	83.7	100.0	705	76.8	23.2			
Municipality	13.1	4.1	5.7	2.1	75.0	100.0	2755	76.2	23.8			
Rural Municipality	14.4	3.4	3.0	2.3	76.8	100.0	2133	80.4	19.6			
<b>Province</b>												
Province 1	7.0	3.3	4.8	1.6	83.3	100.0	804	67.9	32.1			
Province 2	12.6	1.3	2.1	1.7	82.3	100.0	803	90.1	9.9			
Province 3	15.7	2.8	5.0	0.7	75.7	100.0	759	84.9	15.1			
Gandaki Province	16.1	2.8	4.0	3.1	74.1	100.0	793	85.4	14.6			
Province 5	12.9	4.7	4.5	1.8	76.1	100.0	797	73.0	27.0			
Karnali Province	16.3	5.2	5.0	3.3	70.2	100.0	808	75.4	24.6			

Sudopashchim Province	18.3	7.9	6.7	5.0	622	1000	829	69.2	30.8	231	49.2	50.8	135	
<b>Education</b>														
None/less than primary	17.8	3.6	7.7	3.0	67.9	100.0	2792	83.0	17.0	689	63.5	36.5	372	
Primary	13.7	2.2	3.9	2.5	77.8	100.0	1051	85.5	14.5	154	51.7	48.3	94	
Secondary	10.4	4.9	1.0	1.3	82.4	100.0	1088	67.9	32.1	149	30.4	69.6	79	
More than secondary	5.6	4.1	2.0	1.0	87.3	100.0	661	57.5	42.5	72	43.6	56.4	56	
<b>Wealth quintile</b>														
Lowest	19.2	4.0	5.1	2.3	69.4	100.0	1653	82.8	17.2	435	57.9	42.1	194	
Second	13.6	3.2	3.9	2.8	76.5	100.0	1062	81.0	19.0	211	49.0	51.0	110	
Middle	11.8	3.9	5.5	2.7	76.2	100.0	949	75.4	24.6	162	58.4	41.6	105	
Fourth	11.5	4.2	4.6	1.9	77.8	100.0	878	72.7	27.3	121	48.3	51.8	95	
Highest	10.3	3.5	3.0	1.0	82.3	100.0	1051	74.5	25.5	136	52.4	47.6	97	
<b>Age (previous, 2013)</b>														
15-29	7.0	4.7	0.9	1.4	86.0	100.0	1466	59.7	40.4	132	33.4	66.6	79	
30-44	14.4	3.1	2.3	2.6	77.5	100.0	2039	81.8	18.2	339	36.2	63.8	158	
45-69	22.8	2.7	12.6	2.9	58.9	100.0	1088	89.1	10.9	594	75.5	24.6	364	
Total (15-39)	9.6	4.2	1.3	1.8	83.2	100.0	2930	69.5	30.5	367.0	32.7	67.3	178	
Total (40-69)	20.3	2.9	10.4	2.9	63.6	100.0	2663	87.4	12.6	698.0	71.5	28.5	423	
<b>Total (15-69)</b>	<b>13.3</b>	<b>3.7</b>	<b>4.4</b>	<b>2.1</b>	<b>76.4</b>	<b>100.0</b>	<b>5593</b>	<b>77.9</b>	<b>22.1</b>	<b>1065</b>	<b>53.5</b>	<b>46.5</b>	<b>601</b>	

**Table 4.2.2 Smokeless Tobacco use (current, former, never)**

Percentage of adults age 15-69 years who currently use any smokeless tobacco product daily or non-daily, percentage who formerly used smokeless tobacco products daily or non-daily, and percentage never user of smokeless tobacco among all participants and among current users by background characteristics. Noncommunicable Disease Risk Factors STEPS Survey, Nepal, 2019

Background characteristics	Among all participants						Among former users of smokeless tobacco						Among former users of smokeless tobacco					
	Currently use smokeless tobacco products			Formerly used smokeless tobacco products			Never used smokeless tobacco products			Number of participants	Among current users of smokeless tobacco		Number of participants	Among current users of smokeless tobacco		Number of participants	Among former users of smokeless tobacco	
	Daily	Non-daily	Daily	Non-daily	Daily	Non-daily	Total	Daily	Non-daily		Daily	Non-daily	Total	Daily	Non-daily	Total	Daily	Non-daily
<b>Age</b>																		
15-24	6.2	2.2	0.0	0.2	91.4	100.0	843	73.6	26.4	56	0.0	100.0	2					
25-39	16.9	2.7	0.4	0.2	79.8	100.0	2087	86.4	13.6	297	69.3	30.7	12					
40-54	21.8	3.6	1.2	0.2	73.2	100.0	1574	85.8	14.3	332	86.2	13.9	32					
55-69	18.8	4.4	2.0	0.9	73.9	100.0	1089	81.0	19.0	228	68.4	31.6	35					
<b>Sex</b>																		
Men	28.2	5.1	1.2	0.5	65.1	100.0	1998	78.1	21.9	731	72.1	27.9	58					
Women	3.8	1.1	0.2	0.1	94.7	100.0	3595	84.6	15.4	182	66.0	34.0	23					
<b>Residence</b>																		
Metropolitan/submetropolitan	13.8	2.0	0.8	0.0	83.3	100.0	705	87.1	12.9	96	99.1	0.9	10					
Municipality	13.6	3.1	0.7	0.2	82.4	100.0	2755	81.5	18.5	427	77.9	22.1	38					
Rural Municipality	18.1	3.0	0.6	0.5	77.8	100.0	2133	85.6	14.4	390	57.5	42.5	33					
<b>Province</b>																		
Province 1	14.0	2.6	0.6	0.1	82.7	100.0	804	84.2	15.8	134	85.8	14.2	11					
Province 2	19.9	3.4	0.7	0.5	75.4	100.0	803	85.5	14.5	187	58.7	41.3	11					
Province 3	7.0	1.1	0.7	0.2	90.9	100.0	759	86.5	13.5	60	75.4	24.6	13					
Gandaki Province	9.9	1.2	0.5	0.1	88.3	100.0	793	89.6	10.4	102	85.9	14.1	8					
Province 5	21.7	5.2	0.6	0.0	72.5	100.0	797	80.7	19.3	188	97.7	2.3	9					
Karnali Province	14.9	2.3	1.0	0.8	81.1	100.0	808	86.5	13.5	112	56.7	43.3	11					
Sudurpashchim Province	13.7	3.1	0.8	0.6	81.8	100.0	829	81.3	18.7	130	57.3	42.8	18					

<b>Education</b>											
None/less than primary	17.0	2.6	1.1	0.4	78.8	100.0	2792	86.6	13.4	460	71.9
Primary	18.0	3.3	0.8	0.3	77.6	100.0	1051	84.3	15.7	202	72.3
Secondary	12.9	3.5	0.2	0.0	83.4	100.0	1088	78.5	21.5	164	96.7
More than secondary	11.2	2.5	0.3	0.3	85.8	100.0	661	81.8	18.2	87	46.6
<b>Wealth quintile</b>											
Lowest	13.8	3.5	0.8	0.3	81.7	100.0	1653	79.8	20.2	253	70.7
Second	14.2	3.0	1.0	0.4	81.5	100.0	1062	82.6	17.4	186	72.8
Middle	18.9	2.2	0.4	0.1	78.3	100.0	949	89.4	10.6	164	78.0
Fourth	16.1	2.8	1.1	0.3	79.7	100.0	878	85.0	15.0	155	75.6
Highest	13.4	3.4	0.2	0.3	82.7	100.0	1051	80.0	20.0	155	44.0
<b>Age (previous 2013)</b>											
15-29	8.8	2.7	0.1	0.1	88.2	100.0	1466	76.3	23.7	120	45.4
30-44	20.1	2.6	0.7	0.2	76.4	100.0	2039	88.6	11.5	339	74.1
45-69	21.1	3.8	1.7	0.6	72.8	100.0	1088	84.7	15.3	454	74.0
Total (15-39)	12.5	2.5	0.3	0.2	84.6	100.0	2930	83.4	16.6	353.0	59.0
Total (40-69)	20.6	3.9	1.5	0.5	73.5	100.0	2663	84.0	16.0	560.0	75.9
<b>Total (15-69)</b>	<b>15.3</b>	<b>3.0</b>	<b>0.7</b>	<b>0.3</b>	<b>80.8</b>	<b>100.0</b>	<b>5593</b>	<b>83.7</b>	<b>16.3</b>	<b>913</b>	<b>70.9</b>
										<b>29.1</b>	<b>81</b>

**Table 4.3.1 Use of different tobacco smoking products: all participants and current smokers**

Background characteristics		Among all participants				Among current smokers				Number of participants		
		Cigarette (manufactured or hand-rolled)	Pipes/cigars/ cigaretillos <i>Bidis</i>	Hukka sessions	Others	Any product	Number of participants	Cigarette (manufactured or hand-rolled)	Pipes/cigars/ cigaretillos <i>Bidis</i>	Hukkah sessions	Others	
<b>Age</b>												
15-24		8.3	1.2	1.0	0.0	9.4	843	79.4	11.6	9.3	12.6	0.0
25-39		14.7	3.5	2.8	1.1	0.8	15.4	2087	90.3	21.6	17.0	6.6
40-54		19.2	5.9	3.6	1.4	1.2	20.6	1574	91.0	27.9	17.3	6.6
55-69		21.8	8.7	4.1	1.1	0.9	26.2	1089	80.7	32.1	15.3	3.9
<b>Sex</b>												
Men		24.6	5.4	4.0	2.0	1.2	26.6	1998	88.0	19.3	14.2	7.1
Women		6.2	2.9	1.5	0.5	0.3	7.2	3595	82.2	38.7	19.5	6.8
<b>Residence</b>												
Metropolitan/ submetropolitan		11.0	2.9	2.8	0.1	0.1	12.1	705	88.0	23.0	22.7	1.1
Municipality		14.6	4.6	2.6	1.5	0.9	16.3	2755	85.0	26.9	14.9	8.9
Rural Municipality		16.1	3.6	2.7	1.0	0.6	17.3	2133	88.8	19.7	15.0	5.4
<b>Province</b>												
Province 1		9.9	1.2	0.9	0.5	0.1	10.3	804	95.7	11.8	8.3	4.4
Province 2		12.2	5.8	1.5	1.5	0.8	13.7	803	87.7	41.3	10.8	10.5
Province 3		17.1	2.0	3.4	1.0	1.1	17.6	759	90.6	10.9	18.1	5.1
Gandaki Province		17.2	1.8	4.6	0.9	0.8	18.1	793	90.8	9.7	24.2	4.8
Province 5		14.7	2.3	2.7	1.0	0.3	16.2	797	83.6	13.2	15.1	5.8
Karnali Province		20.3	2.9	3.2	1.7	0.7	20.9	808	94.2	13.7	15.0	8.1
Sudurpashchim Province		19.8	13.7	4.6	2.5	1.5	25.2	829	74.9	51.8	17.4	9.5

<b>Education</b>	18.5	6.9	3.7	1.3	1.1	20.8	2792	85.4	31.9	17.1	6.0	5.2	689
None/less than primary													
Primary	14.9	2.7	1.6	0.5	0.1	15.8	1051	93.2	16.8	10.2	3.2	0.5	154
Secondary	13.3	2.9	2.0	1.3	0.4	14.5	1088	86.2	18.6	12.8	8.5	2.6	149
More than secondary	7.9	0.5	2.3	1.6	0.8	8.4	661	80.9	5.5	23.7	16.7	7.9	72
<b>Wealth quintile</b>													
Lowest	20.1	7.6	4.2	1.7	1.2	22.5	1653	86.4	32.9	18.0	7.5	5.2	435
Second	15.1	4.5	3.2	1.2	1.4	16.6	1062	88.0	26.4	18.7	7.0	7.9	211
Middle	13.3	4.1	1.7	0.4	0.1	14.8	949	84.9	26.4	10.9	2.7	0.5	162
Fourth	12.9	3.0	2.4	1.9	0.1	14.6	878	81.8	18.9	15.4	11.9	0.4	121
Highest	12.8	1.1	1.7	0.7	0.7	13.0	1051	93.1	7.8	12.4	5.4	5.4	136
<b>Age (previous 2013)</b>													
15-29	9.7	1.4	1.6	1.0	0.2	10.6	1466	82.9	11.6	13.3	8.7	1.9	132
30-44	16.2	5.1	3.1	1.3	0.9	17.1	2039	92.2	29.1	17.8	7.6	5.3	339
45-69	22.1	7.6	4.0	1.4	1.2	25.3	1088	85.4	29.3	15.4	5.3	4.7	594
Total (15-39)	12.1	2.6	2.0	1.2	0.5	12.9	2930	87.0	18.5	14.6	8.4	3.4	367
Total (40-69)	20.2	7.0	3.8	1.3	1.1	22.8	2663	86.3	29.8	16.4	5.4	4.7	698
<b>Total (15-69)</b>	<b>14.8</b>	<b>4.1</b>	<b>2.6</b>	<b>1.2</b>	<b>0.7</b>	<b>16.3</b>	<b>5593</b>	<b>86.7</b>	<b>23.8</b>	<b>15.5</b>	<b>7.0</b>	<b>4.3</b>	<b>1065</b>

Note: Use of different smoking tobacco products with denominator of all participants; the total across different products may not add to 100% due to dual use; don't know and missing observations are excluded from analysis

**Table 4.3.2 Use of different smokeless tobacco products: all participants**

Percentage of adults age 15-69 years who currently use different smokeless tobacco products, among all participants and among current users by background characteristics, Noncommunicable Disease Risk Factors STEPS Survey, Nepal, 2019

Background characteristics	Among all participants				Among current smokers			
	Snuff by mouth or nose	Chewing tobacco	Betel leaves with tobacco	Betel leaves with tobacco	Snuff by mouth or nose	Chewing tobacco	Betel leaves with tobacco	Snuff or khaini
<b>Age</b>								
15-24	1.7	1.8	6.9	2.9	8.4	843	20.1	21.4
25-39	2.8	4.1	5.3	10.8	13.6	19.3	2087	14.1
40-54	3.4	5.3	5.8	6.9	21.1	25.0	1574	13.3
55-69	2.1	4.8	4.0	6.1	19.5	22.8	1089	9.2
								20.7
<b>Sex</b>								
Men	4.9	7.3	8.3	16.9	24.2	32.9	1998	14.8
Women	0.4	0.7	0.8	0.7	3.1	4.9	3595	7.4
								15.1
<b>Residence</b>								
Metropolitan/submetropolitan	2.3	2.0	9.9	3.6	8.7	15.8	705	14.6
Municipality	2.7	3.5	3.9	7.7	11.7	16.4	2755	16.1
Rural Municipality	2.3	4.8	3.5	10.2	16.0	21.0	2133	11.0
								22.7
<b>Province</b>								
Province 1	0.4	1.0	2.0	3.6	14.0	16.2	804	2.2
Province 2	4.8	5.8	8.8	13.7	18.7	23.2	803	20.8
Province 3	1.0	0.6	0.5	3.0	5.8	7.5	759	11.8
Gandaki Province	2.0	3.5	1.7	5.7	8.7	10.8	793	18.0
Province 5	3.3	5.1	7.7	10.9	15.4	26.9	797	12.2
Karnali Province	2.7	7.2	2.8	10.4	11.7	17.0	808	15.7
Sudurpashchim Province	3.1	5.8	2.2	10.0	11.6	16.8	829	18.3
								13.0

<b>Education</b>	2.7	4.9	4.4	6.2	16.0	19.5	2792	13.9	24.9	22.3	31.6	81.1	4.7	460
None/less than primary														
Primary	2.2	4.9	4.1	10.4	14.5	21.1	1051	10.3	22.8	19.2	48.7	67.9	5.6	202
Secondary	2.4	2.1	4.9	9.5	9.9	16.1	1088	14.6	12.5	29.7	58.1	60.2	2.5	164
More than secondary	2.5	2.6	3.5	8.8	8.8	13.2	661	18.6	18.9	25.4	64.8	64.4	2.0	87
<b>Wealth quintile</b>														
Lowest	2.9	5.4	3.4	7.2	11.9	16.9	1653	16.8	31.3	19.6	41.8	68.9	3.7	253
Second	2.7	4.0	3.6	7.2	13.7	16.8	1062	16.0	23.2	20.7	42.1	79.4	6.1	186
Middle	1.5	3.5	3.6	9.3	15.1	21.1	949	7.2	16.7	17.0	44.2	71.4	4.5	164
Fourth	2.7	3.3	6.1	9.5	13.6	18.8	878	14.2	17.4	32.2	50.1	71.9	4.5	155
Highest	2.7	3.0	4.9	8.1	11.0	16.5	1051	16.3	17.6	29.1	48.5	65.4	1.8	155

**Age (previous 2013)**

15-29	2.0	2.7	2.2	8.1	5.6	11.4	1466	17.7	23.1	18.9	70.6	48.2	6.9	120
30-44	3.0	4.8	7.4	10.1	17.4	22.5	2039	13.3	21.1	32.7	44.6	76.4	1.4	339
45-69	2.8	4.7	4.5	6.5	21.1	24.5	1088	11.1	19.1	18.1	26.1	84.9	4.7	454
Total (15-39)	2.3	3.2	3.9	9.2	9.2	14.8	2930	15.5	21.1	26.0	61.2	61.2	4.4	353
Total (40-69)	2.9	5.1	5.1	6.6	20.5	24.1	2663	11.7	20.9	20.7	26.8	83.4	3.8	560
<b>Total (15-69)</b>	<b>2.5</b>	<b>3.8</b>	<b>4.3</b>	<b>8.3</b>	<b>13.0</b>	<b>18.0</b>	<b>593</b>	<b>13.8</b>	<b>21.0</b>	<b>23.6</b>	<b>45.3</b>	<b>71.4</b>	<b>4.1</b>	<b>913</b>

Note: Use of different smokeless tobacco products with denominator of all participants; the total across different products may not add to 100% due to dual use; don't know and missing observations are excluded from analysis

**Table 4.4 Age at initiation of smoking: all participants**

Mean and median age at initiation of smoking among adults age 15-69 years who currently use any smoked tobacco products by background characteristics, Noncommunicable Disease Risk Factors STEPS Survey, Nepal, 2019

Background characteristics	Mean age at initiation of smoking	Median age at initiation of smoking	Number of participants
<b>Age</b>			
15-24	16.0	16	843
25-39	18.3	18	2087
40-54	18.6	19	1574
55-69	17.5	18	1089
<b>Sex</b>			
Men	17.7	17	1998
Women	18.4	17	3595
<b>Residence</b>			
Metropolitan/submetropolitan	18.2	19	705
Municipality	17.8	17	2755
Rural Municipality	17.9	17	2133
<b>Province</b>			
Province 1	17.9	18	804
Province 2	17.9	18	803
Province 3	18.1	18	759
Gandaki Province	17.5	16	793
Province 5	18.4	18	797
Karnali Province	17.6	17	808
Sudurpashchim Province	17.0	16	829
<b>Education</b>			
None/less than primary	17.7	16	2792
Primary	17.2	16	1051
Secondary	18.6	19	1088
More than secondary	18.0	18	661
<b>Wealth quintile</b>			
Lowest	17.3	16	1653
Second	18.4	18	1062
Middle	17.2	16	949
Fourth	18.1	18	878
Highest	18.5	19	1051
<b>Age (previous, 2013)</b>			
15-29	17.4	17	1466
30-44	18.1	17	2039
45-69	18.0	17	1088
Total (15-39)	17.6	17	2930
Total (40-69)	18.1	17	2663
<b>Total (15-69)</b>	<b>17.8</b>	<b>17</b>	<b>5593</b>

Note: excluded observations with age at smoking less than 7 years of age and more than or equal to 70; age at started smoking if don't know in T3, we have replaced responses from T4; exclude observations who are don't know for t3 (=77) and also either missing or don't know for t4/t4type; exclude observations where age at initiation of smoking is more than the current age

**Table 4.5 Tobacco cessation attempts**

Percentage of current smokers and current smokeless tobacco users age 15-69 years who tried to stop smoking and use of smokeless tobacco products, respectively by background characteristics, Noncommunicable Disease Risk Factors STEPS Survey, Nepal, 2019						
Background characteristics	Tried to stop smoking	Number of participants	Tried to stop using smokeless tobacco	Number of participants	Advised to quit smoking	Number of participants
<b>Age</b>						
15-24	18.1	68	13.7	56	12.3	35
25-39	19.7	299	17.1	297	17.3	150
40-54	19.7	355	20.9	332	25.6	228
55-69	19.4	343	17.9	228	32.2	229
						28.6
						172
<b>Sex</b>						
Men	19.3	650	19.3	731	21.6	424
Women	19.4	415	9.7	182	23.7	261
						29.6
						122
<b>Residence</b>						
Metropolitan/submetropolitan	18.1	93	12.5	96	34.3	58
Municipality	20.0	515	22.5	427	20.1	324
Rural Municipality	18.7	457	13.7	390	22.7	303
						25.1
						261
<b>Province</b>						
Province 1	14.5	101	16.6	134	13.8	68
Province 2	13.5	115	13.5	187	26.6	87
Province 3	19.6	139	13.4	60	20.9	98
Gandaki Province	19.8	140	26.4	102	27.4	89
Province 5	15.8	134	17.4	188	15.2	79
Karnali Province	35.8	205	33.4	112	20.3	125
Sudurpashchim Province	24.7	231	23.2	130	30.4	139
						18.2
						76
<b>Education</b>						
None/less than primary	19.0	689	16.4	460	20.2	436
Primary	17.3	154	21.6	202	18.5	103
						18.5
						133
						310
						33

	<b>Total (15-69)</b>	<b>194</b>	<b>1065</b>	<b>179</b>	<b>913</b>	<b>22.1</b>	<b>685</b>	<b>21.0</b>	<b>630</b>
	-	-	-	-	-	-	-	-	-
	Note: no visit to the health care provider during the past 12 months is treated as missing.								
Secondary	21.6	149	15.7	164	25.9	96	19.5	120	
More than secondary	20.0	72	20.4	87	30.6	50	28.9	67	
<b>Wealth quintile</b>									
Lowest	22.1	435	19.9	253	17.1	259	14.7	158	
Second	16.0	211	18.4	186	13.8	131	22.2	111	
Middle	16.6	162	17.4	164	21.7	108	21.3	120	
Fourth	20.8	121	19.9	155	27.9	87	22.4	123	
Highest	20.4	136	13.9	155	30.4	100	23.0	118	
<b>Age (previous 2013)</b>									
15-29	17.1	132	14.0	120	13.2	79	17.9	75	
30-44	23.9	339	22.2	339	22.1	222	19.4	231	
45-69	17.7	594	16.8	454	28.3	384	25.0	324	
Total (15-39)	19.2	367	16.3	353	15.9	228	17.7	230	
Total (40-69)	19.6	698	19.8	560	28.6	457	24.7	400	

**Table 4.5.1 Methods used for Tobacco cessation**

Percentage of current smokers and current smokeless tobacco users age 15-69 years who tried to stop smoking and use of smokeless tobacco products, respectively and used different cessation methods by background characteristics, NCD STEPS survey, Nepal, 2019

Background characteristic	Counselling by any health care workers	Nicotine replacement therapy	Traditional medicine	Try to quit without assistance	Number of participants
users					
<b>Age</b>					
15-24	12.5	0.4	0.0	74.2	21
25-39	11.1	1.2	5.2	91.6	117
40-54	17.0	1.3	2.9	86.5	152
55-69	17.3	1.7	5.2	84.1	100
<b>Sex</b>					
Men	14.1	1.3	4.1	87.8	274
Women	15.0	1.0	2.9	80.4	116
<b>Residence</b>					
Metropolitan/submetropolitan	5.1	5.1	5.1	90.7	44
Municipality	11.8	0.4	6.2	85.8	186
Rural Municipality	19.6	1.8	0.0	86.8	160
<b>Province</b>					
Province 1	6.6	2.6	12.6	94.0	37
Province 2	19.2	0.0	0.0	78.8	32
Province 3	13.6	0.0	3.6	84.1	42
Gandaki Province	34.2	0.0	0.0	78.7	50
Province 5	8.3	0.0	0.0	97.8	50
Karnali Province	24.2	1.4	0.5	75.4	96
Sudurpashchim Province	7.9	4.1	9.5	84.0	83
<b>Education</b>					
None/less than primary	15.6	1.3	4.0	87.7	219
Primary	10.1	1.5	2.6	89.4	65
Secondary	7.8	1.1	5.7	87.3	69
More than secondary	29.8	0.5	2.2	73.8	37
<b>Wealth quintile</b>					
Lowest	14.5	2.7	7.3	85.4	140
Second	10.8	1.0	0.0	83.7	71
Middle	16.3	0.0	7.3	91.5	63
Fourth	16.3	0.0	0.0	84.7	58
Highest	12.8	2.3	4.8	88.3	58
<b>Age (previous, 2013)</b>					
15-29	15.9	1.5	1.3	82.5	44
30-44	11.2	0.3	5.9	92.2	147
45-69	16.2	2.0	3.5	83.3	199
Total (15-39)	11.5	1.0	3.9	87.3	138
Total (40-69)	17.1	1.4	3.8	85.6	252
<b>Total (15-69)</b>	<b>14.2</b>	<b>1.2</b>	<b>3.9</b>	<b>86.5</b>	<b>390</b>

**Table 4.5.2 Tobacco cessation attempts**

Percentage of current smokers and current smokeless tobacco users age 15-69 years who tried to stop smoking and use of smokeless tobacco products, respectively by background characteristics, Noncommunicable Disease Risk Factors STEPS Survey, Nepal, 2019

Background characteristics	Tried to stop smoking	Number of participants	Tried to stop using smokeless tobacco	Number of participants	Advised to quit smoking	Number of participants	Advised to quit smokeless tobacco	Number of participants
<b>Age</b>								
15-24	18.1	68	13.7	56	12.3	35	18.3	33
25-39	19.7	299	17.1	297	17.3	150	17.5	197
40-54	19.7	355	20.9	332	25.6	228	22.3	228
55-69	19.4	343	17.9	228	32.2	229	28.6	172
<b>Sex</b>								
Men	19.3	650	19.3	731	21.6	424	19.5	508
Women	19.4	415	9.7	182	23.7	261	29.6	122
<b>Residence</b>								
Metropolitan/ submetropolitan	18.1	93	12.5	96	34.3	58	19.8	69
Municipality	20.0	515	22.5	427	20.1	324	17.8	300
Rural Municipality	18.7	457	13.7	390	22.7	303	25.1	261
<b>Province</b>								
Province 1	14.5	101	16.6	134	13.8	68	14.5	88
Province 2	13.5	115	13.5	187	26.6	87	29.4	157
Province 3	19.6	139	13.4	60	20.9	98	12.0	44
Gandaki Province	19.8	140	26.4	102	27.4	89	30.7	74
Province 5	15.8	134	17.4	188	15.2	79	17.3	121
Karnali Province	35.8	205	33.4	112	20.3	125	21.4	70
Sudurpashchim Province	24.7	231	23.2	130	30.4	139	18.2	76
<b>Education</b>								
None/less than primary	19.0	689	16.4	460	20.2	436	20.5	310
Primary	17.3	154	21.6	202	18.5	103	18.5	133
Secondary	21.6	149	15.7	164	25.9	96	19.5	120
More than secondary	20.0	72	20.4	87	30.6	50	28.9	67
<b>Wealth quintile</b>								
Lowest	22.1	435	19.9	253	17.1	259	14.7	158
Second	16.0	211	18.4	186	13.8	131	22.2	111
Middle	16.6	162	17.4	164	21.7	108	21.3	120
Fourth	20.8	121	19.9	155	27.9	87	22.4	123
Highest	20.4	136	13.9	155	30.4	100	23.0	118
<b>Age (previous, 2013)</b>								
15-29	17.1	132	14.0	120	13.2	79	17.9	75
30-44	23.9	339	22.2	339	22.1	222	19.4	231
45-69	17.7	594	16.8	454	28.3	384	25.0	324
Total (15-39)	19.2	367	16.3	353	15.9	228	17.7	230
Total (40-69)	19.6	698	19.8	560	28.6	457	24.7	400
<b>Total (15-69)</b>	<b>19.4</b>	<b>1065</b>	<b>17.9</b>	<b>913</b>	<b>22.1</b>	<b>685</b>	<b>21.0</b>	<b>630</b>

Note: no visit to the health care provider during the past 12 months is treated as missing;

**Table 4.6.1 Exposure to second hand smoke at home**

Percentage of adults age 15-69 years who were exposed to secondhand smoke at home in the past 30 days and frequency of exposure by background characteristics, Noncommunicable Disease Risk Factors STEPS Survey, Nepal , 2019

Background characteristics	Someone smoked in home in their presence	Number of participants	Frequency of exposure to second hand smoke at home among those exposed					Number of participants			
			Daily	Weekly	Monthly	Less than monthly	less than monthly				
users											
<b>Age</b>											
15-24	33.8	843	70.5	19.9	2.8	3.0	3.8	311			
25-39	34.4	2087	63.7	24.6	3.9	4.1	3.8	696			
40-54	30.5	1574	65.8	21.0	4.3	7.3	1.5	511			
55-69	34.9	1089	65.7	20.7	5.5	4.5	3.6	388			
<b>Sex</b>											
Men	35.8	1998	61.8	25.5	3.7	5.5	3.5	747			
Women	31.5	3595	70.7	18.7	4.1	3.4	3.1	1159			
<b>Residence</b>											
Metropolitan/ submetropolitan	17.6	705	58.3	30.3	2.2	4.8	4.4	157			
Municipality	34.0	2755	66.3	18.4	5.2	5.6	4.6	901			
Rural Municipality	36.5	2133	67.1	26.1	2.5	2.9	1.5	848			
<b>Province</b>											
Province 1	25.8	804	65.3	21.0	6.6	4.3	2.8	233			
Province 2	20.6	803	43.7	49.5	1.9	0.0	4.9	154			
Province 3	28.1	759	80.1	9.7	2.3	6.1	1.8	206			
Gandaki Province	37.8	793	67.8	22.2	3.8	3.6	2.7	261			
Province 5	38.8	797	70.0	20.1	3.7	4.9	1.3	278			
Karnali Province	51.4	808	63.1	21.0	3.8	9.9	2.1	364			
Sudoorpashchim Province	53.3	829	67.1	17.4	4.8	3.5	7.1	410			
<b>Education</b>											
None/less than primary	34.1	2792	70.2	17.3	2.9	4.7	5.0	998			
Primary	34.0	1051	71.7	18.0	4.4	3.7	2.2	344			
Secondary	34.7	1088	62.5	25.8	3.8	6.0	2.0	372			
More than secondary	29.1	661	53.0	35.7	6.6	2.1	2.7	191			
<b>Wealth quintile</b>											
Lowest	39.9	1653	70.7	20.0	2.6	4.4	2.3	656			
Second	35.9	1062	67.7	21.1	3.1	6.1	2.1	414			
Middle	36.5	949	67.2	16.1	4.9	5.4	6.5	351			
Fourth	29.3	878	59.4	29.6	3.9	3.0	4.1	245			
Highest	25.8	1051	63.8	26.8	6.0	2.6	0.9	240			
<b>Age (previous, 2013)</b>											
15-29	33.5	1466	67.5	22.2	3.2	3.3	3.7	513			
30-44	33.9	2039	63.7	23.7	4.4	5.0	3.3	678			
45-69	32.9	1088	66.8	20.2	4.6	5.8	2.7	715			
Total (15-39)	34.1	2930	66.5	22.7	3.5	3.6	3.8	1007			
Total (40-69)	32.2	2663	65.7	20.9	4.8	6.1	2.4	899			
<b>Total (15-69)</b>	<b>33.5</b>	<b>5593</b>	<b>66.2</b>	<b>22.1</b>	<b>3.9</b>	<b>4.5</b>	<b>3.3</b>	<b>1906</b>			

Note: don't know treated as missing

**Table 4.6.2 Exposure to second hand smoke outside home: All participants**

Percentage of adult age 15-69 years who visited different public places and were exposed to secondhand smoke in the past 30 days by background characteristics, Noncommunicable Disease Risk Factors STEPS Survey, Nepal,-2019

Background characteristic	At work place users	Restaurants/bars/canteen/hotel	Public transport	school/college/university/hostel	Health care facilities	Any of the public place	Number of participants
<b>Age</b>							
15-24	21.8	71.3	49.4	12.1	1.9	73.7	843
25-39	22.7	70.9	54.0	7.4	1.6	74.8	2087
40-54	22.7	66.9	48.7	4.3	1.6	69.6	1574
55-69	23.4	58.0	39.9	3.5	0.9	62.7	1089
<b>Sex</b>							
Men	23.9	76.8	56.9	9.9	2.4	79.3	1998
Women	21.4	61.1	43.5	5.4	0.9	65.1	3595
<b>Residence</b>							
Metropolitan/submetropolitan	13.0	64.5	47.5	7.0	1.6	66.6	705
Municipality	22.3	72.1	50.5	7.8	1.8	75.8	2755
Rural Municipality	25.3	64.1	49.3	7.2	1.3	67.3	2133
<b>Province</b>							
Province 1	19.2	59.7	43.0	3.4	0.8	62.3	804
Province 2	15.3	73.6	65.7	6.6	1.8	78.8	803
Province 3	18.1	77.5	50.8	7.5	1.1	80.5	759
Gandaki Province	19.5	73.7	49.5	4.4	1.4	75.3	793
Province 5	25.0	70.8	52.4	12.4	1.8	72.6	797
Karnali Province	32.8	65.2	39.1	8.8	2.6	69.4	808
Sudurpashchim Province	38.4	55.1	33.2	8.3	2.5	60.4	829
<b>Education</b>							
None/less than primary	25.2	57.6	40.9	4.2	0.9	61.6	2792
Primary	25.6	67.9	52.3	7.2	1.1	72.1	1051
Secondary	20.0	78.9	53.2	10.4	2.0	80.3	1088
More than secondary	16.1	80.4	63.9	11.9	3.4	83.9	661
<b>Wealth quintile</b>							
Lowest	28.8	55.1	34.9	4.5	0.7	58.1	1653
Second	27.1	64.4	50.7	7.3	1.4	69.2	1062
Middle	22.7	71.1	50.6	7.7	1.0	74.0	949
Fourth	19.3	74.7	57.5	6.3	1.9	76.9	878
Highest	14.9	77.0	55.1	11.8	3.0	80.8	1051
<b>Age (previous, 2013)</b>							
15-29	21.8	71.2	50.8	10.7	1.6	74.5	1466
30-44	22.8	69.2	52.0	5.8	2.2	72.3	2039
45-69	23.6	62.9	45.5	3.9	0.9	66.7	2088
Total (15-39)	22.3	71.1	52.1	9.4	1.7	66.9	2930
Total (40-69)	23.0	63.4	45.3	4.0	1.3	74.4	2663
<b>Total (15-69)</b>	<b>22.5</b>	<b>68.5</b>	<b>49.8</b>	<b>7.5</b>	<b>1.6</b>	<b>71.8</b>	<b>5593</b>

Note: don't know are treated same as no

**Table 4.6.3 Exposure to second hand smoke outside home: Among those visited those places**

Percentage of adults age 15-69 years who were exposed to secondhand smoke at work place and other public places in the past 30 days by background characteristics, Noncommunicable Disease Risk Factors STEPS Survey, Nepal, 2019

Background characteristics	At work place users	Number of participants	Restaurants/ bars/canteen/ hotel	Number of participants	Public transport	Number of participants	school/college/ university/ hostel	Number of participants	Health care facilities	Number of participants
<b>Age</b>										
15-24	21.8	776	79.3	730	56.0	724	14.8	684	2.9	595
25-39	22.7	1906	81.2	1775	60.2	1796	10.7	1471	2.3	1446
40-54	22.7	1408	77.8	1300	56.6	1306	6.6	1047	2.5	1050
55-69	23.4	983	77.8	604	51.3	847	6.1	649	1.6	676
<b>Sex</b>										
Men	23.9	1783	84.3	1784	62.9	1777	13.3	1473	3.5	1421
Women	21.4	3290	74.9	2835	51.8	2896	8.1	2378	1.4	2346
<b>Residence</b>										
Metropolitan/submetropolitan	13.0	649	73.4	639	53.4	641	9.4	540	2.2	526
Municipality	22.3	2536	81.2	2311	55.8	2342	10.7	1883	2.7	1828
Rural Municipality	25.3	1888	78.6	1669	60.6	1690	11.1	1428	2.1	1413
<b>Province</b>										
Province 1	19.2	720	71.1	669	53.9	641	5.4	538	1.4	523
Province 2	15.3	749	83.7	685	69.9	746	9.4	559	2.6	535
Province 3	18.1	679	84.8	687	56.2	674	10.5	558	1.6	531
Gandaki Province	19.5	722	83.3	689	56.8	682	6.4	572	2.2	556
Province 5	25.0	713	84.0	633	60.4	668	17.1	527	2.7	514
Karnali Province	32.8	736	77.8	626	47.5	604	11.9	544	3.6	562
Sudurpashchim Province	38.4	754	67.7	630	39.5	658	11.5	553	3.7	546

Education		Age (previous 2013)					Wealth quintile				
		15-29	30-44	45-69	Total (15-39)	Total (40-69)	Lowest	Second	Middle	Fourth	Highest
None/less than primary	25.2	2499	74.1	2112	51.5	2168	7.0	1663	1.6	1679	
Primary	25.6	958	78.2	892	59.6	892	10.0	768	1.8	729	
Secondary	20.0	993	85.0	996	57.4	994	13.2	864	2.6	825	
More than secondary	16.1	622	84.2	619	66.4	619	14.5	556	4.3	534	
<b>Wealth quintile</b>											
Lowest	28.8	1459	73.5	1197	46.3	1207	7.0	1045	1.2	1028	
Second	27.1	969	79.5	836	62.1	854	11.4	680	2.6	653	
Middle	22.7	876	81.2	815	56.7	816	11.1	666	1.6	635	
Fourth	19.3	823	82.4	773	62.3	796	8.7	617	2.6	629	
Highest	14.9	946	80.2	998	57.4	1000	14.4	843	3.9	822	
<b>Age (previous 2013)</b>											
15-29	21.8	1347	80.0	1263	56.7	1272	13.8	1133	2.4	1044	
30-44	22.8	1864	79.8	1714	59.6	1719	8.6	1408	3.4	1361	
45-69	23.6	1862	78.5	1642	55.5	1682	6.4	1310	1.5	1362	
Total (15-39)	22.3	2682	80.4	2505	58.5	2520	12.5	2155	2.6	2041	
Total (40-69)	23.0	2391	77.8	2114	54.7	2153	6.4	1696	2.2	1726	
<b>Total (15-69)</b>	<b>22.5</b>	<b>5073</b>	<b>79.6</b>	<b>4619</b>	<b>57.2</b>	<b>4673</b>	<b>10.7</b>	<b>3851</b>	<b>2.4</b>	<b>3767</b>	

**Table 4.7 Exposure to graphic health warnings on tobacco packages and intention to quit: all participants**

Percentage of current tobacco users age 15-69 years who noticed any health warnings on cigarette/ bidis/ smokeless tobacco product packages in the past 30 days by background characteristics, Noncommunicable Disease Risk Factors STEPS Survey, Nepal, 2019

Background characteristics	Noticed warning on tobacco package	Number of participants	Among current tobacco users who noticed graphic health warning	
			Thought about quitting because of package warnings	Number of participants
<b>Age</b>				
15-24	73.5	99	55.8	69
25-39	80.0	472	43.2	340
40-54	76.1	557	45.6	402
55-69	68.1	477	38.6	304
<b>Sex</b>				
Men	77.2	1067	45.5	769
Women	69.8	538	41.8	346
<b>Residence</b>				
Metropolitan/submetropolitan	77.6	160	23.0	119
Municipality	73.0	767	39.1	537
Rural Municipality	78.7	678	55.3	459
<b>Province</b>				
Province 1	84.3	197	42.5	148
Province 2	74.2	237	52.2	158
Province 3	71.2	172	48.5	128
Gandaki Province	75.4	201	56.2	150
Province 5	82.6	261	34.6	201
Karnali Province	59.6	250	54.9	150
Sudurpashchim Province	67.1	287	45.0	180
<b>Education</b>				
None/less than primary	66.4	942	39.4	585
Primary	85.1	284	47.8	234
Secondary	82.3	245	43.9	199
More than secondary	84.7	133	58.3	97
<b>Wealth quintile</b>				
Lowest	65.9	562	39.4	364
Second	71.7	315	51.3	207
Middle	81.1	257	43.0	187
Fourth	80.0	234	51.7	175
Highest	81.9	237	38.0	182
<b>Age (previous, 2013)</b>				
15-29	78.0	199	46.8	141
30-44	77.5	542	46.2	389
45-69	72.3	864	41.8	585
Total (15-39)	78.3	571	46.4	409
Total (40-69)	72.8	1034	42.9	706
<b>Total (15-69)</b>	<b>75.7</b>	<b>1605</b>	<b>44.8</b>	<b>1115</b>

Note: people who did not see any tobacco packages are excluded and coded as 'missing'; don't know was recoded same as 'no'; only among current smokers

**Table 4.8.1 Exposure to tobacco advertisements or signs promoting cigarettes/bidis/smokeless tobacco products: all participants**

Percentage of adults age 15-69 years who saw any advertisements or signs promoting cigarettes/ *bidis* or any other smokeless tobacco product in the past 30 days by background characteristics, Noncommunicable Disease Risk Factors STEPS Survey, Nepal, 2019

Background characteristics	Television	Radio	Newspaper or magazines	Bill boards/posters/wall painting	Internet/websites	Any electronic media (Radio or TV)	On any media	At point of sale	Number of participants
<b>Age</b>									
15-24	11.5	10.4	7.7	11.9	6.8	15.3	23.8	12.6	843
25-39	12.0	11.4	8.9	9.9	5.1	14.6	21.4	11.6	2087
40-54	11.0	8.6	5.9	8.0	2.1	14.1	19.7	10.9	1574
55-69	9.0	9.7	4.9	6.7	2.2	12.1	15.6	7.5	1089
<b>Sex</b>									
Men	12.8	11.1	9.2	11.9	6.2	15.8	23.7	13.6	1998
Women	9.9	9.6	5.8	7.6	3.0	13.1	18.5	9.1	3595
<b>Residence</b>									
Metropolitan/submetropolitan	4.0	3.0	6.4	5.8	3.3	4.9	12.9	9.4	705
Municipality	14.2	12.4	9.5	9.3	5.6	17.2	21.4	9.6	2755
Rural Municipality	8.7	9.1	4.6	11.0	3.3	12.5	22.1	13.9	2133
<b>Province</b>									
Province 1	12.6	10.1	8.6	14.9	5.9	13.4	22.0	13.4	804
Province 2	20.2	11.9	5.9	4.2	3.7	21.3	23.8	7.1	803
Province 3	5.7	3.9	3.9	10.6	3.3	7.5	18.8	13.0	759
Gandaki Province	10.6	9.8	8.4	8.0	4.0	12.8	18.1	6.0	793
Province 5	8.0	7.6	7.5	7.4	5.3	9.4	13.4	11.7	797
Karnali Province	8.8	12.6	10.0	7.5	4.3	13.9	18.3	7.7	808
Sudurpashchim Province	9.3	20.7	10.8	15.2	4.5	23.5	33.6	16.3	829
<b>Education</b>									
None/less than primary	8.0	8.1	3.5	5.2	1.3	11.6	15.6	7.4	2792
Primary	12.3	10.6	6.6	10.6	2.8	15.3	22.9	14.7	1051
Secondary	14.4	11.9	9.6	11.6	7.1	17.4	24.9	11.0	1088
More than secondary	13.3	12.9	14.9	16.5	11.0	15.2	25.7	16.5	661
<b>Wealth quintile</b>									
Lowest	6.2	11.1	4.6	6.1	1.5	13.9	18.9	5.6	1653
Second	8.5	7.9	5.7	8.3	3.8	12.1	20.8	13.0	1062
Middle	13.0	10.9	6.7	12.6	4.9	15.0	22.2	11.9	949
Fourth	13.0	9.7	7.1	9.1	4.8	14.3	18.7	10.0	878
Highest	15.6	11.8	13.0	12.1	7.7	16.5	24.0	15.4	1051
<b>Age (previous, 2013)</b>									
15-29	11.4	10.7	8.4	11.3	6.8	14.5	22.3	12.5	1466
30-44	12.1	10.5	7.3	8.9	3.1	15.4	21.9	10.3	2039
45-69	10.0	9.4	5.8	7.6	2.2	12.9	17.5	10.0	1088
Total (15-39)	11.8	11.0	8.4	10.7	5.8	14.9	22.4	12.0	2930
Total (40-69)	10.2	9.0	5.5	7.5	2.1	13.3	18.1	9.6	2663
<b>Total (15-69)</b>	<b>11.3</b>	<b>10.3</b>	<b>7.4</b>	<b>9.6</b>	<b>4.5</b>	<b>14.3</b>	<b>20.9</b>	<b>11.2</b>	<b>5593</b>

Note: don't know are treated same as no

**Table 4.8.2 Exposure to anti-tobacco information: all participants**

Percentage of adults age 15-69 years who noticed information about the dangers of smoking cigarettes, bidis or other tobacco products that encourages quitting in different media in the past 30 days by background characteristics, Noncommunicable Disease Risk Factors STEPS Survey, Nepal, 2019

Background characteristics	Television	Radio	Newspaper or magazines	Internet/websites	Any electronic media (Radio or TV)	On any media	Number of participants
<b>Age</b>							
15-24	63.9	60.8	50.6	40.4	74.4	78.6	843
25-39	62.6	60.9	46.3	27.0	72.6	74.7	2087
40-54	54.6	54.8	37.4	10.0	66.8	68.1	1574
55-69	45.6	50.0	31.0	6.9	59.9	62.1	1089
<b>Sex</b>							
Men	63.8	61.1	50.3	29.5	73.6	76.9	1998
Women	54.7	55.5	37.6	19.8	67.1	68.9	3595
<b>Residence</b>							
Metropolitan/submetropolitan	52.7	47.8	43.7	28.2	58.8	61.5	705
Municipality	62.6	59.7	44.7	25.7	72.5	75.9	2755
Rural Municipality	55.2	58.4	41.9	21.5	69.5	70.8	2133
<b>Province</b>							
Province 1	60.0	57.1	42.5	23.9	67.8	69.3	804
Province 2	68.7	59.4	41.5	24.3	72.6	73.3	803
Province 3	62.5	57.9	51.4	28.7	71.3	76.4	759
Gandaki Province	62.0	53.6	39.4	26.1	72.4	75.0	793
Province 5	59.4	56.1	45.5	24.1	68.3	69.8	797
Karnali Province	43.2	62.5	41.0	17.4	69.9	73.8	808
Sudurpashchim Province	41.2	62.7	38.3	21.7	69.9	74.8	829
<b>Education</b>							
None/less than primary	42.5	46.9	25.0	5.6	56.7	58.6	2792
Primary	66.2	64.7	45.3	21.2	77.0	78.4	1051
Secondary	66.4	62.3	55.4	34.5	75.9	80.0	1088
More than secondary	79.9	71.8	70.0	60.4	86.6	89.8	661
<b>Wealth quintile</b>							
Lowest	33.4	51.6	26.3	10.5	57.2	59.1	1653
Second	48.0	54.8	37.5	16.2	64.5	68.4	1062
Middle	67.0	61.2	43.3	22.3	75.4	77.4	949
Fourth	70.7	57.5	48.2	29.2	74.1	76.1	878
Highest	75.8	65.7	62.6	43.7	79.6	82.4	1051
<b>Age (previous, 2013)</b>							
15-29	63.7	61.0	48.7	37.2	73.6	76.9	1466
30-44	58.7	58.1	43.6	19.0	70.7	72.7	2039
45-69	51.1	53.3	34.7	8.3	63.8	65.4	1088
Total (15-39)	63.1	60.9	48.1	32.5	73.3	76.3	2930
Total (40-69)	51.0	52.9	34.9	8.7	64.1	65.8	2663
<b>Total (15-69)</b>	<b>59.0</b>	<b>58.1</b>	<b>43.6</b>	<b>24.4</b>	<b>70.2</b>	<b>72.7</b>	<b>5593</b>

\* people who responded "don't know" are counted as "no"

**Table 4.8.3 Exposure to cigarette promotion: all participants**

Percentage of adults age 15-69 years who noticed different types of cigarette promotions in the past 30 days by background characteristics, Noncommunicable Disease Risk Factors STEPS Survey, Nepal, 2019

Background characteristics	Free samples of cigarettes	Cigarette at sale prices	Coupons for cigarettes	Free gifts/other discount offers on other products	Clothing or other items with cigarette logo	Cigarette promotion in mail	Any type of promotion	Number of participants
<b>Age</b>								
15-24	2.1	2.2	0.8	0.9	3.2	4.7	10.6	843
25-39	2.1	1.9	0.8	0.6	1.6	3.7	8.1	2087
40-54	1.1	1.3	0.5	0.9	1.2	3.7	7.1	1574
55-69	0.9	1.7	0.3	1.0	1.5	2.1	6.0	1089
<b>Sex</b>								
Men	2.2	2.2	0.7	0.8	2.6	4.1	9.4	1998
Women	1.3	1.5	0.6	0.8	1.3	3.5	7.3	3595
<b>Residence</b>								
Metropolitan/sub-metropolitan	2.4	1.3	0.8	1.5	3.9	6.1	11.1	
Municipality	2.0	1.9	0.9	0.8	1.6	0.8	5.3	705
Rural Municipality	1.2	1.8	0.4	0.6	1.9	7.5	11.9	2755
								2133
<b>Province</b>								
Province 1	1.0	1.4	0.1	0.4	0.7	9.4	11.5	804
Province 2	0.5	0.0	0.0	0.2	1.7	1.6	4.0	803
Province 3	3.9	3.8	1.4	0.6	2.3	5.1	12.9	759
Gandaki Province	2.1	1.1	0.4	1.4	0.6	0.3	4.3	793
Province 5	2.3	2.6	1.2	1.4	3.0	1.8	7.7	797
Karnali Province	1.6	0.9	0.5	0.3	2.8	0.5	6.1	808
Sudurpashchim Province	0.9	2.0	1.1	1.3	2.3	4.1	8.8	829
<b>Education</b>								
None/less than primary	1.0	1.0	0.4	0.6	0.8	3.0	5.6	2792
Primary	1.1	2.3	0.1	0.4	1.6	6.5	10.5	
Secondary	3.3	3.0	1.3	0.9	3.6	2.9	10.4	1088
More than secondary	2.0	1.4	1.0	1.6	2.4	3.7	9.0	661
<b>Wealth quintile</b>								
Lowest	1.1	1.6	0.7	0.2	0.8	1.7	5.3	1653
Second	2.8	2.4	0.6	1.3	2.2	7.5	12.9	1062
Middle	0.6	0.7	0.7	0.7	2.7	5.1	9.1	949
Fourth	1.1	1.1	0.5	0.7	1.6	2.0	5.3	878
Highest	3.1	3.2	1.0	1.1	2.4	2.5	8.9	1051
<b>Age (previous, 2013)</b>								
15-29	2.2	1.9	0.8	0.8	2.7	4.5	9.6	1466
30-44	1.5	2.0	0.8	0.7	1.1	3.0	7.1	2039
45-69	1.2	1.4	0.4	1.0	1.4	3.3	7.2	1088
Total (15-39)	2.1	2.0	0.8	0.7	2.2	4.1	9.1	2930
Total (40-69)	1.1	1.4	0.4	.9396	1.3	3.1	6.7	2663
<b>Total (15-69)</b>	<b>1.7</b>	<b>1.8</b>	<b>0.7</b>	<b>0.8</b>	<b>1.9</b>	<b>3.8</b>	<b>8.3</b>	<b>5593</b>

Note: don't know are treated same as no

**Table 4.9 Mean monthly expenditures on purchase of cigarettes: among current cigarette smokers**

Mean monthly expenditure (in Nepalese Rs) incurred by current cigarette smokers age 15-69 years by background characteristics, Noncommunicable Disease Risk Factors STEPS Survey, Nepal, 2019

Background characteristics	Mean Price per 20 cigarette users	Mean number of cigarette smoked each month	Expenditures per month on cigarettes among cigarette smokers (in Nepalese Rupee)	Annual expenditure as percentage of GDP per Capita
<b>Age</b>				
15-24	195.6	107.5	959.1	10%
25-39	149.7	130.3	928.6	10%
40-54	138.2	179.8	1198.1	13%
55-69	135.0	188.8	1181.2	13%
<b>Sex</b>				
Men	164.0	145.7	1075.3	12%
Women	106.0	170.9	949.0	10%
<b>Residence</b>				
Metropolitan/submetropolitan	170.4	206.2	1952.5	21%
Municipality	160.6	149.1	1062.6	11%
Rural Municipality	134.5	143.9	861.5	9%
<b>Province</b>				
Province 1	148.7	114.3	779.8	8%
Province 2	137.9	145.9	935.5	10%
Province 3	185.4	197.7	1863.7	20%
Gandaki Province	172.9	200.7	1532.4	17%
Province 5	149.5	118.7	627.6	7%
Karnali Province	143.8	159.6	1086.1	12%
Sudurpashchim Province	132.5	137.7	869.6	9%
<b>Education</b>				
None/less than primary	117.6	169.0	900.5	10%
Primary	178.1	156.5	1364.6	15%
Secondary	182.0	121.3	1023.1	11%
More than secondary	198.6	115.8	1201.7	13%
<b>Wealth quintile</b>				
Lowest	121.0	181.5	968.5	10%
Second	134.7	171.8	994.7	11%
Middle	155.8	121.1	854.4	9%
Fourth	166.1	128.2	1014.6	11%
Highest	202.3	137.4	1511.0	16%
<b>Age (previous, 2013)</b>				
15-29	180.2	104.5	894.3	10%
30-44	140.9	149.5	1018.7	11%
45-69	135.5	189.6	1212.0	13%
Total (15-39)	163.3	123.8	937.6	10%
Total (40-69)	136.8	183.6	1191.0	13%
<b>Total (15-69)</b>	<b>151.5</b>	<b>151.0</b>	<b>1049.3</b>	<b>11%</b>

notes: we excluded those who reported more than 8888 in amount but bought less than 100 cigs; exclude if both tp7 and tp6=777; GDP source as per World Bank data for the year 2018 given in the following link : Nepal 2018 GDP rate was 1025.8USD <https://data.worldbank.org/indicator/ny.gdp.pcap.cd>; conversion is for March 2019 as the following link <https://www.poundsterlinglive.com/best-exchange-rates/us-dollar-to-nepalese-rupee-exchange-rate-on-2019-03-19>; don't know and refused responses has been considered as missing; since most brands in Nepal do not cost more than 30 rs per cig, we have exclude all those with values >= 50 NPR

**Table 4.10 Electronic cigarettes: all participants**

Percentage of adults age 15-69 years who heard about electronics cigarettes, ever used, currently using or correctly identified an e-cig by background characteristics, Noncommunicable Disease Risk Factors STEPS Survey, Nepal, 2019

Background characteristics	Ever heard about e-Cigarettes users	Number of participants	Among those who heard about e-cigarettes		
			Ever used e-cigarettes	Currently using e-cigarettes	Correctly identified an e-cig
<b>Age</b>					
15-24	16.9	835	17.5	16.1	55.3
25-39	13.5	2081	22.7	14.4	46.3
40-54	6.0	1568	9.3	7.1	30.6
55-69	2.4	1076	8.2	8.1	26.5
<b>Sex</b>					
Men	18.8	3569	21.5	16.9	53.7
Women	4.7	1991	8.8	3.8	25.2
<b>Residence</b>					
Metropolitan/submetropolitan	19.0	700	12.0	5.7	61.5
Municipality	12.1	2737	23.9	20.1	46.0
Rural Municipality	8.5	2123	11.8	6.2	42.8
<b>Province</b>					
Province 1	11.1	797	19.0	9.8	46.2
Province 2	4.9	802	2.2	2.2	69.8
Province 3	18.5	758	33.1	29.8	43.0
Gandaki Province	16.3	789	29.4	26.8	81.7
Province 5	12.7	787	9.4	2.5	36.4
Karnali Province	7.7	803	8.4	4.9	32.9
Sudoorpasschim Province	8.7	824	6.3	4.6	29.5
<b>Education</b>					
None/less than primary	3.3	2772	3.2	3.0	37.5
Primary	10.2	1043	20.1	20.0	34.2
Secondary	16.5	1084	24.2	12.8	51.7
More than secondary	25.4	660	17.5	16.0	53.1
<b>Wealth quintile</b>					
Lowest	2.7	1640	3.0	2.5	14.0
Second	7.5	1056	15.2	14.0	43.9
Middle	9.5	940	10.7	4.3	42.6
Fourth	11.0	877	20.5	13.6	72.6
Highest	26.3	1047	23.6	19.0	43.2
<b>Age (previous, 2013)</b>					
15-29	16.2	1458	21.3	14.6	14.6
30-44	10.3	2031	15.8	14.3	14.3
45-69	4.3	2071	10.3	10.0	10.0
Total (15-39)	14.9	2916	20.3	15.2	50.3
Total (40-69)	4.6	2644	9.1	7.3	29.8
<b>Total (15-69)</b>	<b>11.4</b>	<b>5560</b>	<b>18.8</b>	<b>14.1</b>	<b>47.5</b>



## CHAPTER 5

# ALCOHOL

### Key Findings

- **Alcohol Consumption**
  - In 2019, 72.2% of adults (15-69 years) (56% of men and 86.5% of women) never consumed alcohol (life abstainers) and 23.9% and 20.8% of adults reported consuming alcohol in the past 12 months, and in the past 30 days respectively (current drinkers in the past 30 days).
- **Alcohol consumption by type**
  - *Rakshi* (a traditional home-brewed spirit) was the most consumed alcohol reported (50.9%), followed by *Jaad* -a home-brewed wine (24.5%) and beer (16.8%).
- **Heavy Episodic Drinking**
  - 7.0% of all adults (13.1% of men, 1.8% of women) engaged in heavy episodic drinking (consumed 6 standard drinks or 60g of pure alcohol or more drinks on any single occasion in the past 30 days).
  - More than one-third (37.6%) of current drinkers who consumed alcohol in past 30 days (42.1% men, 22.4% women) engaged in heavy episodic drinking.
- **Unrecorded alcohol use**
  - Overall, among all adults, 14.3% of adults reported consuming unrecorded alcohol in the past 7 days. 68.5% of current drinkers (past 30 days) reported consuming unrecorded alcohol, comprising mainly of homebrewed spirits and wines. Amongst the current drinkers<sup>1</sup>, the proportion of unrecorded alcohol consumed as a fraction of overall alcohol was very high at 66.3%.
- **Alcohol Dependence**
  - On a monthly or more frequently basis, 13.6% of adults reported that they were not able to stop drinking once started, 6.3% of adults needed a drink, first thing in the morning and 8% of the adults failed to perform tasks that were expected from them.
- **Harm to Others**
  - 2.7% of adults reported having family problems or problems with their partners due to someone else's drinking, on a monthly/more frequently basis.
- **Alcohol access and affordability**
  - Among adults, (who ever consumed an alcoholic drink), 88.2% found it easy or very easy to obtain alcohol.
  - Raising the prices of the alcoholic beverages through taxation is another key policy to control alcohol. However, only 27.9% adults who ever consumed alcohol perceived that alcohol has become less affordable than before.
  - None of the underage participants (15-18 years of age) who tried to buy alcohol reported that they were refused alcoholic beverages due to their age. The legal minimum purchasing age for alcohol is 18 years in Nepal.

<sup>1</sup> Current drinkers who consumed alcohol in the past 30 days

- **Exposure to advertising and marketing of alcohol**
  - 18.7% of adults reported seeing advertisements promoting alcohol on some media platform.
  - More than 1 in 5 participants (21.9%) who attended social events such as sports events, fairs, concerts, etc.) saw alcohol advertisements or got free beer/discounted alcohol sometimes/most of the times/always.
- **Exposure to anti-alcohol messages**
  - Nearly 1 in 2 (47.9%) adults reported seeing or hearing any messages on one or more media platforms, that discouraged consumption of alcohol.
- **Driving under influence of alcohol**
  - Amongst the adults who drove vehicle in the past 12 months, 3.9% reported being checked by traffic police for drunk driving.
  - 17.2% of adults, who have ever consumed alcohol, reported that in the past 30 days, they drove a vehicle under the influence of alcohol and 8.9% rode in a motorized vehicle where the driver had had 2 or more alcoholic drinks.

## 5. Introduction

In 2016, the harmful use of alcohol resulted in some 3 million deaths (5.3% of all deaths) worldwide and 5.1% of all disability-adjusted life years (DALYs) in that year. Harmful use of alcohol caused some 1.7 million deaths from noncommunicable diseases in 2016, including some 1.2 million deaths from digestive and cardiovascular diseases (0.6 million for each condition) and 0.4 million deaths from cancers. Globally an estimated 0.9 million deaths due to injury were attributable to alcohol, including around 370 000 deaths due to road injuries, 150 000 due to self-harm and around 90 000 due to interpersonal violence. Of the road traffic injuries, 187 000 alcohol-attributable deaths were among people other than drivers. In the World Health Organization (WHO) South-East Asia Region, home to 1.9 billion people (29% of world's population), and where Nepal is situated, 1 in 20 deaths were attributed to alcohol consumption<sup>2</sup>.

In 2018, WHO launched a SAFER initiative to reduce death, disease and injuries caused by the harmful use of alcohol using high-impact, evidence-based, cost-effective interventions.

### The SAFER action package

- S** Strengthen restrictions on alcohol availability
- A** Advance and enforce drink driving counter measures
- F** Facilitate access to screening, brief interventions and treatment
- E** Enforce bans or comprehensive restrictions on alcohol advertising, sponsorship, and promotion
- R** Raise prices on alcohol through excise taxes and pricing policies



### Current relevant policies and programs in Nepal for alcohol

- Multisectoral Action Plan for the Prevention and Control of Non-Communicable Diseases (2014-20).
- In 2017, the Republic of Nepal developed a national alcohol regulation and control policy, which is yet to be endorsed by cabinet. The proposed plan entails a total ban on alcohol advertisement, promotions and sponsorships, restricting physical availability by licensing of sales, restriction on the days/hours of sale. As of now Nepal has introduced licensing/monopolies at different levels of alcohol market (imports, production, distribution, retail sales), on-premise sale restrictions on hours, places, events, and minimum purchasing age (18 years) and ban from alcohol consumption in public places to restrict the commercial availability of alcohol<sup>3</sup>. Additionally, it has also introduced drink-driving countermeasures such as specifying blood alcohol concentration limit (zero tolerance) for general population and drivers, random breath testing and

2 <http://onlinelibrary.wiley.com/doi/10.1111/1467-9563.07332/abstract>

3 <http://addresourcess.org/nepal-passes-new-national-alcohol-policy.5944894-315750.html>

penalties for drunk driving. It also levies excise taxes on alcohol to reduce the affordability of alcoholic beverages, though these are not adjusted for inflation and economic growth.

SDG Goal 3.5 aims for a relative reduction of 10% in per capita alcohol consumption by 2030. The same goal has been part of nine global NCD indicators as well and has been adopted in the Nepal's multisectoral action plan as well.

This chapter focuses on indicators related to patterns of alcohol consumption, type of alcoholic beverages consumed including consumption of unrecorded alcohol; alcohol dependence as well as population-level coverage of specific policies implemented for alcohol control (e.g. bans on marketing, and restricting availability, etc). The alcohol-related questions recommended were a part of the core modules in the population-based STEPS survey. This information will help Nepal assess trends and progress towards alcohol control targets specified in its multisectoral action plan as well as evaluation of current policies and programs in place to reduce population alcohol consumption. These will also guide future policy and programs to reduce alcohol intake at population level.

## 5.1 Alcohol consumption

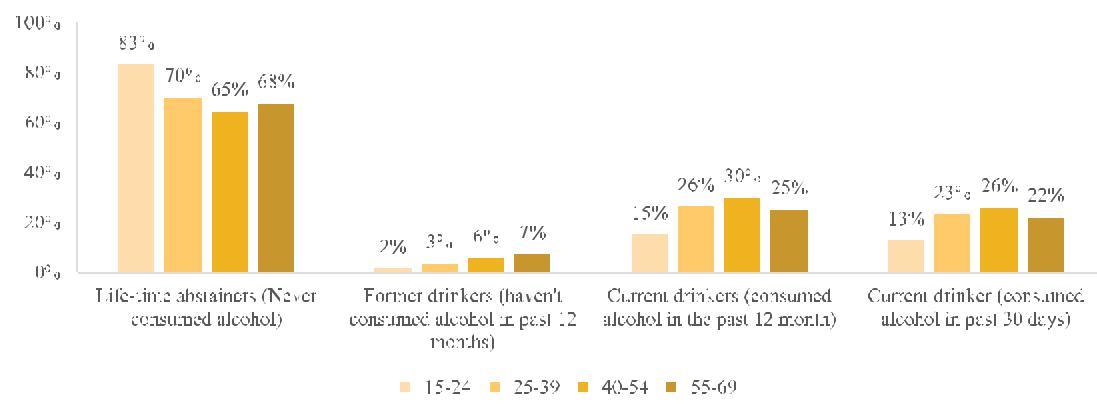
### Alcohol consumption – life-time abstainers, former drinkers, and current drinkers<sup>4</sup>

The prevalence of alcohol consumption has been calculated by asking all the adults if they have ever consumed alcohol (beer, wine, spirits fermented cider or *Jaad, Chyang, Raksi, Aila or Tungba*) and if they have consumed in the past 12 months and in the past 30 days. In 2019, the prevalence of current alcohol consumption (people who consumed alcohol in the past 12 months) amongst all the adults was 23.9%. Life-time abstainers were 72.2% 20.8% of all adults were current drinkers (consumed alcohol in the past 30 days) (**Table 5.1**).

#### Patterns by background characteristics

- While the life-time abstinence of alcohol declined with increasing age, the proportion of former drinkers as well as current drinkers increased with age (**Figure 5.1**)

**Figure 5.1** Differentials in prevalence of alcohol consumption amongst adult by age, Nepal STEPS survey 2019

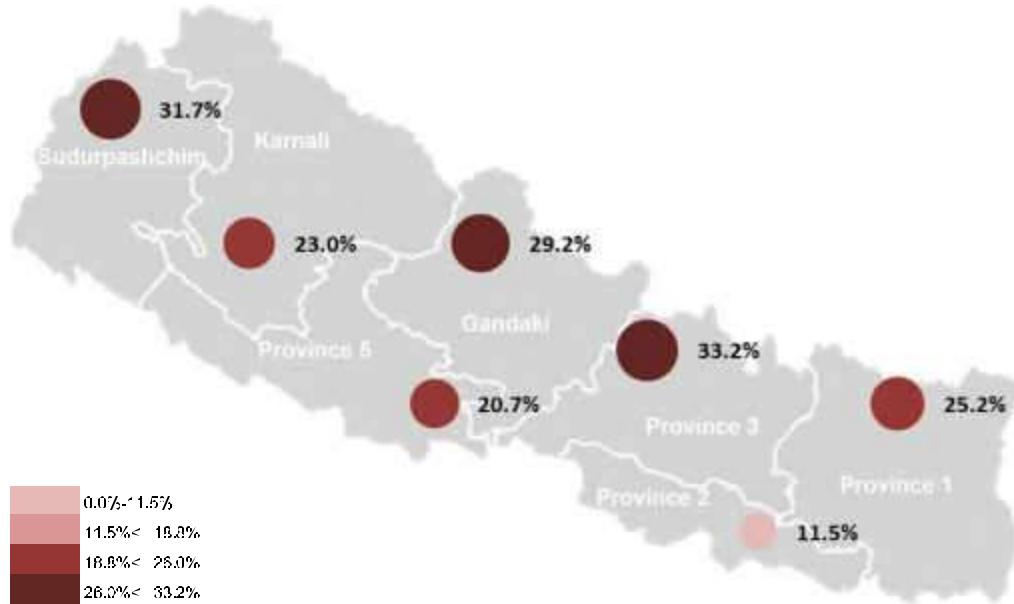


- Men were significantly more likely to consume alcohol currently than women.
- Rural regions had a higher current use of alcohol in the past 12 months as compared to metropolitan/sub metropolitan regions (24.7% versus 17.9%).

<sup>4</sup> Alcohol use referenced includes current drinkers who consumed alcohol in the past 12 months, unless otherwise stated)

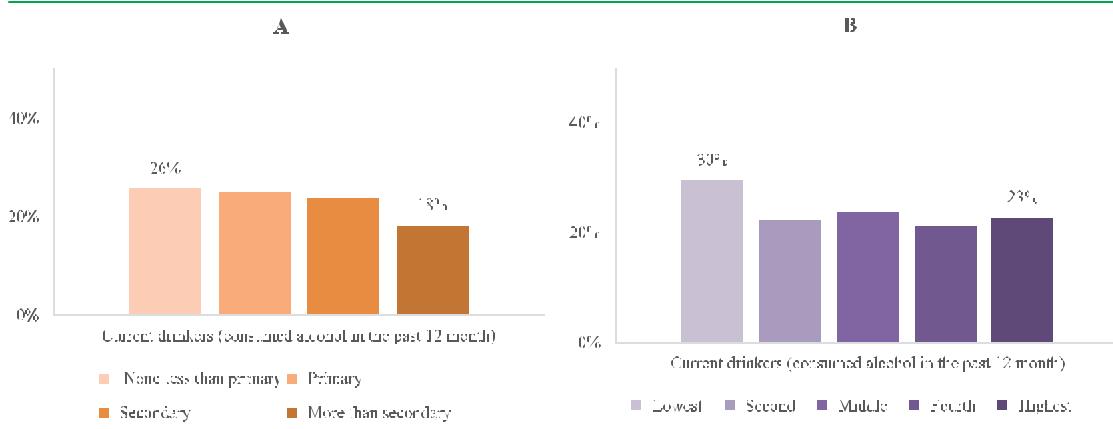
- Province 2 and 5 had the lowest prevalence of current alcohol consumption (11.5%, and 20.7%, respectively), compared to the national average of 23.9%. Province 3 had the highest prevalence of current alcohol consumption, 33.2% (**Figure 5.2**).

**Figure 5.2** Differentials in current alcohol use (past 12 months) amongst population aged 15-69 years, across the provinces of Nepal, Nepal STEPS survey 2019



- Prevalence of current alcohol consumption decreased with an increase in the level of education and household wealth. The highest prevalence of current drinkers were in the lowest wealth quintile (30%) and adults with no or less than primary education (26%) (**Figure 5.3**).

**Figure 5.3** Differentials in current alcohol consumption (past 12 months) by levels of education (A) and by wealth (B), Nepal STEPS survey 2019



(A) and by wealth (B)<sup>5</sup>, Nepal STEPS survey 2019

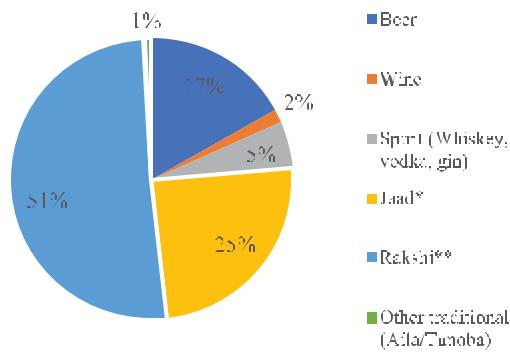
<sup>5</sup> Prevalence of current alcohol consumption is people who consumed alcohol in the past 12 months

## 5.2 Alcohol consumption by type

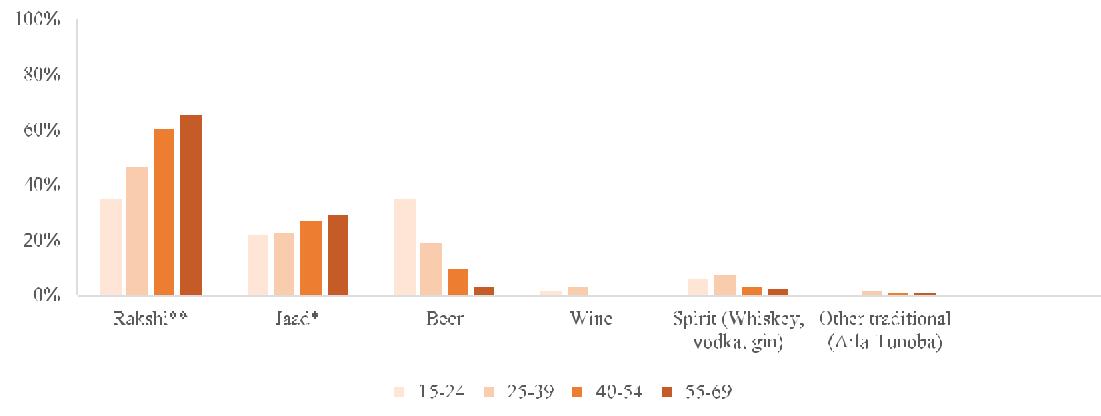
Adults, aged 15-69 years, who reported consuming alcohol in the past 30 days were asked the type of alcohol (beer, wine, spirits, fermented cider or *Jaad*, *Chyang*, *Rakshi*, *Aila* or *Tungba*, other) usually/most often consumed by them. *Rakshi* (a traditional home-brewed spirit) was the most consumed alcohol reported (50.9%), followed by *Jaad*-a home-brewed wine (24.5%) and beer (16.8%) (**Table 5.2**, **Figure 5.4**).

- While the use of traditional home-brewed spirit-*Rakshi*-increased with age (from 35% among 15-24 years to 65% among 55-69 years), the use of beer declined with age (**Figure 5.5**).
- Jaad* is the most preferred option of alcohol by women (50.8%), followed by *Rakshi* (43.1%). Whereas *Rakshi* is the most preferred alcohol type for men (53.2%), followed by beer (20.7%) and *Jaad* (17%).
- Although, the consumption of traditional alcohol (*Rakshi* and *Jaad*) decreases with increasing household wealth and increasing educational level, the traditional wines and spirits still remain the most consumed alcohol even in the highest wealth quintile.
- With increasing levels of education and wealth, the alcohol consumption shifts towards higher preference for beer (**Figure 5.6**).

**Figure 5.4** Alcohol type – among current drinkers (past 30 days), Nepal STEPS survey 2019



**Figure 5.5** Differentials in consumption of different type of alcohol amongst adults by age, Nepal STEPS Survey, 2019



**Figure 5.6** Differentials in consumption of different types of alcohol by wealth (A) and by levels of education (B) amongst adults aged 15-69 years, Nepal STEPS survey 2019



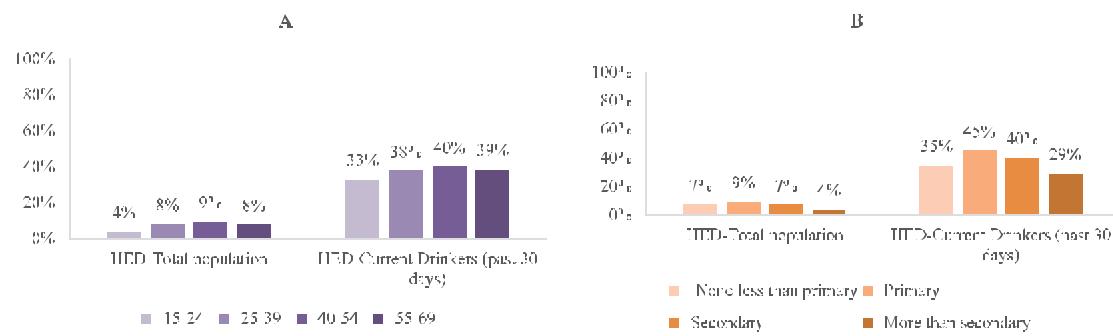
### 5.3 Heavy episodic drinking

- Heavy episodic drinking (HED) is defined as consumption of 60 or more grams of pure alcohol (6+ standard drinks in most countries) on at least one single occasion in the 30 days prior to survey. The indicator is presented in the overall population (among both drinkers and non-drinkers) as well as among current drinkers only (those who consumed any alcohol within the past 30 days). In the total population 7.0% of adults engaged in HED and amongst the current drinkers, 37.6% adults engaged in HED (**Table 5.3**).

#### Patterns by background characteristics

- The prevalence of HED drinking increased with increasing age both in the total population and amongst current drinkers. 32.9% of adults in the age group 15-24 years indulged in HED, increasing to 38.6% among 55-69 year group (**Figure 5.7**).
- Men were significantly more likely to engage in HED than women. 13.1% of men (in total population) and 42.1% of men who currently drink (past 30 days) engaged in HED compared to 1.8% of women overall and 22.4% of currently drinking women.
- HED was lower in rural areas compared to municipality (35.1% versus 39.5%).
- While the engagement in HED drinking decreased with increase in education-level in the total population; amongst the current drinkers, the incidence of HED follows a u-shaped curve with increasing education. There is no consistent trend of HED with household wealth (**Figure 5.7**).

**Figure 5.7** Differentials in engagement in HED, amongst adults aged 15-69 years – by age (A) and by levels of education (B), Nepal STEPS survey 2019



## 5.4 Unrecorded Alcohol use

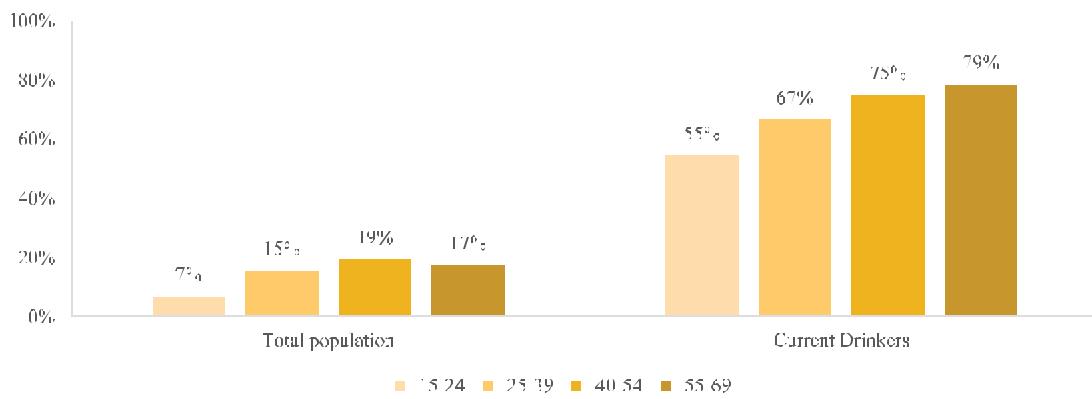
Unrecorded alcohol refers to alcohol that is not taxed in the country where it is consumed because it is usually produced, distributed and sold outside the formal channels under government control. Unrecorded alcohol consumption in a country includes consumption of home-made or informally produced alcohol (legal or illegal), smuggled alcohol, alcohol intended for industrial or medical uses and alcohol obtained through cross-border shopping (which is recorded under a different jurisdiction). Sometimes, these alcoholic beverages are traditional drinks that are produced and consumed in the community or in homes. Home-made or informally produced alcoholic beverages are mostly fermented products made from sorghum, millet, maize, rice, wheat or fruits. All adults who ever consumed alcohol were asked if they consumed unrecorded alcohol (homebrewed, untaxed, cross-border or alcohol not intended for drinking) in the past 7 days and the number of standard drinks of unrecorded alcohol. In the total population, 14.3% of adults consumed unrecorded alcohol and amongst the current drinkers, 68.5% consumed unrecorded alcohol. Amongst the current drinkers<sup>6</sup>, the proportion of unrecorded alcohol consumed as a fraction of overall alcohol was very high at 66.3% (**Table 5.4**).

### Patterns by background characteristics

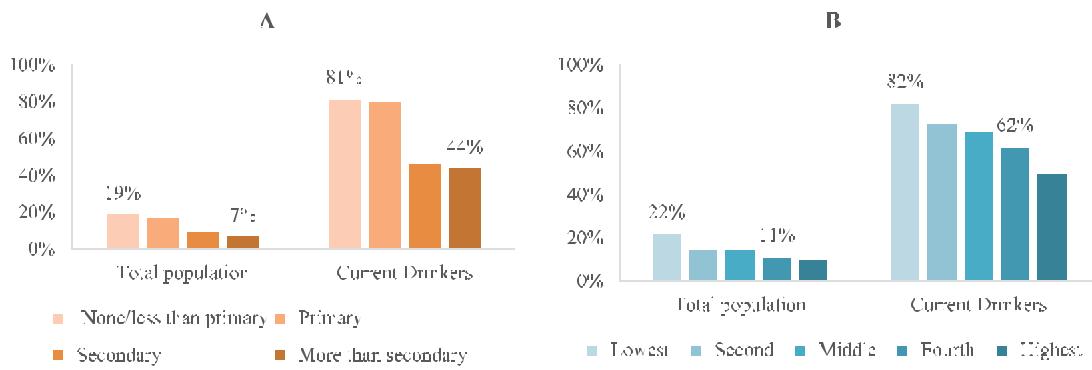
- The proportion of adults consuming unrecorded alcohol increase with age – both in the total population and amongst the current drinkers. Mean percentage of unrecorded alcohol consumed as a fraction of total alcohol consumption amongst current drinkers follows the same trend (**Figure 5.8**).
- In the total population, a higher proportion of men consumed unrecorded alcohol (22.6%) as compared to women (6.8%). However, amongst the current drinkers, 77.7% of women consumed unrecorded alcohol as compared to 65.8% of men.
- 76.3% of current drinkers in rural municipality consumed unrecorded alcohol compared to 57.2% in metropolitan/sub-metropolitan regions of Nepal.
- With increasing levels of education and household wealth there is a decrease in consumption of unrecorded alcohol (**Figure 5.9**).

<sup>6</sup> Current drinkers who consumed alcohol in the past 30 days

**Figure 5.8** Differentials in consumption of unrecorded alcohol by age amongst adults, Nepal STEPS Survey, 2019



**Figure 5.9** Differentials in consumption of unrecorded alcohol by levels of education (A) and by wealth (B amongst adults, aged 15-69 years, Nepal STEPS Survey (2019)

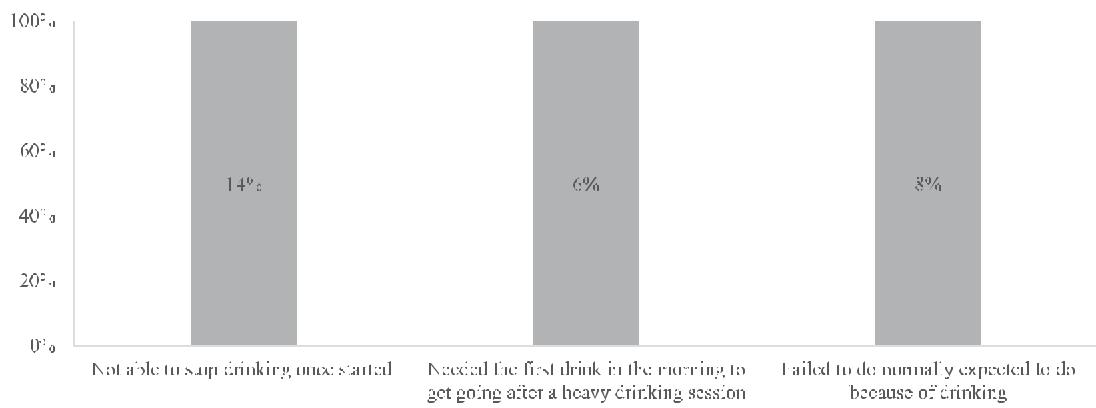


## 5.5 Alcohol Dependence

All adults who consumed alcohol in the past 12 months were enquired if they were not able to stop drinking once they started; needed a drink, the first thing in the morning; and/or failed to do things that were normally expected of them on a daily or almost daily, weekly, monthly or less than monthly basis. These are signs of possible alcohol dependence.

On a monthly or more frequently basis, 13.6% reported that they were not able to stop drinking once started, 6.3% needed a drink first thing in the morning and 8% of the adults failed to perform tasks that were expected from them (**Table 5.5, Figure 5.10**).

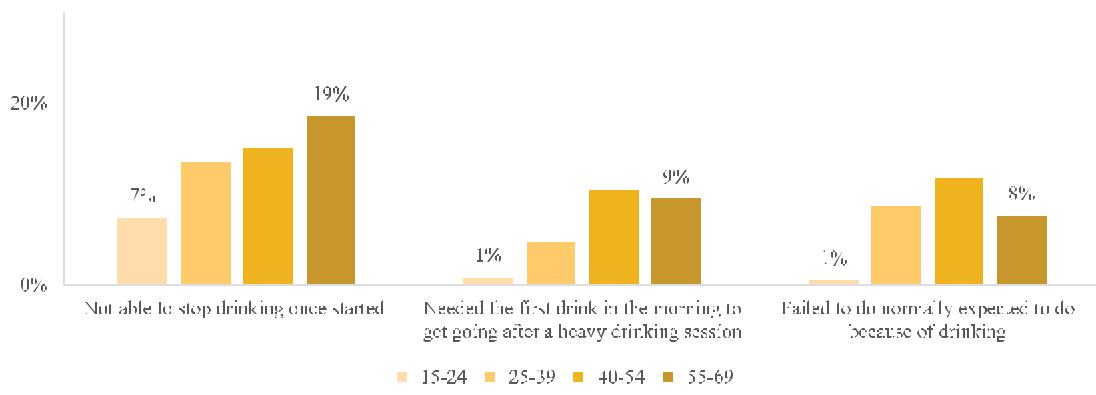
**Figure 5.10** Percentage of adults (15-69 years) who drank alcohol in the past 12 months and who showed different signs of alcohol dependence at once a month or more, Nepal STEPS survey 2019



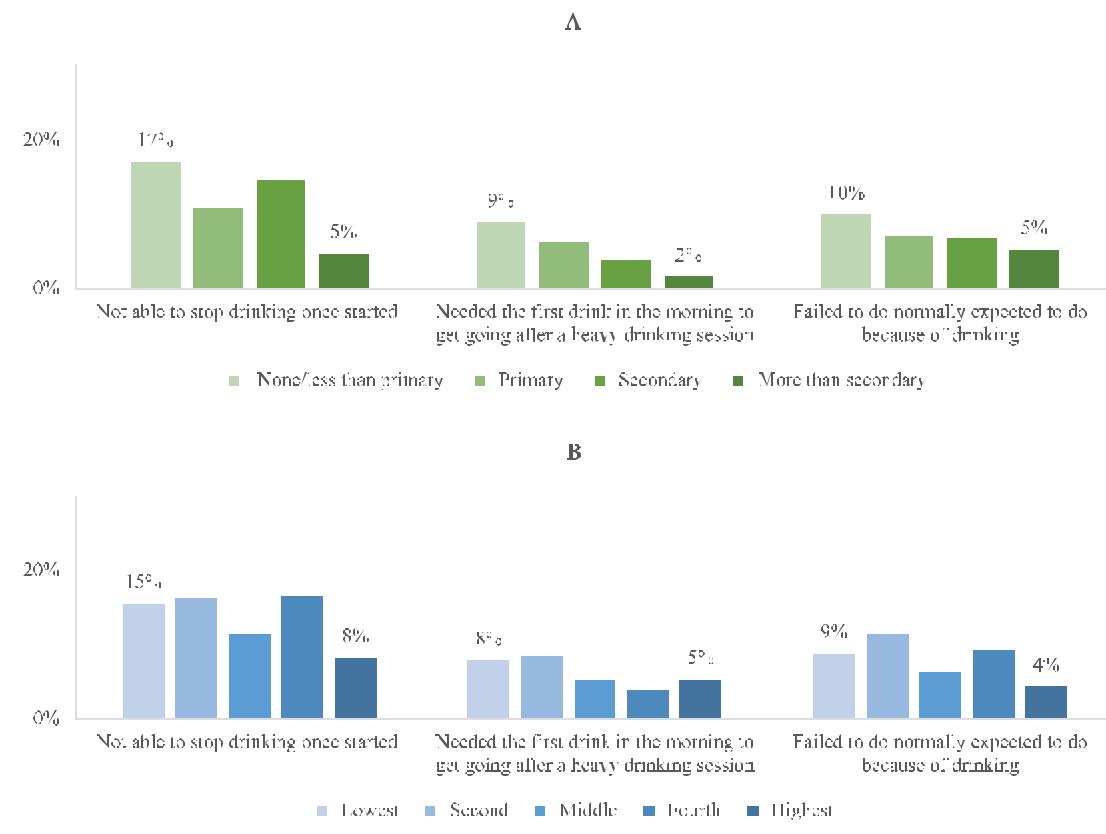
#### Patterns by background characteristics

- The proportion of current drinkers that showed the three signs of alcohol dependence generally increased with age and was significantly higher among men than women (**Figure 5.11**).
- The proportion of current drinkers with signs of alcohol dependence was the highest in the metropolitan/sub-metropolitan region compared to other two regions.
- The proportion of current drinkers with signs of alcohol dependence declined with increasing educational-level and generally higher among the poorest two wealth quintiles compared to the highest wealth quintile (**Figure 5.12**).

**Figure 5.11** Differentials in percentage of adults who drank alcohol in the past 12 months and who showed signs of alcohol dependence, by age, Nepal STEPS survey 2019



**Figure 5.12** Differentials in signs of alcohol dependence by education (A) and household wealth (B), Nepal STEPS survey 2019



## 5.6 Harm to others

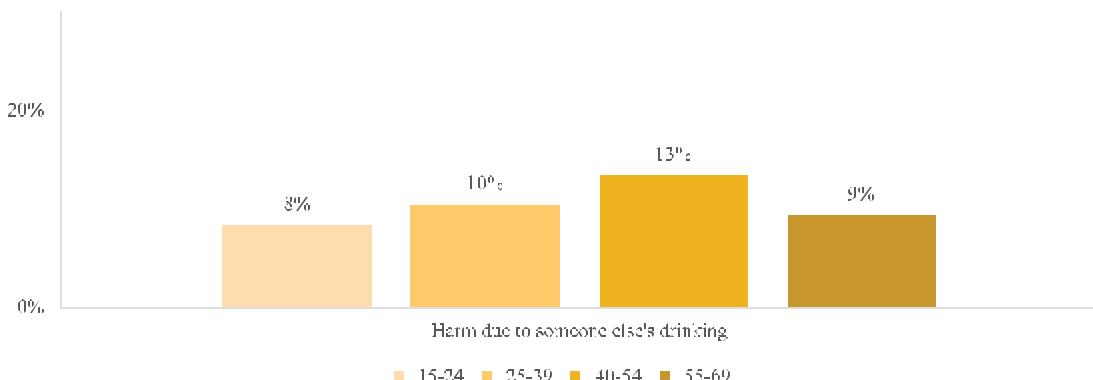
The societal costs of alcohol affecting the partners, children, families and communities of drinkers are estimated to be twice those incurred by drinkers themselves.<sup>7</sup> It's important to quantify the magnitude of this issue and all adults were asked if, during the past 12 months, they had family problems or problems with their partner due to someone else's drinking, on a monthly/more frequently, less than monthly, or never. In the total population, 10.3% of adults reported being harmed due to someone else's drinking, on a monthly/more frequently or less than monthly basis (**Table 5.5**).

### Patterns by background characteristics

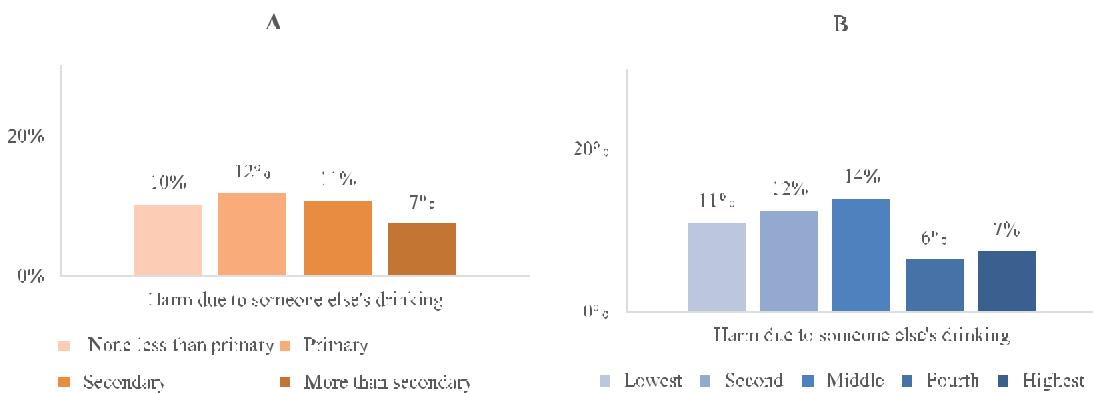
- The proportion of adults facing some form of harm due to someone else's drinking increased with increasing age. This is true for the ages 15 to 54 years (**Figure 15.13**).
- 13.1% women reported facing family problems and problems with a partner; harm due to someone else's drinking, compared to 7.7% of the men.
- Higher proportion of adults reported facing some harm due to someone else's drinking in rural municipality, as compared to metropolitan/sub-metropolitan area (11.5% versus 8.5%).
- With increasing levels of education and wealth, there was a decline in the proportion of adults who faced any harm due to someone else's drinking (**Figure 15.14**).

<sup>7</sup> <https://apps.who.int/iris/handle/10665/329393>

**Figure 5.13** Differentials in harm to others due to someone else's drinking habits, by age, Nepal STEPS survey 2019



**Figure 5.14** Differentials in harm to others due to someone else's drinking habits, by levels of education (A) and by wealth (B), Nepal STEPS survey 2019



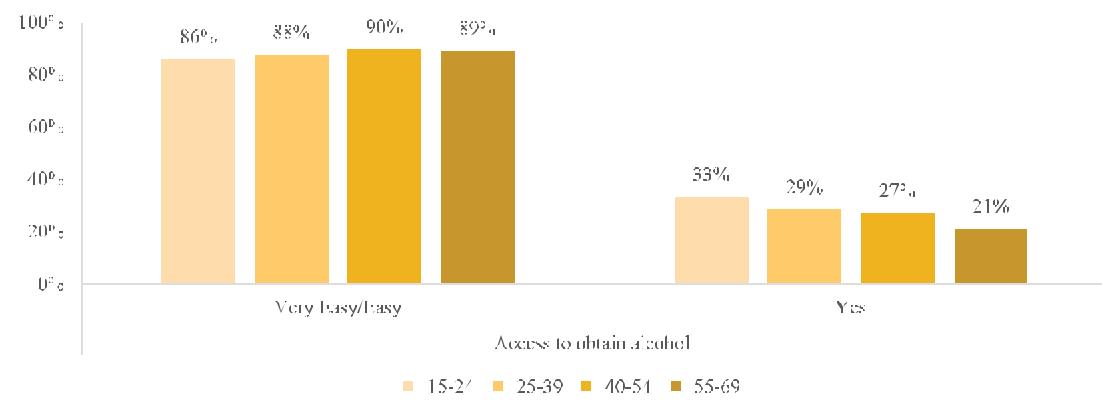
## 5.7 Alcohol accessibility

Restricting the physical availability of alcohol through state licensing and monopolies as well by restricting the hours, days and place of sale is one of the key policies for alcohol control. Among adults, (who ever consumed an alcoholic drink such as beer, wine, spirits fermented cider or *Jaad, Chyang, Raksi, Aila or Tungba*), 88.2% found it easy or very easy to obtain alcohol. In addition, raising the prices of the alcoholic beverages through taxation is another key policy to control alcohol. However, only 27.9% adults who ever consumed alcohol perceived that alcohol has become less affordable than before. None of the underage participants (15-18 years of age) who tried to buy alcohol reported that they were refused alcoholic beverages due to their age. The legal minimum purchasing age for alcohol is 18 years in Nepal (**Table 5.6**).

### Patterns by background characteristics

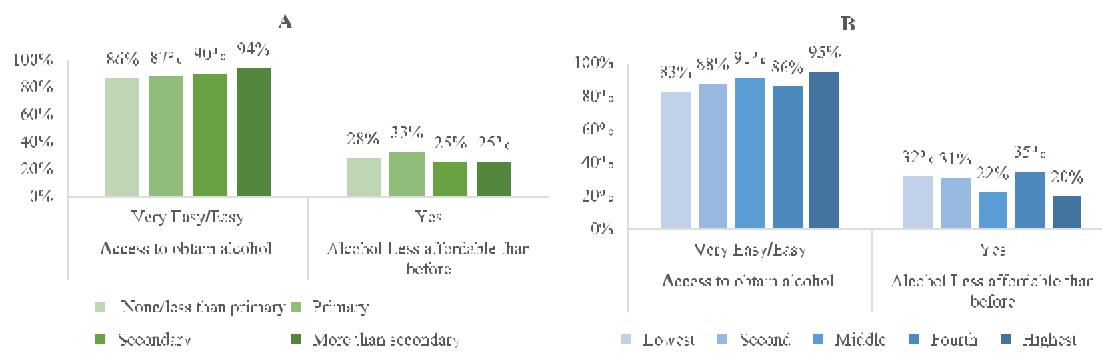
- The proportion of adults that reported obtaining alcohol easy or very easy did not vary significantly by age, increasing from 86.1% among aged 15-24 years to 89.3% among 55-69 year of age, despite the minimum legal alcohol purchasing age of 18 years. However, the proportion of participants who perceived alcohol to become less affordable decreased with age (33.5% among 15-24 years compared to 21.3% among 55-69 years of age) (**Figure 5.15**).

**Figure 5.15** Access and affordability of alcohol, amongst adults aged 15-69 years, by age, Nepal STEPS survey 2019

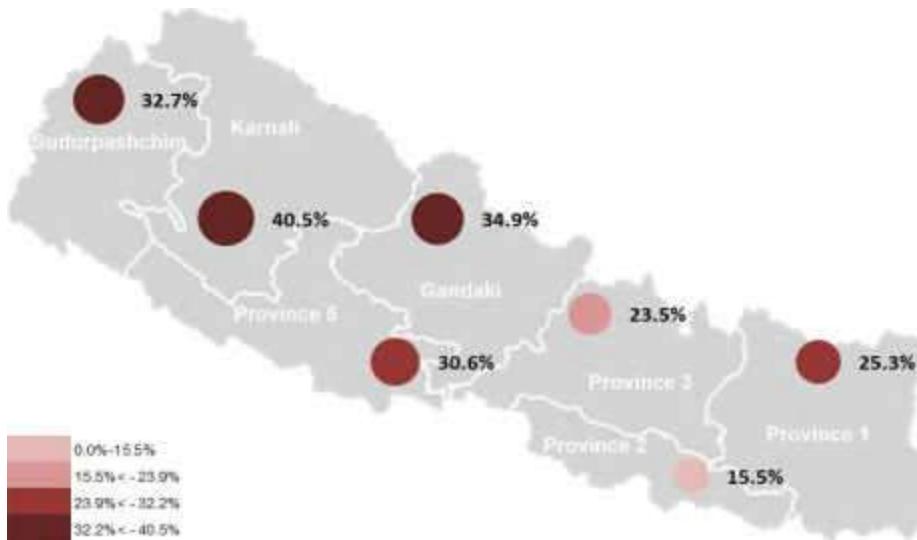


- The proportion of adults who felt obtaining alcohol is very easy/easy generally increased with increasing household wealth and educational level and reverse pattern was observed with regard to perception of alcohol becoming less affordable (more poor people felt alcohol has become less affordable than rich people) (**Figure 5.16**).
- In province 1, 90.8% of all adults found it very easy/easy to access alcohol, compared to 80.8% in Karnali Province. 40.5% of participants in Karnali Province felt that the alcohol was less affordable than before (**Figure 5.17**).

**Figure 5.16** Differentials in access and affordability of alcohol, amongst adults aged 15-69 years, by levels of education (A) and wealth quintile (B), Nepal STEPS survey 2019



**Figure 5.17** Affordability of alcohol, amongst adults aged 15-69 years, by province, Nepal STEPS survey 2019



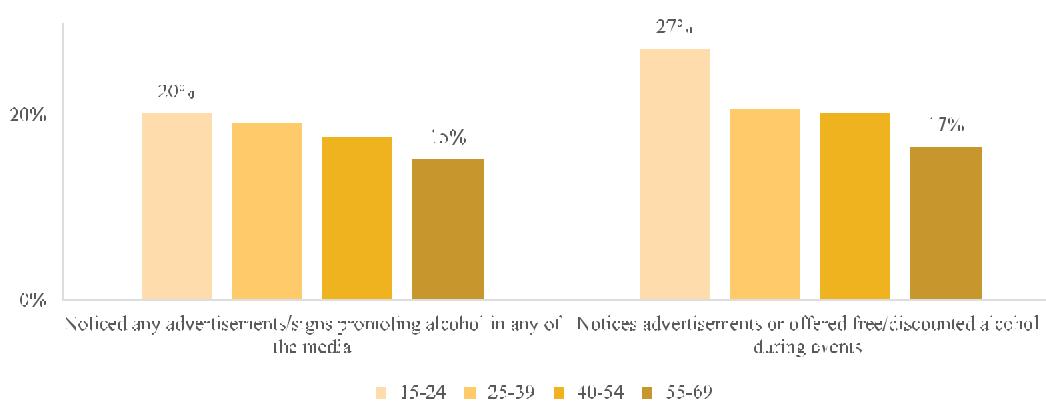
## 5.8 Exposure to advertising and marketing of alcohol

Comprehensive ban on alcohol advertising and marketing in all media is one of the most cost-effective interventions to prevent and control alcohol use. A decree issued in 1999 bans alcohol advertising in all electronic media (TV and radio), product placement on TV and films and at point of sale. Nevertheless, 18.7% of adults reported seeing advertisements promoting alcohol on some media platform. In addition, more than 1 in 5 participants (21.9%) who attended social events such as sports events, fairs, concerts, etc.) saw alcohol advertisements or got free beer/discounted alcohol sometimes/most of the times/always (**Table 5.7**).

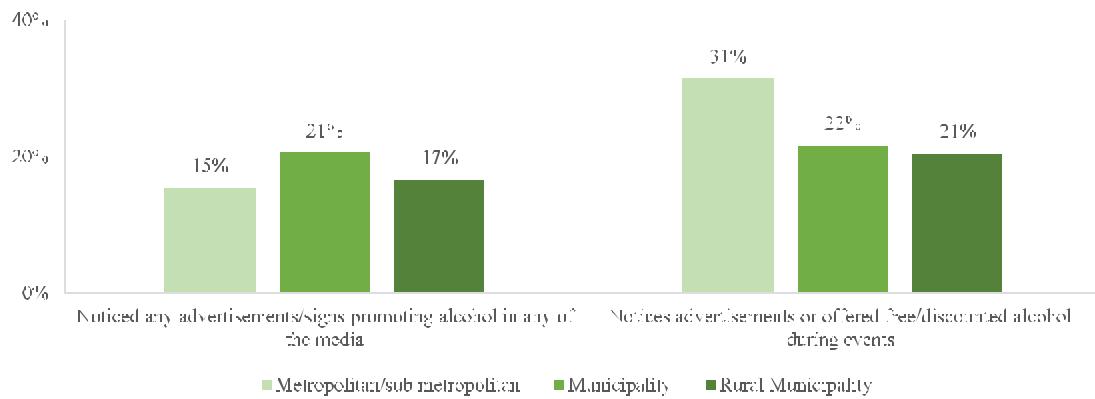
### Patterns by background characteristics

- Exposure to alcohol advertisements and signs promoting alcohol in any media as well to promotions during different events decreased with increasing age. More men reported exposed to alcohol marketing and advertising than women (**Figure 5.18**).
- 31.5% of adults in metropolitan-sub-metropolitan region were offered discounts or free alcohol at events in the regions, compared to 20.5% of adults in rural regions (**Figure 5.19**).

**Figure 5.18** Differentials in exposure to advertising and marketing of alcohol by age, amongst adults aged 15-69 years, Nepal STEPS Survey, 2019

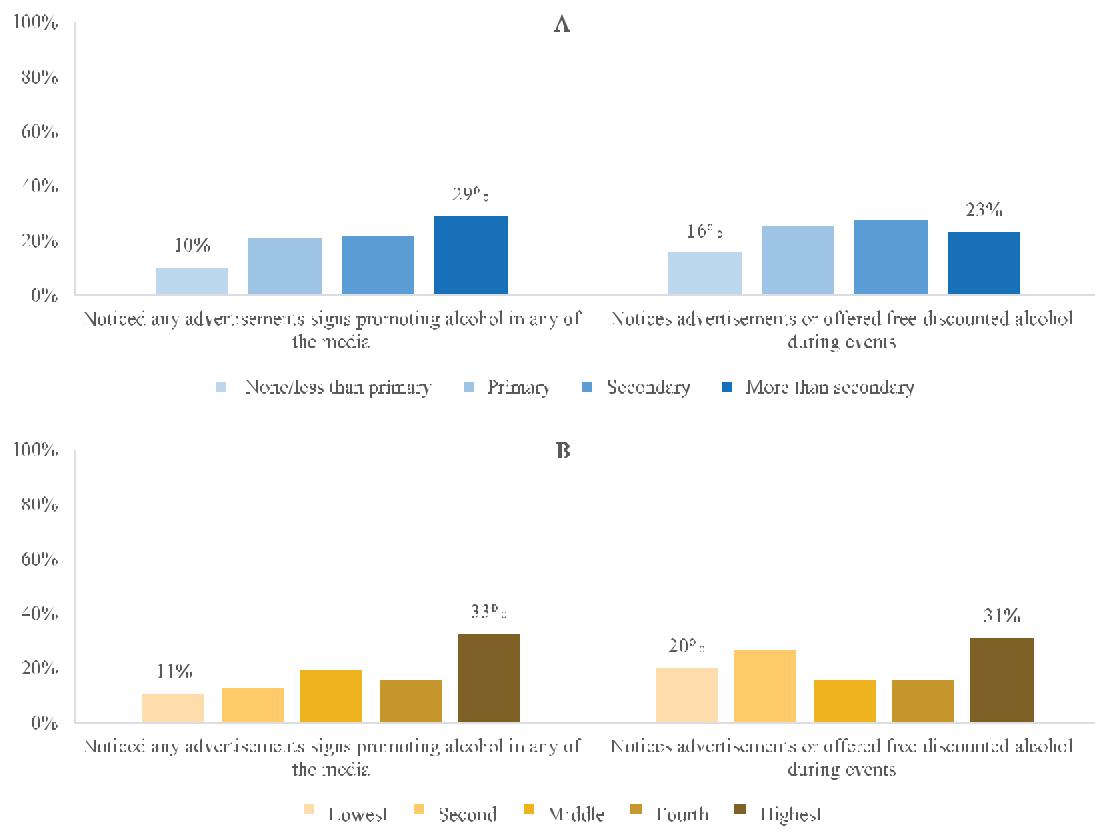


**Figure 5.19** Differentials in exposure to advertising and marketing of alcohol by residence, amongst adults aged 15-69 years, Nepal STEPS survey 2019



- With increasing levels of education and wealth, the proportion of adults exposed to advertising and marketing of alcohol also increased (**Figure 5.20**)

**Figure 5.20** Differentials in exposure to advertising and marketing of alcohol by level of education (A) and by wealth quintile (B), amongst adults aged 15-69 years, Nepal STEPS Survey, 2019



## 5.9 Exposure to anti-alcohol messages

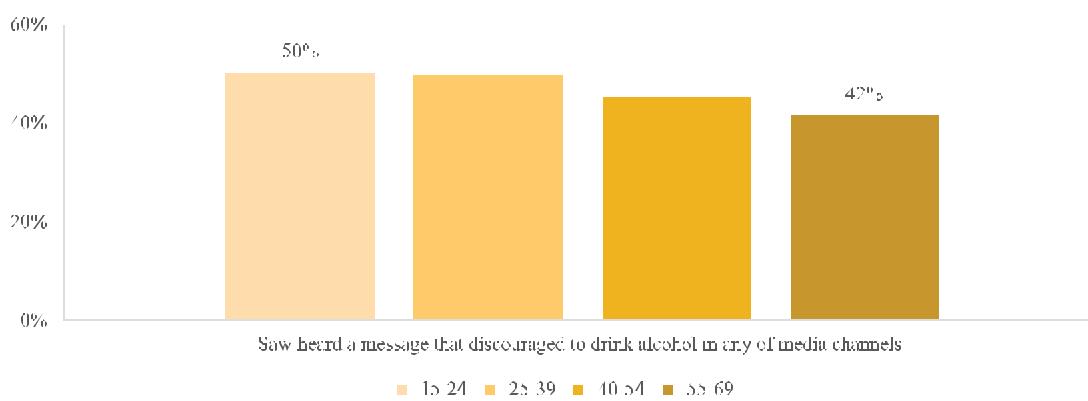
Organized information, education and communication campaigns to make users and general population aware of the dangers of initiating alcohol use and social and economic impact, and other dangers of alcohol use in general

or in specific settings (e.g. while driving) is an integral part of alcohol control programs. All adults were asked if during the past 30 days, they saw or heard any messages on television, radio, billboards, posters, newspapers, magazines, or movies, internet, social media that discouraged them to drink alcohol or informed them about health dangers of drinking alcohol? Nearly 1 in 2 (47.9%) adults reported seeing or hearing any messages on one or more media platforms, that discouraged consumption of alcohol (**Table 5.7**).

#### Patterns by background characteristics

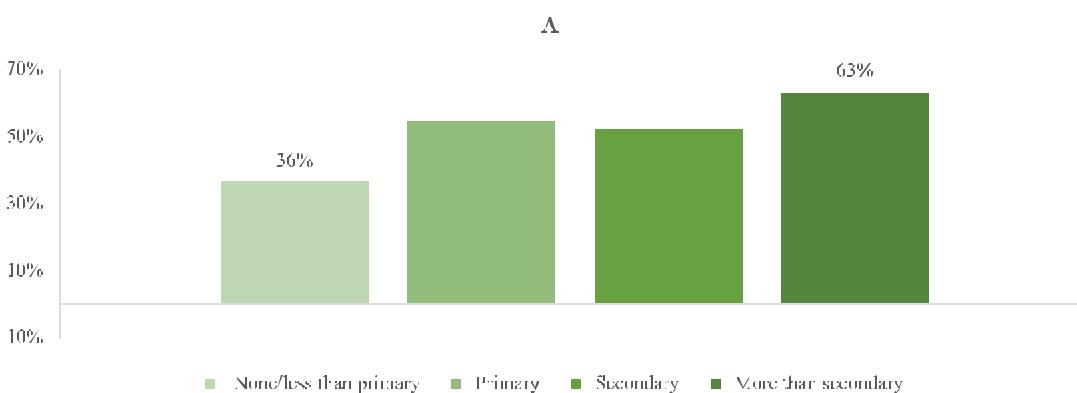
- Exposure to anti-alcohol messages decreased with increasing age, where 50.2% of adults in age group 15-24 years, saw or heard the messages, while only 41.5% adults in the age group 55-69 years noticed these (**Figure 5.21**).

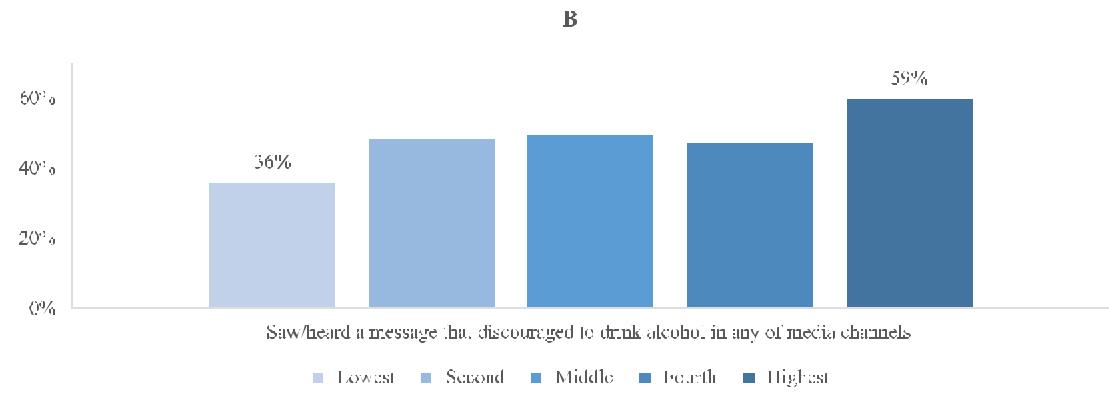
**Figure 5.21** Differentials in exposure to anti-alcohol messages, amongst adults aged 15-69 years, by age, Nepal STEPS survey 2019



- 53.4% of men noticed anti-alcohol messages compared to only 42.9% of women.
- Of all the participants, 50.3% of residents in rural regions saw or heard messages that discouraged alcohol consumption, compared to 34.9% of residents in metropolitan/sub-metropolitan regions.
- Exposure to anti-alcohol messages increased with increasing levels of education (36.2% for adults with no or primary education versus 62.9% for adults with more than secondary education) and household wealth (35.9% in lowest quintile versus 59.4% in the wealthiest quintile) (**Figure 5.22**).

**Figure 5.22** Differentials in exposure to anti-alcohol messages, amongst adults aged 15-69 years, by level of education (A) and by wealth quintile (B), Nepal STEPS survey 2019





## 5.10 Drink Driving

Prevention of drink driving is a key component of alcohol control programs to prevent road accidents and other alcohol-associated injuries. Nepal has put in place random breath test to discourage drink-driving. Additionally, it also has policies for drunk driving as a first offence (detention, fines, license suspension, penalty points) and for repeated offence. Amongst the adults who drove vehicle in past 12 months, 3.9% reported being checked by traffic police for drunk driving.

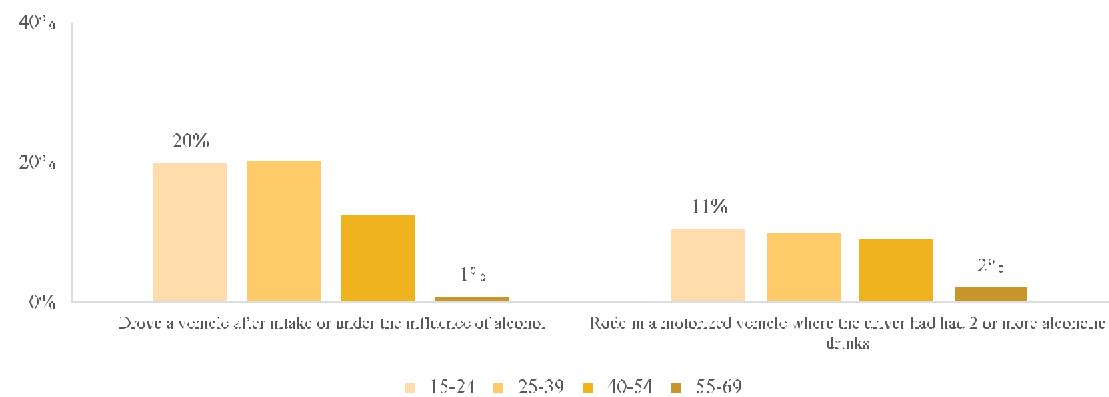
In addition, 17.2% of adults who have ever consumed alcohol reported that in the past 30 days, they drove a vehicle under the influence of alcohol and 8.9% rode in a motorized vehicle where the driver had had 2 or more alcoholic drinks (**Table 5.8**).

### Patterns by background characteristics

#### I. Drunk Driving

- Proportion of adults driving under influence, or driving with a person under influence of alcohol decreased with increasing age (**Figure 5.23**).

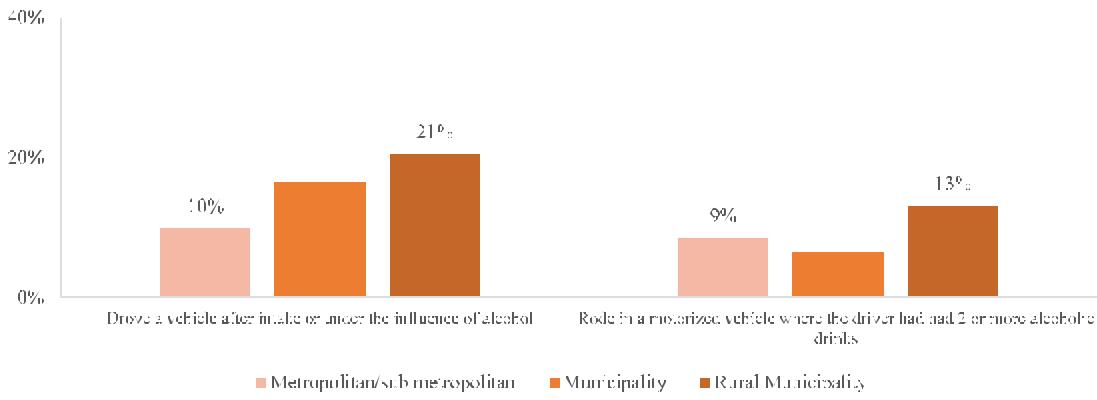
**Figure 5.23** Differentials in drunk driving, for adults aged 15-69 years, by age, Nepal STEPS survey 2019



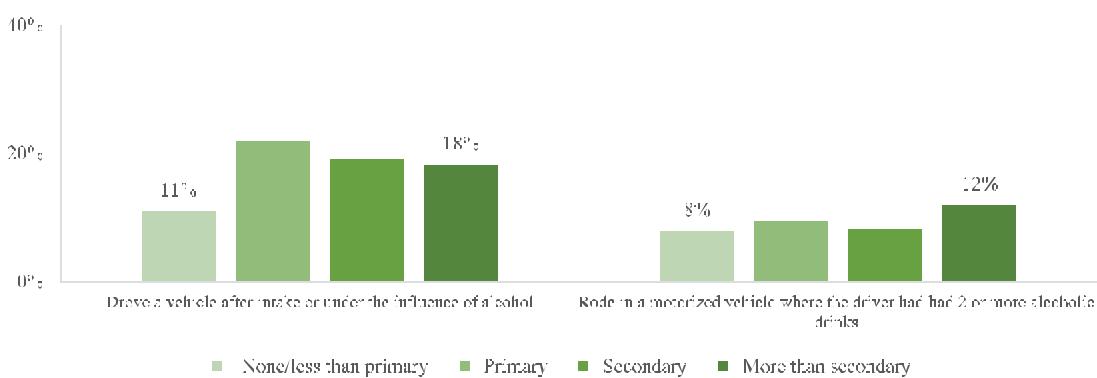
- More men engaged in driving under influence of alcohol or driving with a person under influence of alcohol as compared to women (19.1% versus 1.7% and 13.8% versus 4.3%).
- More adults from rural municipality drove under influence of alcohol and rode with a driver who had consumed 2 or more drinks in the past 30 days as compared to metropolitan/sub municipality region. (20.5% and 13.2% versus 9.9% and 8.6%) (**Figure 5.24**).

- The proportion of adults engaging in drunk driving behaviour increased with increasing level of education (**Figure 5.25**). No significant trend arises in proportion of adults driving under influence with an increase in wealth.

**Figure 5.24** Differentials in drunk driving, for adults aged 15-69 years, by region of residence, Nepal STEPS survey 2019



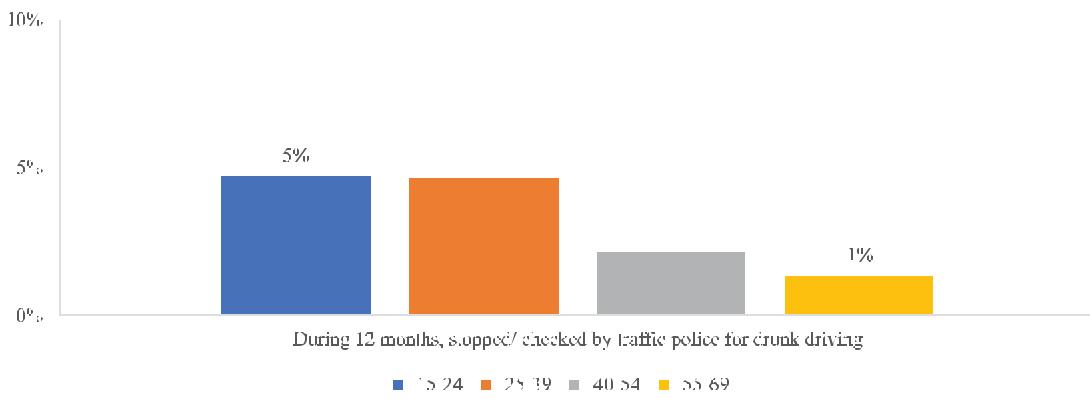
**Figure 5.25** Differentials in drunk driving, for adults aged 15-69 years, by levels of education, Nepal STEPS survey 2019



## II. Counter measures

- The proportion of adults who have been stopped or checked by the traffic police for drink driving decreased with increase in age (**Figure 5.26**).
- 5.8% of men were stopped by the traffic police, compared to only 0.7% of women
- 5.4% of adults residing in municipality were stopped, whereas only 1.8% and 2.5% of adults were stopped and checked by the police in metropolitan/sub-metropolitan and rural areas, respectively.
- Higher proportions of adults with secondary education and above were stopped for checks for drunk driving as compared to those with primary education or less. No trends were observed in the countermeasures with an increase in wealth.

**Figure 5.26** Differentials in proportion of adults stopped or checked by police for drink-driving by age, Nepal STEPS survey 2019



## **LIST OF TABLES:**

For more information on alcohol consumption, see the following tables:

**Table 5.1 Alcohol consumption: all participants**

**Table 5.2 Most often consumed alcohol: all participants**

**Table 5.3 Heavy episodic drinking: total, Men, Women**

**Table 5.4 Consumption of unrecorded alcohol**

**Table 5.5 Symptoms of alcohol dependence: among current users in last 12 months**

**Table 5.6 Ease of access to alcohol: all participants**

**Table 5.7 Percentage of participants exposed to advertisements/signs promoting alcohol, other alcohol promotions and anti-alcohol messages in any of the media: all participants**

**Table 5.8 Drink driving and implementation of countermeasures: all participants**

**Table 5.1 Alcohol consumption: all participants**

		Percentage of people age 15-69 who are life abstainers, former drinkers and current drinkers; by background characteristics, [Nepal STEPS, 2019]						
				Consumed alcohol in past 12 months				
				Current drinkers (consumed alcohol in the past 12 month)		1-3 days/months or < than a month		
Background characteristic	Consumed alcohol	Former drinkers (haven't consumed alcohol in past 12 months)	Life-time abstainers (Never consumed alcohol)	Daily or almost daily	1-4 days/week	1-3 days/months or < than a month	Current drinker (consumed alcohol in past 30 days)	Number of Persons
<b>Age</b>								
15-24	83.2	1.7	15.1	1.6	5.4	8.1	12.7	843
25-39	70.2	3.5	26.4	7.1	9.5	9.7	23.3	2087
40-54	64.5	5.7	29.8	12.0	8.3	9.5	25.9	1574
55-69	67.7	7.3	25.1	10.3	7.9	6.9	22.2	1089
<b>Sex</b>								
Men	56.0	5.3	38.6	11.7	13.5	13.4	34.4	1998
Women	86.5	2.7	10.8	2.9	3.0	4.8	8.8	3595
<b>Residence</b>								
Metropolitan/submetropolitan	80.3	1.8	17.9	4.5	3.4	10.0	15.1	705
Municipality	70.9	4.8	24.3	6.3	8.4	9.6	20.9	2755
Rural Municipality	72.0	3.3	24.7	8.7	8.4	7.6	22.1	2133
<b>Province</b>								
Province 1	69.6	5.2	25.2	8.9	6.9	9.5	23.1	804
Province 2	86.2	2.3	11.5	3.0	4.6	4.0	10.3	803
Province 3	63.7	3.1	33.2	10.3	11.3	11.7	27.5	759
Gandaki Province	66.7	4.2	29.2	9.0	8.4	11.7	24.1	793
Province 5	74.5	4.8	20.7	8.3	7.1	5.3	19.1	797
Karnali Province	72.1	4.9	23.0	5.7	8.8	8.5	19.6	808
Sudurpashchim Province	64.4	3.9	31.7	3.5	11.5	16.7	27.0	829

	<b>Education</b>							
None/less than primary	69.8	4.6	25.7	10.3	8.3	7.0	23.0	2792
Primary	70.5	4.6	24.9	7.2	9.8	7.9	21.5	1051
Secondary	74.0	2.4	23.6	4.6	7.5	11.5	20.1	1088
More than secondary	77.7	4.1	18.2	2.4	5.3	10.6	15.4	661
<b>Wealth quintile</b>								
Lowest	67.0	3.5	29.5	11.7	10.9	7.0	26.5	1653
Second	72.4	5.2	22.4	6.1	8.5	7.8	19.5	1062
Middle	71.7	4.7	23.6	6.1	9.2	8.3	21.3	949
Fourth	74.8	4.0	21.2	5.1	5.6	10.5	18.0	878
Highest	75.0	2.4	22.7	6.2	5.6	10.9	18.9	1051
Total (15-39)	75.5	2.7	21.7	4.8	7.9	9.1	18.9	2930
Total (40-69)	65.7	6.3	28.0	11.3	8.2	8.5	24.5	2663
<b>Total 15-69</b>	<b>72.2</b>	<b>4.0</b>	<b>23.9</b>	<b>7.0</b>	<b>8.0</b>	<b>8.9</b>	<b>20.8</b>	<b>5593</b>

<sup>1</sup> who have never consumed alcohol; <sup>2</sup> persons who ever drank alcoholic beverages but have not done so in the past 12 months; <sup>3</sup> includes both the lifetime abstainers and former drinkers.

**Table 5.2 Most often consumed alcohol: all participants**

Percentage of people age 15-69 who reported consuming alcohol in past 30 days and mentioned a specific alcohol as most often consumed alcohol; by background characteristics, [Nepal STEPS, 2019]

Background characteristic	Beer	wine	Spirit (Whiskey, vodka, gin)	Jaad	Rakshi	<i>Other traditional (Aila/ Tungba)</i>	Total	Number of Persons
<b>Age</b>								
15-24	35.0	1.5	6.2	22.0	35.0	0.4	100.0	85
25-39	19.0	3.0	7.5	22.7	46.4	1.3	100.0	412
40-54	9.2	0.1	3.0	26.6	60.5	0.6	100.0	386
55-69	3.1	0.0	2.0	29.4	65.1	0.5	100.0	269
<b>Sex</b>								
Men	20.7	1.9	6.6	17.0	53.2	0.6	100.0	381
Women	3.0	1.0	0.7	50.8	43.1	1.4	100.0	771
<b>Residence</b>								
Metropolitan/sub metropolitan	14.9	0.7	3.0	36.0	45.4	0.2	100.0	127
Municipality	18.0	2.6	5.0	19.3	54.5	0.3	100.0	523
Rural Municipality	14.9	0.6	6.1	29.8	46.9	1.6	100.0	502
<b>Province</b>								
Province 1	16.9	3.7	4.9	43.9	28.7	1.9	100.0	213
Province 2	14.3	0.0	1.6	4.3	79.8	0.0	100.0	81
Province 3	15.6	0.9	2.5	34.5	45.2	1.3	100.0	211
Gandaki Province	21.9	1.2	2.0	10.8	63.1	0.8	100.0	175
Province 5	17.9	2.2	12.8	11.5	55.6	0.0	100.0	150
Karnali Province	18.6	1.6	10.0	11.6	57.8	0.4	100.0	139
Sudurpashchim Province	14.4	0.7	3.3	26.5	54.7	0.4	100.0	183
<b>Education</b>								
None/less than primary	3.5	0.0	1.3	30.9	64.0	0.2	100.0	615
Primary	13.4	0.0	7.5	27.9	49.8	1.4	100.0	217
Secondary	28.5	5.6	11.7	16.5	36.9	0.7	100.0	200
More than secondary	49.3	2.8	3.0	10.6	31.8	2.4	100.0	120
<b>Wealth quintile</b>								
Lowest	3.9	0.0	2.0	37.1	56.7	0.3	100.0	394
Second	5.9	0.6	2.2	32.1	57.7	1.6	100.0	228
Middle	18.2	1.0	7.7	18.0	54.3	0.9	100.0	202
Fourth	34.9	4.4	0.9	18.3	40.6	1.0	100.0	136
Highest	27.0	3.3	14.8	12.5	41.9	0.5	100.0	192
Total (15-39)	23.3	2.8	7.1	22.5	43.3	1.0	100.0	497
Total (40-69)	7.0	0.1	2.6	27.6	62.2	0.6	100.0	655
<b>Total 15-69</b>	<b>16.8</b>	<b>1.7</b>	<b>5.3</b>	<b>24.5</b>	<b>50.9</b>	<b>0.8</b>	<b>100.0</b>	<b>1152</b>

**Table 5.3 Heavy episodic drinking: total, Men, Women**

Percentage of population aged 15-69 years who engaged in heavy episodic drinking (drank 6 or more standard drinks in a single occasion) in the past 30 days, by background characteristics, [Nepal STEPS, 2019]

Background characteristic	In total population		Among current drinkers	
	All%	number of persons	All (%)	
<b>Age</b>				
15-24	3.6	843	32.9	68
25-39	7.9	2087	37.6	363
40-54	9.2	1574	39.9	329
55-69	7.7	1089	38.6	230
<b>Sex</b>				
Men	13.1	1886	42.1	659
Women	1.8	3545	22.4	331
<b>Residence</b>				
Metropolitan/submetropolitan	5.3	686	37.6	108
Municipality	7.2	2684	39.5	452
Rural Municipality	7.1	2061	35.1	430
<b>Province</b>				
Province 1	5.9	782	29.8	191
Province 2	3.7	797	39.4	75
Province 3	8.9	739	34.2	191
Gandaki Province	8.9	756	44.6	138
Province 5	7.9	784	43.5	137
Karnali Province	9.0	785	49.5	116
Sudurpashchim Province	7.5	788	34.9	142
<b>Education</b>				
None/less than primary	7.2	2702	34.9	525
Primary	8.9	1027	44.9	193
Secondary	7.0	1063	40.0	175
More than secondary	3.9	638	28.9	97
<b>Wealth quintile</b>				
Lowest	9.4	1602	38.9	343
Second	6.5	1031	37.6	197
Middle	7.6	924	39.4	177
Fourth	4.8	862	30.3	120
Highest	6.5	1012	40.7	153
Total (15-39)	6.1	2864	36.3	431
Total (40-69)	8.6	2567	39.4	559
<b>Total 15-49</b>	<b>6.97</b>	<b>5431</b>	<b>37.6</b>	<b>990</b>

**Table 5.4 Consumption of unrecorded alcohol**

Percentage of population aged 15-69 years who reporting consuming unrecorded alcohol\* in the past 7 days in the past 30 days, by background characteristics, [Nepal STEPS, 2019]

Background characteristic	All%	Number of persons	Percentage of current drinkers who drank unrecorded alcohol in the past 7 days		
			All (%)	N	Mean percentage of total unrecorded alcohol out of total alcohol drank in the last 7 days
<b>Age</b>					
15-24	6.952	843	54.56	85	52.11
25-39	15.48	2087	66.6	412	66.639
40-54	19.41	1574	74.9	386	68.377
55-69	17.42	1089	78.5	269	76.97
<b>Sex</b>					
Men	22.62	1998	65.81	771	63.02
Women	6.841	3595	77.7	381	77.54
<b>Residence</b>					
Metropolitan/submetropolitan	9	705	57.19	127	42.106
Municipality	13.41	2755	64.11	523	64.219
Rural Municipality	16.85	2133	76.3	502	73.44
<b>Province</b>					
Province 1	14.85	804	64.39	213	51.922
Province 2	7.848	803	76.43	81	90.493
Province 3	20.59	759	74.89	211	87.47
Gandaki Province	15.1	793	62.59	175	48.59
Province 5	13.51	797	70.83	150	67.12
Karnali Province	13.25	808	67.69	139	70.28
Sudoropashchim Province	16.46	829	60.9	183	48.93
<b>Education</b>					
None/less than primary	18.74	2792	81.36	615	80.706
Primary	17.22	1051	79.93	217	72.501
Secondary	9.362	1088	46.64	200	44.98
More than secondary	6.753	661	43.8	120	48
<b>Wealth quintile</b>					
Lowest	21.75	1653	82.24	394	76.627
Second	14.22	1062	73.09	228	80.597
Middle	14.71	949	69.15	202	56.507
Fourth	11.2	878	62.11	136	64.269
Highest	9.408	1051	49.68	192	49.116
Total (15-39)	11.98	2930	63.27	497	62.75
Total (40-69)	18.63	2663	76.19	655	71.49
<b>Total 15-49</b>	<b>14.26</b>	<b>5593</b>	<b>68.47</b>	<b>1152</b>	<b>66.27</b>

**Table 5.5 Symptoms of alcohol dependence among current users in last 12 months**

Percentage of people age 15-69 who consumed alcohol in the past 12 months and showed symptoms of alcohol dependence, by background characteristics, [Nepal STEPS, 2019]

Background Characteristic	Needed the first drink in the morning to get going after a heavy drinking session						Failed to do normally expected to do because of drinking						Harm to others: family problems or problems with partner due to someone else drinking			
	Notable to stop drinking once started			Monthly or more frequently			Monthly or more frequently			Less than monthly			Never			Number of Persons
	Monthly or more frequently	Less than monthly	Never	Monthly or more frequently	Less than monthly	Never	Monthly or more frequently	Less than monthly	Never	Monthly or more frequently	Less than monthly	Never	Monthly or more frequently	Less than monthly	Never	Number of Persons
<i>Age</i>																
15-24	7.4	18.1	74.5	0.9	8.2	90.9	0.5	8.2	91.3	107	1.3	7.0	91.7	843	8.3	
25-39	13.7	10.6	75.8	4.7	10.4	84.9	8.7	11.7	79.6	486	2.7	7.7	89.7	2087	10.4	
40-54	15.0	16.5	68.5	10.5	11.9	77.5	11.7	13.1	75.2	450	4.4	8.9	86.7	1574	13.3	
55-69	18.6	9.6	71.8	9.5	8.1	82.4	7.6	10.2	82.1	302	2.7	6.6	90.7	1089	9.3	
<i>Sex</i>																
Men	15.5	15.0	69.6	6.8	12.0	81.1	9.3	13.0	77.7	876	2.2	5.5	92.3	3595	7.7	
Women	7.7	7.9	84.4	4.4	3.8	91.8	3.6	5.7	90.7	469	3.2	9.9	86.9	1998	13.1	
<i>Residence</i>																
Metropolitan/sub metropolitan	17.8	6.5	75.7	17.0	4.7	78.4	18.4	4.9	76.8	170	3.4	5.1	91.5	705	8.5	
Municipality	15.4	12.4	72.3	4.9	10.1	85.0	6.7	8.8	84.5	616	2.5	7.2	90.3	2755	9.7	
Rural Municipality	10.5	15.7	73.9	6.3	11.0	82.7	7.9	15.8	76.3	559	2.7	8.8	88.5	2133	11.5	
<i>Province</i>																
Province 1	13.8	13.1	73.1	4.6	17.0	78.4	5.2	13.5	81.4	235	0.5	8.2	91.3	804	8.7	
Province 2	16.2	5.9	77.9	4.0	10.3	85.7	5.5	4.7	89.7	92	1.2	3.7	95.1	803	4.9	
Province 3	8.2	9.7	82.1	4.4	6.4	89.3	5.6	12.5	81.9	263	3.6	5.9	90.5	759	9.5	
Gandaki Province	13.0	19.6	67.4	9.2	15.7	75.1	12.0	18.0	70.0	208	3.6	7.0	89.4	793	10.6	
Province 5	12.9	12.7	74.4	9.1	4.4	86.5	10.1	7.7	82.2	169	4.0	7.3	88.6	797	11.4	
Karnali Province	19.8	18.8	61.4	9.0	12.5	78.5	13.9	16.4	69.7	163	6.4	17.4	76.2	808	23.8	
Sudurpashchim Province	18.7	17.9	63.5	6.3	8.8	84.9	9.3	8.7	82.1	215	2.2	11.8	860	829	14.0	



**Table 5.6 Ease of access to alcohol : all participants**

Background characteristic	Access to obtain alcohol		Percentage of participants, 18 year or younger who were refused alcoholic beverages due to their age		Alcohol Less affordable than before				
	Very Easy/Easy	Difficult/Very Difficult	No of person	Yes	No of person	No	Yes	No of person	Total %
<b>Age</b>									
15-24	86.1	13.9	115	3.3	356	66.5	33.5	115	100
25-39	87.8	12.3	527	1.6	1068	71.4	28.6	525	100
40-54	89.8	10.3	513	1.1	851	72.9	27.2	514	100
55-69	89.3	10.7	363	2.3	581	78.7	21.3	362	100
<b>Sex</b>									
Men	88.4	11.6	985	2.9	1321	71.1	28.9	984	100
Women	87.7	12.4	533	0.7	1535	75.2	24.8	528.0	100
<b>Residence</b>									
Metropolitan/sub metropolitan	87.5	12.5	186	0.5	378	82.5	17.5	186	100
Municipality	90.3	9.7	711	3.2	1388	74.0	26.0	706	100
Rural Municipality	85.2	14.9	621	0.6	1090	67.6	32.4	620	100
<b>Province</b>									
Province 1	90.8	9.2	262	0.4	420	74.7	25.3	260	100
Province 2	85.7	14.3	104	1.4	489	84.5	15.5	104	100
Province 3	92.7	7.3	286	3.9	449	76.6	23.5	285	100
Gandaki	83.8	16.2	235	1.2	417	65.1	34.9	236	100
Province 5	89.6	10.4	199	1.3	326	69.4	30.6	198	100
Karnali Pr	80.8	19.2	196	1.7	355	59.5	40.5	196	100
Sudurpashchim Province	84.3	15.7	236	3.8	400	67.3	32.7	233	100
<b>Education</b>									
None/less than primary	86.2	13.8	772	1.6	1417	72.1	27.9	771	100
Primary	87.5	12.5	296	1.8	504	67.3	32.7	292	100
Secondary	90.0	10.0	275	2.4	559	75.0	25.0	275	100
More than secondary	93.6	6.4	174	2.2	375	75.1	24.9	173	100
					0.0				
<b>Wealth quintile</b>									
Lowest	82.9	17.1	484	0.8	798	68.4	31.6	481	100
Second	87.6	12.4	293	2.2	491	69.5	30.5	293	100
Middle	91.5	8.5	260	0.9	469	78.2	21.8	256	100
Fourth	85.8	14.2	203	2.0	473	65.3	34.7	203	100
Highest	94.9	5.1	278	3.5	625	80.4	19.6	279	100
Total (15-39)	87.3	12.7	642	2.18	1424	70.04	29.96	636	100
Total (40-69)	89.6	10.4	876	1.6	1432	75.0	25.0	876	100.0
<b>Total 15-69</b>	<b>88.2</b>	<b>11.8</b>	<b>1518</b>	<b>2.0</b>	<b>2856</b>	<b>72.1</b>	<b>27.9</b>	<b>1512.0</b>	

**Table 5.7 Percentage of participants exposed to advertisements/signs promoting alcohol, other alcohol promotions and anti-alcohol messages in any of the media: all participants**

Percentage of people age 15-69 who reported exposure to advertisements and marketing of alcohol ; by background characteristics, [Nepal, 2019]

Background characteristic	Noticed any advertisements/signs promoting alcohol in any of the media	Notices advertisements or offered free/discounted alcohol during events	Saw/heard a message that discouraged to drink alcohol in any of media channels	Total person
<b>Age</b>				
15-24	20.2	27.2	50.2	843
25-39	19.2	20.6	49.9	2087
40-54	17.7	20.2	45.3	1574
55-69	15.3	16.6	41.5	1089
<b>Sex</b>				
Men	23.7	25.7	53.4	1998
Women	14.1	18.5	43.0	3595
<b>Residence</b>				
Metropolitan/sub metropolitan	15.5	31.5	35.0	705
Municipality	20.6	21.7	48.4	2755
Rural Municipality	16.6	20.5	50.3	2133
<b>Province</b>				
Province 1	18.9	27.6	51.1	804
Province 2	9.8	11.1	43.2	803
Province 3	25.2	30.0	55.5	759
Gandaki Province	14.4	18.4	47.9	793
Province 5	21.1	16.8	46.3	797
Karnali Province	19.5	20.5	47.6	808
Sudoropashchim Province	23.8	32.5	43.0	829
<b>Education</b>				
None/less than primary	10.3	15.54	36.2	2792
Primary	21.2	25.16	54.7	1051
Secondary	21.9	27.76	51.7	1088
More than secondary	29.0	23.19	63.0	661
<b>Wealth quintile</b>				
Lowest	10.8	20.1	35.6	1653
Second	12.5	26.7	48.2	1062
Middle	19.5	16.01	49.6	949
Fourth	15.9	15.91	46.8	878
Highest	32.7	31.1	59.4	1051
Total (15-39)				
Total (40-69)				
<b>Total 15-69</b>	<b>18.7</b>	<b>21.9</b>	<b>47.9</b>	<b>5593</b>

**Table 5.8 drink driving and implementation of countermeasures : all participants**

Percentage of people age 15-69 who reported exposure to drink driving or exposed to countermeasures taken to discourage drink driving ; by background characteristics, [Nepal, 2019]

Background characteristic	Last 30 days, drove a vehicle after intake or under the influence of alcohol*	Number of participants	Last 12 months, stopped/checked by traffic police for drunk driving	Number of participants	Past 30 days, rode in a motorized vehicle where the driver had had 2 or more alcoholic drinks	Number of participants
<b>Age</b>						
15-24	19.9	57	4.7	286	10.6	230
25-39	20.1	246	4.6	700	9.9	596
40-54	12.6	181	2.2	475	9.2	448
55-69	0.9	82	1.3	262	2.1	318
<b>Sex</b>						
Men	19.1	443	5.8	879	13.8	600
Women	1.7	123	0.7	844	4.3	992
<b>Residence</b>						
Metropolitan/sub metropolitan	9.9	99	1.8	297	8.6	173
Municipality	16.4	277	5.4	851	6.6	808
Rural Municipality	20.5	190	2.5	575	13.2	611
<b>Region</b>						
Province 1	9.7	79	4.3	224	4.1	218
Province 2	17.0	66	2.2	378	11.7	294
Province 3	9.7	132	5.4	287	4.9	186
Gandaki Province	20.2	95	4.8	225	24.7	243
Province 5	34.0	49	5.2	190	10.9	175
Karnali Province	29.0	50	4.6	153	6.7	217
Sudurpashchim Province	12.7	95	2.3	266	3.2	259
<b>Education</b>						
None/less than primary	10.9	199	2.6	665	7.8	815
Primary	21.9	108	2.8	318	9.5	295
Secondary	19.2	160	5.1	415	8.2	295
More than secondary	18.1	99	4.9	325	11.8	187
<b>Wealth quintile</b>						
Lowest	11.7	91	4.3	291	5.2	400
Second	21.2	87	0.3	226	3.8	294
Middle	22.1	101	2.4	301	15.4	295
Fourth	7.8	100	4.7	357	13.9	284
Highest	21.9	187	5.4	548	6.1	319
Total (15-39)	20.0	303	4.7	986	10.2	826
Total (40-69)	9.1	263	1.9	737	6.4	766
<b>Total 15-69</b>	<b>17.2</b>	<b>566</b>	<b>3.9</b>	<b>1723</b>	<b>8.9</b>	<b>1592</b>

\*among those who have ever drunk and among those who drive



## CHAPTER 6

# DIET

### Key Findings

- **Consumption of fruits and vegetables and knowledge:**
  - o Average servings of fruits and vegetables consumed per day: 2.0 servings (0.5 servings of fruit and 1.5 servings of vegetables per day).
  - o Prevalence of insufficient fruits and vegetables intake (< 5 servings~ 400gms a day): 96.7% in adults (96.3% women, 97.0% men).
- **Knowledge on recommended intake for fruits and vegetables:**
  - o Knowledge on recommended intake: Only 10.1% of adults reported the correct servings for recommended fruits and vegetables intake per day (10.4% women; 9.8% men).
- **Fats and oils used for cooking:**
  - o Cooking oil/fats: Refined vegetable oil (51.4%) and mustard oil (43.8%) are the most commonly used cooking oil for food preparation.

An unhealthy diet is one of the 5 main risk factors for NCDs and the promotion of a healthy diet is one of the recommended components for policies and programs in the Global Action Plan against NCDs<sup>1</sup>. WHO recommends mean population intake of least 5 servings (400g) of fruits and vegetables as part of a healthy balanced diet which provides a rich mix of nutrients and bioactive substances for the prevention of diet-related non-communicable diseases<sup>2</sup>.

This chapter summarizes average fruits and vegetables consumption levels to reflect national average intake as well as population knowledge on dietary recommendations on servings of fruits and vegetables to be consumed. Additionally, information on oils and fats used for meal preparation and average number of meals per day eaten that were not prepared at home were also summarized. The indicators presented will help Nepal assess current trends in dietary patterns and guide policy and programs targeting the improvement of population dietary intake. Salt intake is summarized in Chapter 7.

#### Current relevant policies and programs in Nepal for diet:

There are no any specific policy guideline focused on dietary behaviours and practices to reduce risks factors for non-communicable disease. Multi-sector nutrition plan (2018-2022) mainly emphasizes on improved maternal, adolescent and child nutrition by scaling up essential nutrition-specific and sensitive interventions and creating an enabling environment for nutrition<sup>3</sup>. However, National Nutrition Policy and Strategy, presents the dietary guidelines for life-style related diseases which mainly emphasizes on consuming a variety of foods including sufficient fruits and vegetables, sufficient grains/cereals, eat more fiber, consume calcium-rich foods and protein-rich foods in the diet, drink sufficient and clean fluids, restrict the use of fats and oils and be selective about the types of fats used, use less salt and eat less salty foods, cut down on sugar, and on drinks and foods that contain sugar, maintain a healthy body weight, encourage physical activity and exercise

1 WHO. The Updated Appendix of 3 of the Global Action Plan for the Prevention and Control of NCDs 2013-2020. World Health Organization. Global action plan for the prevention and control of NCDs 2013-2020. Geneva.

2 Joint WHO/FAO Consultation on Diet, Nutrition and the Prevention of Chronic Diseases (2002; Geneva, Switzerland) Diet, nutrition and the prevention of chronic diseases: report of a joint WHO/FAO expert consultation, Geneva, 28 January – 1 February 2002.

and suggest its minimum duration, control alcohol intake and stop or avoid tobacco use. The ultimate goal of National Nutrition Policy and Strategy is achieving nutritional wellbeing of all people in Nepal so that they can maintain a healthy life and contribute to the socio-economic development of the country<sup>4</sup>.

## 6.1 Consumption of fruits and vegetables

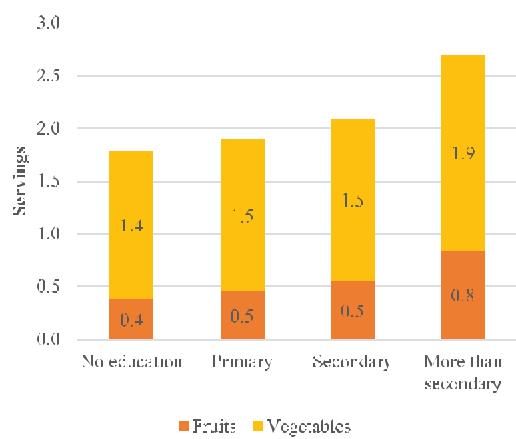
Information on consumption levels of fruits and vegetables amongst adults was elicited by asking number of days fruits and vegetables are consumed and usual number of servings consumed each of these days.

Average daily consumption of fruits and vegetables was 2.0 servings amongst adults. Average daily fruit consumption was 0.5 servings compared with average daily vegetable consumption of 1.5 servings. The prevalence of inadequate intake of fruits and vegetables per day (i.e. less than 5 servings a day) was 96.7% (**Table 6.1 and Table 6.2**).

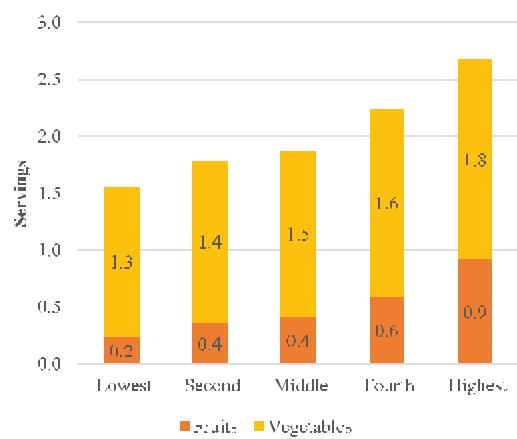
**Patterns by background characteristics (Table 6.1 and Table 6.2):**

- Adults aged 15-69 years who had more than secondary level education, and higher household wealth had significantly higher mean intake of fruits and vegetable intakes (**Figure 6.1 and Figure 6.2**).

**Figure 6.1** Differentials in mean fruit and vegetable intake per day amongst adults aged 15-69 by education, Nepal STEPS Survey 2019



**Figure 6.2** Differentials in mean fruit and vegetable intake amongst adults aged 15-69 by wealth, Nepal STEPS Survey 2019

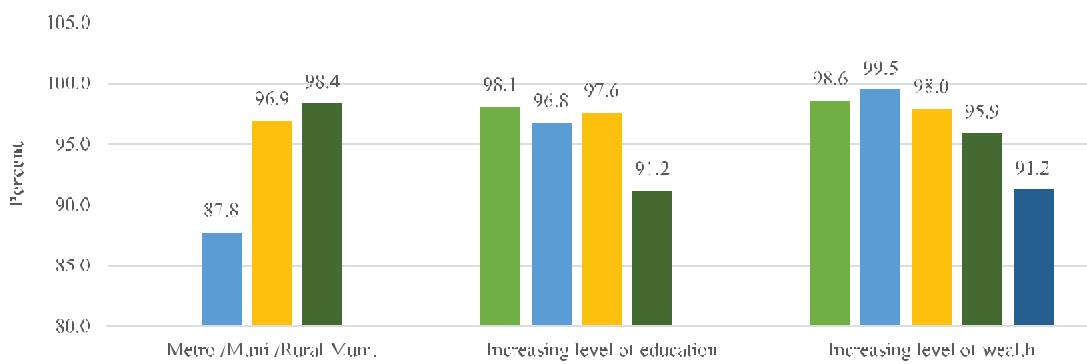


- Inadequate intake of fruits and vegetable was largely prevalent in Nepal amongst all adults.
- A lower prevalence of inadequate intake of fruits and vegetables was seen amongst adults who live in metropolitan/sub-metropolitan areas, those with higher level of education and household wealth (**Figure 6.3**).

3 National Planning Commission. Multi-sector nutrition plan (2018-2022). Government of Nepal. Kathmandu

4 Ministry of Health and Population. National Nutrition Policy and Strategy. Government of Nepal. Kathmandu

**Figure 6.3** Differentials in prevalence of inadequate fruits and vegetables intake amongst adults aged 15-69 by residence, education and wealth, Nepal STEPS Survey 2019



**Trends between 2013<sup>5</sup> and 2019 Survey:** In comparison to STEPS survey 2013, average daily servings of fruits and vegetables have increased from 1.8 servings in 2013 to 2.0 servings in 2019. This is reflected in the slight reduction in prevalence of inadequate fruits and vegetables intake (98.9% to 96.7%).

## 6.2 Knowledge on recommended fruits and vegetable intakes (Table 6.3)

Only 10.1% of adults reported the correct amount of servings for recommended intake of fruits and vegetables. This question is included in the Nepal survey for the first time.

### Patterns by background characteristics (Table 6.3):

- Higher percentage (16.7%) of adults from metropolitan/sub metropolitan were aware of WHO recommendations on fruits and vegetables compared to residents of municipalities (9.2%) or rural municipalities (9.8%).
- With increasing level of education a awareness about recommendations on fruits and vegetables intake increased (**Figure 6.4**). Similarly, adults whose household wealth was above the middle quintile were more aware than those of lower quintiles (**Table 6.3**).

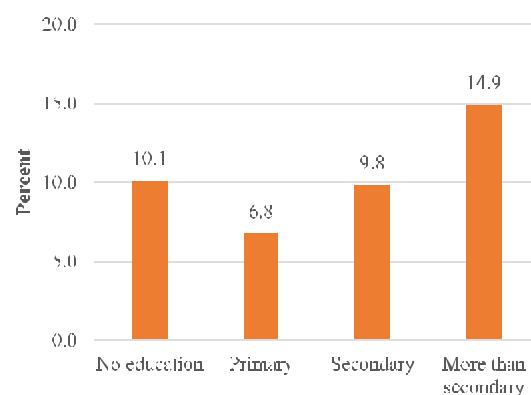
## 6.3 Fats and oils used for cooking

Most commonly used cooking oil for food preparation is refined vegetable oil (51.4%) and mustard oil (43.8%) (**Table 6.4**).

### Patterns by background characteristics (Table 6.4):

- Refined vegetable oil was more commonly used amongst older adults, metropolitan residents, those with higher education and household wealth.
- Use of mustard oil was more common amongst the rural municipality residents and those with lower education levels.

**Figure 6.4** Awareness about recommendations on fruits and vegetables intake amongst adults aged 15-69 by education, Nepal STEPS Survey 2019



<sup>5</sup> 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

**Trends between 2013<sup>5</sup> and 2019 survey:**

- A drastic increase in the use of refined vegetable oil is seen between 2013 and 2019 (18.1% to 51.4%), while mustard oil use has decreased from 79.1% to 43.8%.

## **LIST OF TABLES:**

For more information on diet, see the following tables:

**Table 6.1 Mean Servings of fruit and vegetable consumption**

**Table 6.2 Prevalence of adequate consumption of fruits and vegetable**

**Table 6.3 Knowledge on adequate fruits and vegetable recommendations**

**Table 6.4 Types of oil or fat most often used for meal preparation**

**Table 6.1 Mean Servings of fruit and vegetable consumption: Total**

Mean number of servings of fruit and vegetable intake per day of adults aged 15-69, according to background characteristics [Nepal STEPS, 2019]

Background characteristic	Mean servings of fruit intake per day:			Mean servings of vegetable intake per day:			Mean servings of fruit and vegetable intake per day*:					
	Mean	95% CI	Number of adults	Mean	95% CI	Number of adults	Mean	95% CI	Number of adults			
<b>Age</b>												
15-24	0.5	0.4	0.6	807	1.5	1.4	1.6	834	2.0	1.8	2.2	840
25-39	0.5	0.5	0.6	1998	1.6	1.5	1.7	2071	2.1	1.9	2.3	2078
40-54	0.5	0.4	0.6	1489	1.5	1.4	1.6	1565	2.0	1.8	2.1	1567
55-69	0.4	0.4	0.5	1025	1.5	1.3	1.6	1077	1.9	1.7	2.0	1082
<b>Sex</b>												
Women	0.5	0.4	0.6	3424	1.5	1.4	1.6	3564	2.0	1.8	2.1	3578
Men	0.5	0.5	0.6	1895	1.5	1.4	1.7	1983	2.1	1.9	2.2	1989
<b>Residence</b>												
Metropolitan/ sub-metropolitan	0.9	0.5	1.2	692	1.8	1.3	2.4	702	2.7	1.9	3.5	704
Municipality	0.5	0.5	0.6	2615	1.5	1.4	1.6	2724	2.0	1.8	2.2	2734
Rural Municipality	0.4	0.3	0.4	2012	1.5	1.4	1.7	2121	1.9	1.7	2.0	2129
<b>Province</b>												
Province 1	0.5	0.4	0.6	773	1.5	1.2	1.8	802	2.0	1.6	2.3	802
Province 2	0.6	0.4	0.7	728	1.8	1.6	2.0	792	2.3	2.0	2.6	792
Province 3	0.7	0.5	0.9	724	1.4	1.2	1.6	756	2.0	1.7	2.4	759
Gandaki Province	0.5	0.4	0.6	772	1.4	1.2	1.7	790	1.9	1.7	2.2	791
Province 5	0.5	0.3	0.7	759	1.5	1.3	1.8	790	2.0	1.5	2.5	792
Karnali Province	0.4	0.3	0.5	776	1.5	1.3	1.7	802	1.9	1.6	2.2	806
Sudurpashchim Province	0.3	0.2	0.4	787	1.4	1.2	1.6	815	1.6	1.4	1.9	825
<b>Education</b>												
No education	0.4	0.3	0.4	2621	1.4	1.3	1.5	2756	1.8	1.6	1.9	2772
Primary	0.5	0.4	0.5	999	1.5	1.3	1.6	1049	1.9	1.7	2.0	1049
Secondary	0.5	0.5	0.6	1055	1.5	1.4	1.7	1081	2.1	1.9	2.2	1084
More than secondary	0.8	0.7	1.0	643	1.9	1.7	2.0	660	2.7	2.4	3.0	661
<b>Wealth quintile</b>												
Lowest	0.2	0.2	0.3	1540	1.3	1.2	1.5	1632	1.5	1.4	1.7	1641
Second	0.4	0.3	0.4	1006	1.4	1.3	1.5	1051	1.8	1.7	1.9	1054
Middle	0.4	0.3	0.5	911	1.5	1.3	1.6	943	1.9	1.7	2.0	947
Fourth	0.6	0.5	0.7	840	1.6	1.5	1.8	875	2.2	2.0	2.4	876
Highest	0.9	0.8	1.1	1022	1.8	1.5	2.0	1046	2.6	2.3	3.0	1049
<b>Age (previous, 2013)</b>												
15-29	0.5	0.4	0.6	1410	1.5	1.4	1.6	1454	2.0	1.8	2.2	1462
30-44	0.5	0.4	0.6	1939	1.6	1.5	1.7	2023	2.1	1.9	2.2	2029
45-69	0.5	0.4	0.5	1970	1.5	1.4	1.6	2070	1.9	1.8	2.1	2076
Total (15-39)	0.5	0.4	0.6	2805	1.5	1.4	1.6	2905	2.0	1.9	2.2	2918
Total (40-69)	0.5	0.4	0.5	2514	1.5	1.4	1.6	2642	1.9	1.8	2.1	2649
<b>Total (15-69)</b>	<b>0.5</b>	<b>0.4</b>	<b>0.6</b>	<b>5319</b>	<b>1.5</b>	<b>1.4</b>	<b>1.6</b>	<b>5547</b>	<b>2.0</b>	<b>1.9</b>	<b>2.2</b>	<b>5567</b>

\*Respondents whose response was missing or who's response was "don't know" to one of either fruit or vegetable intake questions were assumed to be 0 and summed to produce mean fruits and vegetables intake. Respondents whose response was either missing or who's response was "don't know" to both fruits and vegetables intake questions were excluded from the total sample.

**Table 6.2 Prevalence of adequate consumption of fruits and vegetable\***

Percent of adults aged 15-69 who reports adequate consumption of fruits and vegetables, according to background characteristics [Nepal STEPS, 2019]

Background characteristic	Total			Men			Women		
	<5 servings/ day	>= 5 servings/ day	Total Number (N)	<5 servings/ day	>= 5 servings/ day	Total Number (N)	<5 servings/ day	>= 5 servings/ day	Total Number (N)
<b>Age</b>									
15-24	95.9	4.1	840	97.6	2.4	273	97.6	2.4	273
25-39	96.6	3.4	2078	96.3	3.7	611	96.3	3.7	611
40-54	97.3	2.7	1567	97.0	3.0	608	97.0	3.0	608
55-69	97.3	2.7	1082	97.6	2.4	497	97.6	2.4	497
<b>Residence</b>									
Metropolitan/ submetropolitan Municipality	87.8	12.3	704	91.0	9.0	275	84.5	15.5	429
Rural Municipality	96.9	3.1	2734	97.1	2.9	958	96.8	3.2	1776
	98.4	1.6	2129	98.5	1.5	756	98.3	1.7	1776
<b>Province</b>									
Province 1	96.4	3.6	802	96.9	3.1	285	96.9	3.1	517
Province 2	96.4	3.6	792	96.4	3.6	348	96.4	3.6	444
Province 3	97.2	2.8	759	97.2	2.8	302	97.2	2.8	457
Gandaki Province	99.0	1.0	791	99.9	0.1	266	99.9	0.1	525
Province 5	94.4	5.6	792	95.8	4.2	266	95.8	4.2	526
Karnali Province	96.9	3.2	806	96.0	4.0	260	96.0	4.0	546
Sudurpashchim Province	98.8	1.2	825	98.5	1.6	262	98.5	1.6	563
<b>Education</b>									
No education	98.1	1.9	2772	97.4	2.6	786	98.5	1.5	1986
Primary	96.8	3.2	1049	97.7	2.3	424	95.9	4.2	625
Secondary	97.6	2.4	1084	98.0	2.1	463	97.2	2.8	621
More than secondary	91.2	8.8	661	93.7	6.3	316	88.6	11.4	345

Wealth quintile						
Lowest	98.6	1.4	1641	98.3	1.7	498
Second	99.5	0.5	1054	99.8	0.2	365
Middle	98.0	2.0	947	98.5	1.5	344
Fourth	95.9	4.1	876	96.2	3.8	338
Highest	91.2	8.8	1049	93.2	6.8	444

**Age (previous 2013)**

	15-29	30-44	45-69			
96.4	3.6	1462	97.7	2.3	448	95.3
96.6	3.4	2029	96.1	3.9	632	97.1
97.0	3.0	2076	96.9	3.1	909	97.2
Total (15-39)	96.3	3.7	2918	96.9	3.1	884
Total (40-69)	97.3	2.7	2649	97.3	2.8	1105

**Total (15-69)**

**96.7**      **3.4**      **5567**      **97.0**      **3.0**      **1989**      **96.3**      **3.7**      **3578**

\* Respondents whose response was missing or who's response was "don't know" to one of either fruit or vegetable intake questions were assumed to be 0 and summed to produce mean fruits and vegetables intake.

Respondents whose response was either missing or who's response was "don't know" to both fruits and vegetables intake questions were excluded from the total sample.

**Table 6.3 Knowledge on adequate fruits and vegetable recommendations**

Percent of men and women aged 15-69 who are aware of adequate fruits and vegetables intake recommendations, according to background characteristics [Nepal STEPS, 2019]

Background characteristic	Men						Women					
	Total			Correct ( $\geq 5$ servings/day)			Incorrect ( $<5$ servings/day)			Incorrect ( $<5$ servings/day)		
	incorrect ( $<5$ servings/day)	Correct ( $\geq 5$ servings/day)	Don't know	Total Number (N)	incorrect ( $<5$ servings/day)	Correct ( $\geq 5$ servings/day)	Don't know	Total Number (N)	incorrect ( $<5$ servings/day)	Correct ( $\geq 5$ servings/day)	Don't know	57.078 mm
<i>Age</i>												
15-24	53.9	10.1	36.0	843	50.9	10.1	39.0	275	56.7	10.1	33.2	568
25-39	48.3	10.8	40.9	2087	52.6	10.0	37.4	615	44.7	11.5	43.8	1472
40-54	43.1	9.5	47.4	1574	43.4	10.6	46.0	609	42.8	8.5	48.7	965
55-69	40.3	9.1	50.6	1089	45.9	8.0	46.1	499	34.6	10.3	55.1	590
<i>Residence</i>												
Metropolitan/ submetropolitan	54.1	16.7	29.2	705	55.9	13.7	30.4	276	52.4	19.6	28.0	429
Municipality	50.6	9.2	40.2	2755	51.1	9.8	39.1	964	50.1	8.7	41.2	1791
Rural Municipality	41.8	9.8	48.4	2133	44.8	8.9	46.3	758	39.2	10.7	50.2	1375
<i>Province</i>												
Province 1	41.3	2.6	56.1	804	40.2	2.9	56.9	285	42.3	2.3	55.4	519
Province 2	45.0	12.3	42.7	803	48.9	12.1	39.0	353	41.0	12.4	46.6	450
Province 3	58.3	4.1	37.6	759	60.6	4.8	34.7	302	56.0	3.5	40.5	457
Gandaki Province	51.0	17.0	32.0	793	50.5	18.2	31.3	267	51.4	15.9	32.6	526
Province 5	42.6	13.3	44.1	797	43.4	12.6	44.0	268	42.0	13.9	44.1	529
Karnali Province	51.0	14.6	34.4	808	57.1	10.8	32.1	261	45.9	17.7	36.4	547
Sudurpashchim Province	52.1	14.0	33.8	829	53.1	13.8	33.1	262	51.4	14.2	34.4	567
<i>Education</i>												
No education	40.5	10.1	49.3	2792	44.2	11.9	43.9	792	38.3	9.1	52.6	2000
Primary	47.3	6.8	46.0	1051	43.8	6.3	49.9	424	50.6	7.3	42.1	627
Secondary	52.0	9.8	38.1	1088	51.9	9.9	38.2	466	52.1	9.8	38.1	622
More than secondary	59.3	14.9	25.8	661	61.3	10.3	28.4	316	57.4	19.5	23.1	345
									100.0	0.0		

<b>Wealth quintile</b>							
Lowest	40.4	5.9	53.7	1653	41.8	4.4	53.8
Second	42.2	8.7	49.1	1062	40.5	10.8	48.7
Middle	48.0	11.3	40.7	949	47.4	10.6	42.0
Fourth	50.7	12.7	36.6	878	53.9	11.7	34.4
Highest	57.0	11.9	31.1	1051	59.0	10.6	30.4

*Age (previous 2013)*

15-29	50.6	10.5	38.9	1466	52.7	9.5	37.7	450	53.4	11.1	35.5	1016
30-44	50.6	10.5	38.9	2039	48.7	11.2	40.1	636	40.1	10.2	49.7	1403
45-69	50.6	10.5	38.9	2088	44.3	9.0	46.7	912	40.3	9.2	50.5	1176
Total (15-39)	50.6	10.5	38.9	2930	51.9	10.0	38.1	890	49.5	10.9	39.6	2040
Total (40-69)	42.0	9.4	48.7	2663	44.4	9.5	46.0	1108	39.7	9.2	51.1	1555
<b>Total (15-69)</b>	<b>47.6</b>	<b>10.1</b>	<b>42.2</b>	<b>5593</b>	<b>49.3</b>	<b>9.8</b>	<b>40.9</b>	<b>1998</b>	<b>46.2</b>	<b>10.4</b>	<b>43.4</b>	<b>3595</b>

**Table 6.4 Types of oil or fat most often used for meal preparation**

Percent of adults (15-69) who responded to using different types of oils/fat for meal preparation, according to background characteristics [Nepal STEPS, 2019]

Background characteristic	Percent of adults who responded to using different types of oils/fat for meal preparation:							Total Number (N)
	Mustard oil	Refined vegetable oil	lard / suet	butter ghee	Vanaspati ghee	others/ none particular/not used	Total (%)	
<b>Age</b>								
15-24	48.3	46.3	0.6	0.9	0.3	3.6	100.0	839
25-39	41.0	54.4	0.2	0.6	0.5	3.3	100.0	2087
40-54	44.5	50.9	0.1	1.1	0.7	2.7	100.0	1570
55-69	41.8	53.9	0.1	1.4	0.4	2.4	100.0	1088
<b>Residence</b>								
Metropolitan/submetropolitan	25.5	65.2	0.3	0.1	0.3	8.6	100.0	703
Municipality	44.6	51.8	0.2	0.6	0.5	2.2	100.0	2751
Rural Municipality	46.9	47.5	0.4	1.4	0.4	3.3	100.0	2130
<b>Province</b>								
Province 1	31.3	66.5	0.0	0.5	0.1	1.7	100.0	803
Province 2	48.5	46.0	0.0	0.0	0.2	5.3	100.0	801
Province 3	28.7	68.8	0.0	0.1	0.1	2.3	100.0	758
Gandaki Province	32.9	63.3	1.6	0.5	0.1	1.7	100.0	793
Province 5	57.8	38.0	0.1	0.3	0.8	2.9	100.0	797
Karnali Province	40.0	52.7	0.1	4.2	1.3	1.7	100.0	807
Sudurpashchim Province	61.1	27.6	1.0	3.9	1.4	5.2	100.0	825
<b>Education</b>								
No education	47.6	46.0	0.4	1.1	0.5	4.4	100.0	2788
Primary	40.8	53.7	0.1	1.0	0.4	4.0	100.0	1050
Secondary	43.6	53.0	0.2	0.6	0.4	2.1	100.0	1084
More than secondary	38.1	59.7	0.3	0.8	0.7	0.5	100.0	661
<b>Wealth quintile</b>								
Lowest	42.5	48.7	0.0	2.6	1.0	5.1	100.0	1650
Second	41.0	51.9	0.6	1.5	0.5	4.6	100.0	1060
Middle	52.1	45.0	0.3	0.3	0.3	2.1	100.0	947
Fourth	41.4	54.5	0.4	0.1	0.4	3.1	100.0	877
Highest	41.9	56.9	0.1	0.1	0.1	0.9	100.0	1050
<b>Age (previous, 2013)</b>								
15-29	45.8	49.1	0.5	0.7	0.3	3.6	100.0	1462
30-44	41.4	53.5	0.2	1.1	0.7	3.1	100.0	2036
45-69	42.9	53.1	0.1	1.0	0.6	2.4	100.0	2086
Total (15-39)	44.0	51.1	0.4	0.7	0.4	3.4	100.0	2926
Total (40-69)	43.4	52.1	0.1	1.2	0.6	2.6	100.0	2658
<b>Total (15-69)</b>	<b>43.8</b>	<b>51.4</b>	<b>0.3</b>	<b>0.9</b>	<b>0.5</b>	<b>3.2</b>	<b>100.0</b>	<b>5584</b>



## CHAPTER 7

# DIETARY SALT

### Key Findings

#### • Estimated salt intake

- o Estimated average population salt intake based on spot urine testing is 9.1 grams per day (8.7g/d women, 9.6g/d men)

#### • Behaviors around dietary salt intake

- o *Adding salt to foods while eating:* 5.6% of adults (6.5% of women, 4.6% of men) reported adding salt often or always to food right before or while eating.
- o *Adding salty sauces to foods while eating:* 4.5% of adults (2.9% of women, 6.3% of men) reported adding salty sauce often or always to food right before or while eating.
- o *Consumption of processed foods:* 19.5% of adults (18.1% of women, 21.1% of men) reported consuming processed foods often or always that are high in salt.

#### • Perceptions about levels of salt intake

- o *Perception of salt intake:* 74.9% of adults perceived their salt intake to be “just right” and only 10.6% of adults perceived it to be ‘far too much or too much’.
- o *Importance of salt reduction:* 79.5 % of adults (78.1% of women, 81.0% of men) think that lowering salt is very important or somewhat important.

#### • Knowledge on salt intake, recommendations and health consequences

- o *Knowledge on recommended intake:* 61.6% of adults (61.5% of women, 62.3% of men) had incorrect knowledge on or did not know of the maximum amount of salt recommended for optimum health.
- o *Knowledge on health consequences:* 70.9% of adults (65.3% of women, 77.1% of men) correctly identified the health consequences related to excessive salt or salty sauce intake.

#### • Practices and methods to reduce salt intake

- o 2.6% of adults (2.2% of women, 3.0% of men) reported currently doing something to reduce salt intake. Methods to reduce salt intake were avoiding or minimizing consumption of processed foods; eating meals without adding extra salt at the table; avoid eating foods prepared outside of home.
- o Excessive salt intake is a major risk factor for hypertension, which is a major cause of premature deaths worldwide. WHO recommends consuming less than 2 grams of sodium or 5 grams of salt per day amongst adults to reduce blood pressure and the risk of cardiovascular disease, stroke and coronary heart disease<sup>1</sup>. Policies to reduce salt intake (food product reformulation; establishing supportive environment in public institutions; communication and mass media campaigns; front-of-pack labelling) at population-level are one of the most cost-effective interventions or ‘best buys’ to prevent and control non-communicable diseases<sup>2</sup>.

A 30% relative reduction in mean population intake of salt/sodium by 2025 relative to 2010 levels is one of the nine voluntary global targets set under WHO global action plan<sup>3</sup>. Nepal has also incorporated it as one of the key targets in its 5-year multisectoral action plan for 2014-2020<sup>4</sup>.

1 WHO. Guideline: Sodium intake for adults and children. Geneva, World Health Organization (WHO), 2012.

2 WHO. The Updated Appendix of 3 of the Global Action Plan for the Prevention and Control of NCDs 2013-2020.

3 World Health Organization. Global action plan for the prevention and control of NCDs 2013-2020. Geneva.

4 Multisectoral Action Plan for the Prevention and Control of Non Communicable Diseases (2014-2020). Kathmandu: Government of Nepal.

This chapter focuses on indicators related to dietary sodium intake by estimating average population 24-hour salt intake based on spot urine sodium and creatinine levels and assessing the knowledge, behaviours, perceptions and practice around salt intake. This information will help Nepal to assess trends and progresses towards salt intake targets specified in its multisectoral action plan as well as inform current policies and programs in place to reduce population salt-intake. These will also guide future policy and programs to reduce salt intake at population level.

#### **Current relevant policies and programs in Nepal for control of salt intake<sup>4</sup>:**

There are no specific relevant policies for control of salt intake except stated above in Multisectoral action plan (2014-20).

### **7.1 Mean population 24-hour salt intake**

Population mean salt intake can be assessed using 24-h urinary sodium excretion, however STEPS survey has, instead, adopted spot urine sodium as a proxy due to ease of collection of spot urine samples, lower cost and higher response rates vis-à-vis 24-hour urine samples, in population-based household surveys. Three major studies have the estimation of 24-h urinary sodium excretion from spot urine samples: Kawasaki<sup>5</sup>, INTERSALT<sup>6</sup> and Tanaka<sup>7</sup> (Refer to section 2.6 under Survey Methodology). So far, there is no consensus on equation to be used in a given population/context. The estimation in this survey maintained the use of the same equation as in previous survey rounds to facilitate comparison of results and assessment of trends.

Using the INTERSALT Southern European equation, the mean population salt intake was estimated to be 9.1 g per day amongst all adults against the recommended maximum intake of 5gm by WHO (**Table 7.1**). This is the first time that urinary sodium was measured in the Nepal STEPS Survey. Hence we cannot compare the change in consumption over years if any.

#### **Patterns by background characteristics (Table 7.1):**

- Estimated average salt intake was significantly higher amongst men (9.6g/d) compared to women (8.7g/d).
- Estimated average salt intake was the highest amongst age groups 25-39 and 40-54 compared to younger and older age groups. (**Figure 7.1**).
- No significant difference in estimated average salt intake was seen across place of residence, Province or household wealth.

### **7.2 Behaviours around dietary salt intake**

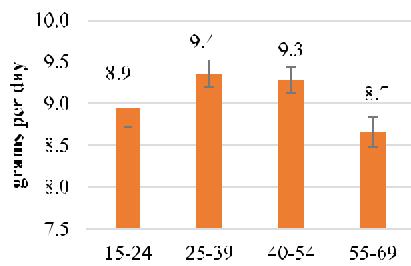
Only 5.6% of adults reported adding salt often or always to foods while eating and 4.5% adults reported so for adding salty sauces (**Table 7.2**). Overall, 9.2% of adults reported often or always adding salt or salty sauces while eating (**Table 7.2**). Hence, it can inference that most of the salt consumed was due to salt added at the time of cooking.

19.5% of adults report often or always consuming processed foods high in salt (**Table 7.4**).

#### **Patterns for adding salt and salty sauces by background characteristic (Table 7.2):**

- A higher percentage of women (6.5%) reported adding

**Figure 7.1** Estimated average salt intake by age group in adults aged 15-69, Nepal STEPS Survey 2019



5 Kawasaki T, Itoh K, Uezono K, Sasaki H. A simple method for estimating 24 h urinary sodium and potassium excretion from second morning voiding urine specimen in adults. *Clin Exp Pharmacol Physiol*. 1993;20(1):7-14.

6 Brown J, Dyer AR, Chan Q, et al. Estimating 24-Hour Urinary Sodium Excretion From Casual Urinary Sodium Concentrations in Western Populations. *American Journal of Epidemiology*. 2013;177(1):1180-1192. doi:10.1093/aje/kwt066

7 Tanaka T, Okamura T, Miura K, et al. A simple method to estimate population 24-h urinary sodium and potassium excretion using a casual urine specimen. *J Hum Hypertens*. 2002;16(2):97-103. doi:10.1038/sj.jhh.1001307

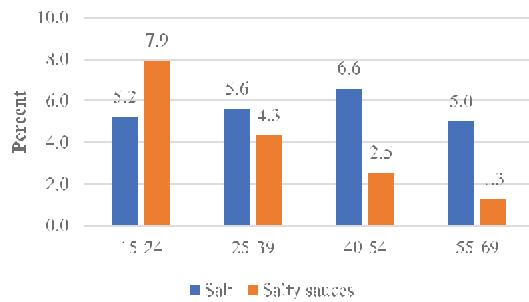
salt often or always to foods while eating compared to men (4.6%). Though a reverse trend was seen for consumption of salty sauce.

- Salt was most frequently added to foods amongst adults aged 40-54, while salty sauces was most frequently added to foods amongst younger adults (**Figure 7.2**).
- Residence of rural municipalities and people from lower education levels reported adding salt more frequently compared to those from metros/ municipalities or more educated (**Figure 7.3**).
- Adults who were more educated and wealthier were more likely to add salty sauces to foods while eating compared to their counterparts (**Figure 7.3**).
- Sudoorpaschim Province reported the highest percentage of adults who reported often or always adding salt to foods (10.1%), and lowest Province 3 (2.1%) and Karnali Province (6.5%) reported highest percentage of adults who add salty sauces often or always to foods (**Table 7.2**).

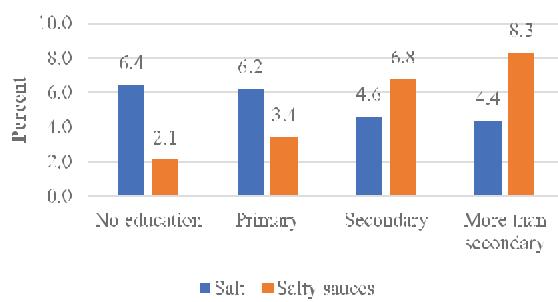
#### **Patterns for consumption of processed foods by background characteristic (Table 7.4):**

- Younger adults, who are more educated, wealthier and live in rural municipalities consumed processed foods more frequently than others (**Figure 7.4**).
- Household wealth is differentially associated with frequency of processed food consumption across levels of wealth quintile.
- Frequent consumption of processed foods is most common in Province 5 (25.6%) and the least common in Sudoorpaashchim Province (13.7%).

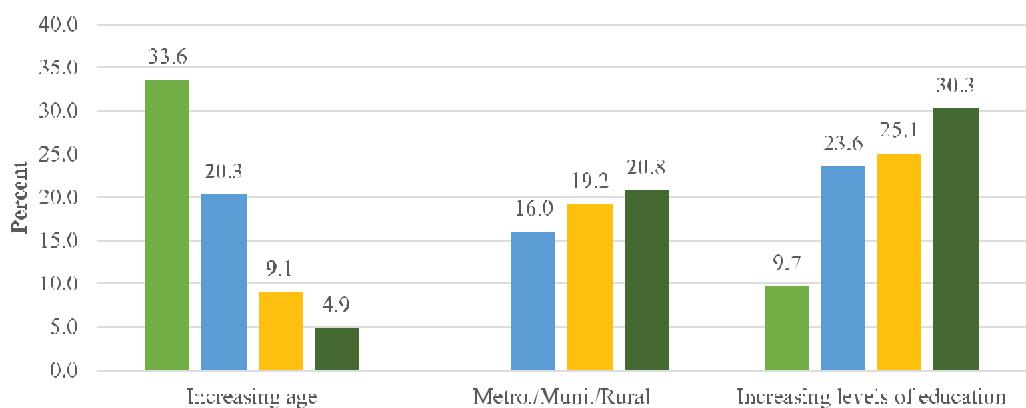
**Figure 7.2** Differentials in added salt or salty sauces to foods while eating by age groups in adults aged 15-69, Nepal STEPS Survey 2019



**Figure 7.3** Differentials in added salt or salty sauces to foods while eating by education in adults aged 15-69, Nepal STEPS Survey 2019



**Figure 7.4** Differentials in percent of adults aged 15-69 reporting often or always consuming processed foods high in salt by age, residence and education, Nepal STEPS Survey 2019



### Trends between 2013<sup>8</sup> and 2019 survey:

The percentage of adults who reported adding salt to food often or always while eating had slightly increased from 2013 (4.7% in 2013 vs 5.6% in 2019). Information on salty sauces was not obtained in last survey round. Frequent consumption of processed foods high in salt has substantially increased (11.5% in 2013 vs 19.5% in 2019). This increase nearly doubled for younger adults aged 15-29 (16.3% in 2013 vs 30.3% in 2019) (**Figure 7.5**).

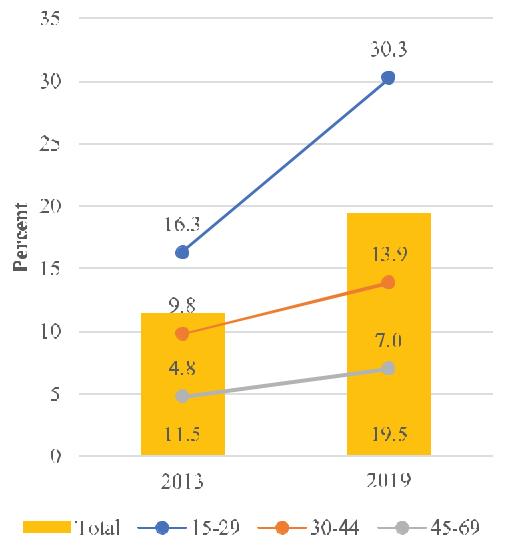
### 7.3. Perceptions about levels of salt intake

In contrast to relatively high estimated population mean salt intake reported earlier, majority of adults (74.9%) think they consume ‘just the right amount of salt’, with only 10.6% reporting consuming ‘far too much or too much’ salt. Self-perceived intake of salty sauces is lower than salt as only 2.4% of adults think they consume ‘far too much or too much’ salty sauces and 39.8% of adults think it is ‘just right’ (**Table 7.3**). Meanwhile, when asked about the importance of lowering dietary salt, 79.5% of adults find it’s very important or somewhat important’ (**Table 7.5**).

#### Patterns by background characteristics (Table 7.3 and Table 7.5):

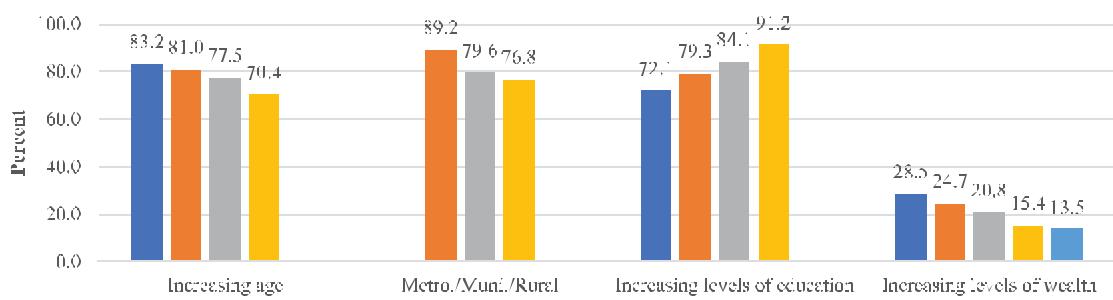
- Perception of salt or salty sauce intake to be ‘just right’ was highest amongst adults aged 15-24.
- The percentage of men who perceived their salt or salty sauce intake too be ‘just right’ was higher than women.
- Province 1 and Province 3 had the highest percentage of adults who perceived their salt or salty sauce intake to be ‘just right’.
- Notable variability is seen across education levels and household wealth for perceived salt or salty sauce intakes.
- Younger adults, who are more educated, wealthier and reside in Metropolitan/sub-metropolitan areas think that lowering salt intake is ‘very important or somewhat important’ (**Figure 7.6**).
- The highest percentage of adults who think lowering salt is important was in Province 2 and the lowest percentage was in Province 1.

**Figure 7.5** Trend in frequency of processed foods consumption by age group, Nepal STEPS Survey 2013 and 2019



<sup>8</sup> Aryal, KK; Neupane, S; Mehata, S; Vaidya, A; Singh, S; Paulin, F; Madanlal, RG; Riley, LM; Cowan, M; Gutthold, R; Singh, SP; Bhusal, CL; Lohani, GR; (2014) Non communicable diseases risk factors: STEPS Survey Nepal 2013. Kathmandu: Nepal Health Research Council

**Figure 7.6** Differentials in percent of adults aged 15-69 who think lowering salt is important by age group, residence, education and wealth, Nepal STEPs Survey 2019



#### Trends between 2013<sup>9</sup> and 2019 survey:

Perception of salt intake is similar between 2013 and 2019 where most adults perceive their salt intake to be ‘just right’ (78.5% in 2013 vs 74.9% in 2019). However, more adults perceive their salt intake to be ‘too little or far too little’ (10.5% in 2013 vs 13.5% in 2019). The proportion of adults who perceive salt intake to be ‘very important or somewhat important’ slightly increased (77.6% in 2013 vs 79.5% in 2019). This increased awareness is mostly seen amongst adults aged 15-29 (79.9% in 2013 vs 83.4% in 2019) while minimal improvements are seen in other age groups (Figure 7.7).

**Figure 7.7** Trend in percent of adults aged 15-69 who think salt reduction is important by age group, Nepal STEPS Survey 2013 and 2019



## 7.4 Knowledge on salt intake, recommendations and health consequences

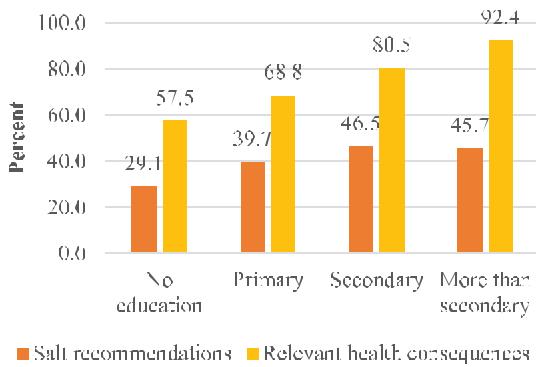
- Only 38.1% of adults correctly stated the maximum amount of salt recommended per day for optimum health (Table 7.5). Majority of adults (70.9%) correctly identified health consequences related to excessive salt intake (Table 7.6). Overall less adults have knowledge on the recommended amount of salt intake for optimum health than knowledge on relevant health consequences.

#### Patterns by background characteristics (Table 7.5 and Table 7.6):

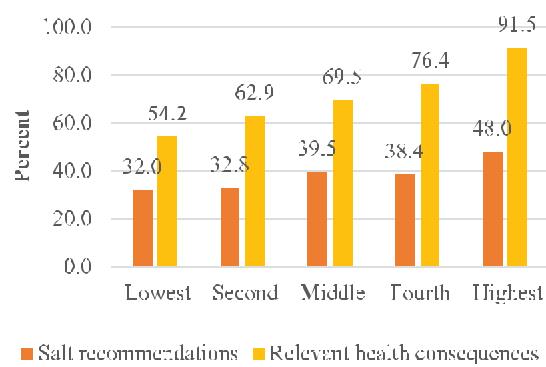
- More men are aware of relevant health consequences due to excessive salt intake than women, but do not differ significantly in knowledge on recommended dietary salt intakes.
- Younger adults, who live in metropolitan/sub-metropolitan areas have more knowledge on recommended salt intakes and relevant health consequences than their counterparts.
- Sudorpaschim Province had the highest percentage (47.0%) of adults with correct knowledge on salt recommendations while the lowest was in Province 1 (31.4%).
- Province 3 had the highest percentage of adults who correctly identified relevant health consequences while the lowest was in Karnali Province.
- Percent of adults with correct knowledge on dietary salt recommendations and relevant health consequences increased with increasing levels of education and household wealth (Figure 7.8 and Figure 7.9).

<sup>9</sup> Percentages for perceived salt intake and perceived importance of salt reduction were reanalyzed for 2013 Nepal STEPs survey due to differences in response in categorization for comparison ('don't know' is now included as a category, but was previously excluded in 2013).

**Figure 7.8** Differential in knowledge on dietary salt recommendations and relevant health consequences by education amongst adults aged 15-69, Nepal STEPS Survey 2019



**Figure 7.9** Differentials in knowledge on dietary salt recommendations and relevant health consequences by wealth amongst adults aged 15-69, Nepal STEPS Survey 2019



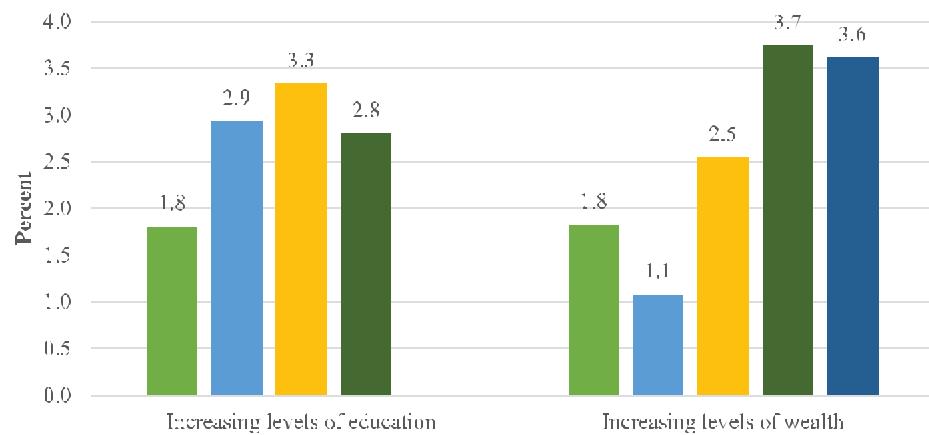
## 7.5 Practices and methods to reduce salt intake

The percent of adults who are currently doing something to control salt intake is particularly low in Nepal (2.6%) (**Table 7.7**). Amongst those, the most common methods for controlling salt intake was avoiding or minimizing consumption of processed foods ; eating meals without adding extra salt at the table; avoid eating foods prepared outside of home (**Table 7.7**).

### Patterns by background characteristics (Table 7.7):

- A higher proportion of older adults reported controlling salt intake than younger adults.
- More men reported controlling salt intake than women (3.0% men vs 2.2% women).
- Adults residing in Municipalities were mostly likely to control salt intake compared to other adults.
- The highest percentage of adults who are controlling salt intake was in Sudoorpasshchim Province (6.1%), and lowest was in Province 2 (0.1%).
- Higher levels of education and household wealth are associated with higher percentage of adults who are currently doing something to control their salt intake (**Figure 7.10**).

**Figure 7.10** Differentials in salt reducing behaviours by education and wealth amongst adults aged 15-69, Nepal STEPS Survey 2019



## **LIST OF TABLES:**

For more information on physical activity, see the following tables:

**Table 7.1 Estimated average population salt intake**

**Table 7.2 Practice of adding salt and salty sauces to food while eating**

**Table 7.3 Perceived intake of salt and salty sauce**

**Table 7.4 Consumption of processed food high in salt**

**Table 7.5 Knowledge on salt intake and recommendations**

**Table 7.6 Knowledge on salt intake and health consequences**

**Table 7.7 Currently controlling salt intake and methods**

**Table 7.1 Estimated average population salt intake**

Estimated average population salt intake amongst adults aged 15-69 based on spot urinary sodium, according to background characteristics [Nepal STEPS, 2019]

Background characteristic	Average daily salt intake (g/day)			
	Mean	95% CI	Number of participants (N)	
<b>Age</b>				
15-24	8.9	8.7	9.2	614
25-39	9.4	9.2	9.5	1617
40-54	9.3	9.1	9.4	1245
55-69	8.7	8.5	8.8	885
<b>Sex</b>				
Women	8.7	8.6	8.8	2761
Men	9.6	9.4	9.8	1600
<b>Residence</b>				
Metropolitan/ sub-metropolitan	9.1	8.9	9.3	557
Municipality	9.2	9.0	9.3	2196
Rural Municipality	9.1	8.9	9.3	1608
<b>Province</b>				
Province 1	9.2	9.0	9.4	711
Province 2	8.9	8.6	9.2	713
Province 3	9.3	9.0	9.6	674
Gandaki Province	9.2	8.9	9.5	726
Province 5	8.7	8.2	9.2	96
Karnali Province	9.5	9.2	9.7	717
Sudoorapashchim Province	9.1	9.0	9.3	724
<b>Education</b>				
No education	9.0	8.9	9.1	2152
Primary	9.2	9.0	9.4	829
Secondary	9.3	9.1	9.6	858
More than secondary	9.1	8.8	9.5	522
<b>Wealth quintile</b>				
Lowest	9.2	9.0	9.3	1281
Second	9.2	9.0	9.5	831
Middle	9.0	8.8	9.2	749
Fourth	9.1	8.8	9.4	670
Highest	9.2	9.0	9.4	830
<b>Age (previous, 2013)</b>				
15-29	9.1	8.9	9.3	1,082
30-44	9.4	9.2	9.5	1,597
45-69	8.9	8.8	9.1	1682
Total (15-39)	9.2	9.0	9.3	2231
Total (40-69)	9.0	8.9	9.2	2,130
<b>Total (15-69)</b>	<b>9.1</b>	<b>9.0</b>	<b>9.2</b>	<b>4361</b>

\*Estimations derived from INTERSALT Southern Europe equation:

$$\text{Male: } \left( 20.061 + 0.45 \times \text{Naspat} \left( \frac{\text{mmol}}{\text{l}} \right) \right) - 3.09 \times \text{Crsput} \left( \frac{\text{mmol}}{\text{l}} \right) - 4.16 \times \text{BMI} \left( \frac{\text{kg}}{\text{m}^2} \right) + 0.72 \times \text{Age (year)}$$

$$\text{Female: } \left( 21.98 + 0.33 \times \text{Naspat} \left( \frac{\text{mmol}}{\text{l}} \right) \right) - 2.44 \times \text{Crsput} \left( \frac{\text{mmol}}{\text{l}} \right) + 2.42 \times \text{BMI} \left( \frac{\text{kg}}{\text{m}^2} \right)$$

$$2.34 \times \text{Age (year)} - 0.03 \times \text{Age}^2(\text{year})$$

**Table 7.2 Practice of adding salt and salty sauces to food while eating**

		Percent distribution of adults aged 15-69 by frequency of adding salt or salty sauces to food while eating, according to background characteristics [Nepal STEPS, 2019]									
		Percent of adults who add salt to food while eating			Percent of adults who add salty sauces to food while eating			Percent of adults who always or often add either salt or salty sauces to food while eating			
Background characteristic		Often / always	Some-times	Rarely / never	Number of participants (N)	Often / always	Some-times	Rarely / never	Number of participants (N)	Often / always	Number of participants (N)
Age											
15-24	5.2	36.9	57.9	840	7.9	44.3	47.8	81.5	11.7	842	
25-39	5.6	34.5	59.9	2084	4.3	31.9	63.8	2025	9.2	2086	
40-54	6.6	30.4	63.0	1570	2.5	21.6	75.8	1509	8.3	1571	
55-69	5.0	33.8	61.3	1086	1.3	20.5	78.3	1030	5.7	1087	
Sex											
Women	6.5	33.7	59.8	3585	2.9	29.8	67.3	3450	8.7	3590	
Men	4.6	34.8	60.6	1995	6.3	33.6	60.2	1929	9.8	1966	
Residence											
Metropolitan/ sub-metropolitan	5.1	37.6	57.3	702	4.5	32.8	62.7	697	9.4	704	
Municipality	5.0	35.4	59.5	2749	4.8	30.6	64.7	2629	9.0	2751	
Rural Municipality	6.6	31.6	61.8	2129	4.1	32.8	63.1	2053	9.4	2131	
Province											
Province 1	7.7	35.2	57.1	803	4.6	40.6	54.8	784	11.2	804	
Province 2	3.7	36.6	59.7	802	2.0	26.9	71.1	793	5.2	803	
Province 3	2.1	25.4	72.5	756	6.2	31.2	62.5	750	7.9	758	
Gandaki Province	5.4	31.8	62.9	793	4.7	28.2	67.0	769	8.8	793	
Province 5	5.5	35.3	59.2	797	4.7	27.7	67.7	776	9.1	797	

Karnali Province	6.9	41.6	51.5	805	6.2	37.3	56.5	748	12.0	805
Sudoopashchim Province	10.1	37.0	52.9	824	4.9	32.3	62.8	759	13.8	826
<b>Education</b>										
No education	6.4	33.7	59.9	2782	2.1	26.0	71.9	2644	7.5	2785
Primary	6.2	36.5	57.3	1049	3.4	35.2	61.4	1014	9.3	1051
Secondary	4.6	36.6	58.8	1088	6.8	37.1	56.1	1065	10.5	1088
More than secondary	4.4	28.7	66.9	660	8.3	32.2	59.5	655	11.3	611
<b>Wealth quintile</b>										
Lowest	5.7	37.4	56.9	1647	1.9	27.9	70.2	1514	6.8	1649
Second	8.7	34.8	56.5	1059	4.6	32.6	62.8	1013	11.7	1060
Middle	4.4	34.8	60.8	949	4.0	34.0	62.1	933	8.1	949
Fourth	5.4	30.5	64.2	875	5.6	30.7	63.7	871	10.1	877
Highest	4.0	33.5	62.5	1050	6.3	32.6	61.1	1048	9.4	1051
<b>Age (previous, 2013)</b>										
15-29	5.6	36.5	58.0	1461	6.9	41.0	52.1	1423	11.3	1464
30-44	5.1	32.3	62.7	2037	3.3	26.1	70.6	1962	7.8	2038
45-69	6.3	32.5	61.3	2082	1.6	21.4	77.0	1994	7.1	2084
Total (15-39)	5.4	35.5	59.1	2924	5.8	37.0	57.3	2840	10.2	2928
Total (40-69)	6.0	31.7	62.3	2656	2.0	21.2	76.8	2539	7.3	2658
<b>Total (15-69)</b>	<b>5.6</b>	<b>34.2</b>	<b>60.1</b>	<b>5580</b>	<b>4.5</b>	<b>31.6</b>	<b>63.9</b>	<b>5379</b>	<b>9.2</b>	<b>5586</b>

**Table 7.3 Perceived intake of salt and salty sauce.**

Percent of adults aged 15-69 who perceive their salt or salty sauce intake to be far too much/too much; just right; far too little/too little, according to background characteristics [Nepal STEPS, 2019]

Background characteristic	Perceived salt intake				Perceived salty sauce intake:				Number of participants (N)
	Far too much / too much	Just right	Far too little/ too little	Don't know	Far too much / too much	Just right	Far too little/ too little	Don't know	
<b>Age</b>									
15-24	9.0	81.8	9.1	0.1	2.6	47.3	45.5	4.6	843
25-39	11.9	75.2	11.9	1.0	2.9	40.9	49.9	6.2	2087
40-54	10.4	71.0	17.2	1.4	1.3	31.8	53.4	13.5	1574
55-69	10.7	66.4	20.1	2.9	2.1	33.6	50.5	13.9	1089
<b>Sex</b>									
Women	11.6	74.4	12.7	1.3	2.6	36.6	51.6	9.2	3595
Men	9.6	75.5	14.0	0.8	2.1	43.3	47.2	7.4	1998
<b>Residence</b>									
Metropolitan/ sub-metropolitan	8.1	75.0	15.0	2.0	0.5	38.7	55.4	5.4	705
Municipality	11.3	74.5	13.9	0.3	2.8	40.4	48.7	8.1	2755
Rural Municipality	10.3	75.6	12.1	2.0	2.3	39.1	49.4	9.3	2133
<b>Province</b>									
Province 1	7.8	77.0	11.5	3.8	1.8	47.0	43.1	8.1	804
Province 2	9.7	76.8	13.4	0.1	2.7	42.0	47.3	8.0	803
Province 3	6.1	79.7	14.0	0.2	1.9	46.4	43.0	8.7	759
Gandaki Province	14.9	68.7	16.0	0.4	2.0	38.1	54.2	5.8	793
Province 5	12.9	73.2	13.0	1.0	2.5	36.0	55.7	5.8	797
Karnali Province	12.8	71.0	15.8	0.4	3.3	35.5	50.0	11.3	808
Sudurpashchim Province	15.0	71.4	12.8	0.7	3.2	25.5	57.9	13.5	829
<b>Education</b>									
No education	11.8	70.6	15.8	1.9	2.5	36.0	48.8	12.7	2792
Primary	9.5	78.5	10.9	1.0	2.3	41.7	48.3	7.7	1051
Secondary	10.5	76.8	12.2	0.5	2.3	43.4	49.4	4.9	1088
More than secondary	9.4	78.4	12.1	0.0	2.5	40.9	53.4	3.3	661
<b>Wealth quintile</b>									
Lowest	11.1	76.8	11.4	0.8	2.3	34.2	49.0	14.5	1653
Second	9.7	74.9	12.5	2.9	1.5	40.3	46.9	11.3	1062
Middle	11.5	76.4	11.4	0.7	4.1	37.4	52.7	5.9	949

Fourth	11.2	74.0	13.8	0.9	2.1	44.3	45.9	7.6	878
Highest	9.8	72.5	17.6	0.1	2.0	42.5	53.3	2.3	1051
<b>Age (previous)</b>									
15-29	9.9	80.5	9.1	0.5	2.6	46.4	46.0	5.1	1466
30-44	11.9	72.3	15.0	0.8	2.5	36.8	52.2	8.5	2039
45-69	10.6	68.2	18.8	2.3	1.8	31.7	52.8	13.7	2088
Total (15-39)	10.7	77.9	10.7	0.6	2.8	43.5	48.1	5.6	2930
Total (40-69)	10.5	69.2	18.3	1.9	1.6	32.5	52.3	13.6	2663
<b>Total (15-69)</b>	<b>10.6</b>	<b>74.9</b>	<b>13.3</b>	<b>1.1</b>	<b>2.4</b>	<b>39.8</b>	<b>49.5</b>	<b>8.3</b>	<b>5593</b>

**Table 7.4 Consumption of processed food high in salt: men and women**

Percent of men and women aged 15-69 who often to always, sometimes, never to rarely eat processed foods high in salt, according to background characteristics [Nepal STEPS, 2019]

Background characteristic	Total				Men				Women			
	Often / always		Rarely / never		Often / always		Rarely / never		Often / always		Rarely / never	
<b>Age</b>												
15-24	33.6	46.9	19.5	839	33.5	47.0	19.5	273	33.7	46.8	19.6	566
25-39	20.3	47.1	32.6	2078	23.1	42.9	34.0	614	18.0	50.6	31.4	1464
40-54	9.1	38.9	52.0	1551	11.2	39.8	49.0	599	7.1	38.2	54.7	952
55-69	4.9	34.4	60.8	1073	6.1	33.9	59.9	493	3.5	34.9	61.6	580
<b>Sex</b>												
Women	18.1	45.1	36.8	3652	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Men	21.1	42.1	36.9	1979	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Residence</b>												
Metropolitan/ sub-metropolitan	16.0	45.4	38.5	701	12.5	46.4	41.1	275	19.6	44.5	36.0	426
Municipality	19.2	42.8	38.0	2721	20.5	40.1	39.4	951	18.0	45.2	36.7	1770
Rural Municipality	20.8	44.4	34.8	2119	24.1	43.8	32.1	753	17.9	45.0	37.1	1366
<b>Province</b>												
Province 1	21.1	46.8	32.1	796	27.8	43.9	28.4	283	15.2	49.4	35.5	513
Province 2	14.3	44.7	41.0	797	13.0	45.9	41.0	350	15.6	43.5	40.9	447
Province 3	22.0	39.7	38.3	758	23.7	38.2	38.2	302	20.3	41.3	38.4	456
Gandaki Province	15.1	46.5	38.4	783	13.6	47.9	38.6	265	16.5	45.3	38.2	518
Province 5	25.6	37.8	36.6	793	26.2	34.8	39.1	266	25.1	40.3	34.6	527
Karnali Province	21.2	44.7	34.1	796	26.1	42.8	31.1	256	17.2	46.3	36.6	5540
Sudurpashchim Province	13.7	50.4	35.9	818	14.7	46.6	38.7	257	13.0	53.2	33.8	561

<b>Education</b>	9.7	40.4	49.9	2754	13.7	39.7	46.5	780	7.2	40.8	52.0	1974
No education												
Primary	23.6	42.6	33.8	1042	22.9	39.4	37.8	421	24.3	45.8	30.0	621
Secondary	25.1	47.1	27.8	1084	24.9	45.3	30.4	462	26.1	49.6	24.3	622
More than secondary	30.3	47.9	21.9	660	26.9	44.3	28.9	316	33.7	51.5	14.7	344
<b>Wealth quintile</b>												
Lowest	12.9	41.7	45.4	1628	15.8	40.7	43.5	495	11.0	42.4	46.7	1133
Second	21.4	45.2	33.4	1051	22.0	46.6	31.4	365	20.9	44.2	35.0	686
Middle	23.0	44.0	33.0	944	29.5	39.7	30.8	342	17.4	47.6	35.0	602
Fourth	17.7	43.8	38.5	871	18.6	39.7	41.8	334	16.6	48.4	35.0	537
Highest	22.6	43.6	33.8	1047	19.3	43.8	36.9	443	26.3	43.3	30.4	604
<b>Age (previous 2013)</b>												
15-29	30.3	47.7	22.0	444	32.6	44.2	23.1	447	28.3	50.6	21.1	1010
30-44	13.9	42.9	43.2	2026	14.1	43.5	42.4	631	13.8	42.4	43.8	1395
45-69	7.0	37.6	55.4	2058	9.7	37.2	53.1	901	4.4	38.0	57.6	1157
Total (15-39)	25.8	47.0	27.2	2917	27.6	44.6	27.8	887	24.2	49.1	26.7	2030
Total (40-69)	7.4	37.2	55.5	2624	9.1	37.4	53.5	1092	5.8	36.9	57.3	1532
<b>Total (15-69)</b>	<b>19.5</b>	<b>43.7</b>	<b>36.8</b>	<b>5341</b>	<b>21.1</b>	<b>42.1</b>	<b>36.9</b>	<b>1979</b>	<b>18.1</b>	<b>45.1</b>	<b>36.8</b>	<b>3562</b>

**Table 7.5 Knowledge on salt intake and recommendations: Total**

Percent of adults aged 15-69 who find importance in lowering salt intake; percentage who's knowledge on maximum salt intake per day is within WHO recommendations; percent who think too much salt relate to health consequence, according to background characteristics [Nepal STEPS, 2019]

Background characteristic	Percent who think lowering salt intake to be:		Percent who's knowledge on maximum salt intake per day is within WHO recommendations			Number of participants (N)
	Important	Not important or unaware	Within recommendations ( $\leq 1 \text{ tsp or } 5 \text{ g/day}$ )	Above recommendation ( $> 1\text{tsp or } 5\text{g/day}$ )	Don't know	
<b>Age</b>						
15-24	83.2	16.8	42.1	37.1	20.8	843
25-39	81.0	19.0	39.1	37.2	23.7	2087
40-54	77.5	22.6	35.7	33.9	30.4	1574
55-69	70.4	29.6	31.0	35.7	33.2	1089
<b>Sex</b>						
Women	78.1	21.9	38.5	34.8	26.8	3595
Men	81.0	19.0	37.7	38.0	24.5	1998
<b>Residence</b>						
Metropolitan/ sub-metropolitan	89.2	10.8	43.8	37.9	18.3	705
Municipality	79.6	20.4	41.4	32.3	26.3	2755
Rural Municipality	76.8	23.2	32.0	41.7	26.3	2133
<b>Province</b>						
Province 1	72.1	27.9	31.4	35.0	33.7	804
Province 2	85.2	17.8	36.3	40.5	23.2	803
Province 3	78.0	22.0	41.5	26.4	32.1	759
Gandaki Province	77.5	22.5	34.9	45.7	19.5	793
Province 5	81.9	18.1	37.6	40.9	21.6	797
Karnali Province	74.7	25.3	44.9	35.7	19.5	808
Sudurpashchim Province	82.7	17.3	47.0	30.9	22.1	829
<b>Education</b>						
No education	72.1	27.9	29.1	39.3	31.6	2792
Primary	79.3	20.7	39.7	34.0	26.3	1051
Secondary	84.1	15.9	46.5	30.9	22.6	1088
More than secondary	91.2	8.8	45.7	40.1	14.2	661
<b>Wealth quintile</b>						
Lowest	28.5	71.6	32.0	38.3	29.7	1653
Second	24.7	75.3	32.8	36.9	30.3	1062
Middle	20.8	79.2	39.5	33.0	27.5	949
Fourth	15.4	84.6	38.4	38.2	23.4	878
Highest	13.5	86.6	48.0	35.0	17.1	1051
<b>Age (previous, 2013)</b>						
15-29	83.4	16.6	41.4	37.1	21.4	1466
30-44	79.0	21.0	36.9	36.3	26.8	2039
45-69	73.1	26.8	33.8	34.8	31.4	2088
Total (15-39)	81.9	18.1	40.3	37.2	22.5	2930
Total (40-69)	74.7	25.3	33.9	34.6	31.5	2663
<b>Total (15-69)</b>	<b>79.5</b>	<b>20.6</b>	<b>38.1</b>	<b>36.3</b>	<b>25.6</b>	<b>5593</b>

**Table 7.6 Knowledge on salt intake and health consequences: Total**

Percent of adults aged 15-69 who think too much salt is related to health consequence, according to background characteristics [Nepal STEPS, 2019]

		Percent who think that too much salt is related to:					Percent who think that too much salt is related to:							
		Percent who's correctly identified that salt intake is related to increased blood pressure or kidney diseases:			Total (%)		No health consequences		Increased blood pressure / kidney disease <sup>a</sup>		Other consequences: asthma / cancer / tuberculosis/ others		Don't know	Number of participants (N)
Background characteristic	Age	Correct	Incorrect	Total (%)	No health consequences	Increased blood pressure / kidney disease <sup>a</sup>	Other consequences: asthma / cancer / tuberculosis/ others	Don't know	Number of participants (N)					
<b>Sex</b>														
Women	65.3	34.7	100.0	1.1	65.3	8.7	31.7	3595	3595					
Men	77.1	22.9	100.0	1.3	77.1	10.0	20.5	1998	1998					
<b>Residence</b>														
Metropolitan/ sub-metropolitan	88.0	12.0	100.0	1.5	88.0	15.4	8.7	705	705					
Municipality	71.2	28.8	100.0	1.0	71.2	7.7	26.7	2755	2755					
Rural Municipality	66.3	33.7	100.0	1.3	66.3	10.3	30.4	2133	2133					
<b>Province</b>														
Province 1	71.5	28.5	100.0	0.7	71.5	6.6	26.3	804	804					
Province 2	79.8	20.2	100.0	0.6	79.8	10.7	19.3	803	803					
Province 3	80.2	19.8	100.0	0.5	80.2	8.8	18.1	759	759					
Gandaki Province	77.2	22.8	100.0	1.3	77.2	11.5	20.0	793	793					
Province 5	64.0	36.0	100.0	1.4	64.0	8.2	34.1	797	797					
Karnali Province	50.4	49.6	100.0	1.8	50.4	13.2	42.1	808	808					
Sudurpashchim Province	59.6	40.4	100.0	3.0	59.6	10.9	33.4	829	829					

Education							
	No education	42.5	100.0	2.0	57.5	9.5	38.8
Primary	68.8	31.2	100.0	1.1	68.8	10.6	28.0
Secondary	80.5	19.5	100.0	0.4	80.5	8.4	17.6
More than secondary	92.4	7.6	100.0	0.3	92.4	8.8	6.7
Wealth quintile							
Lowest	54.2	45.9	100.0	1.7	54.2	14.1	41.5
Second	62.9	37.1	100.0	1.0	62.9	7.6	34.1
Middle	69.5	30.6	100.0	1.1	69.5	8.7	27.5
Fourth	76.4	23.6	100.0	1.7	76.4	7.9	20.9
Highest	91.5	8.5	100.0	0.4	91.5	8.3	8.0
Age (previous 2013)							
15-29	75.6	24.4	100.0	0.9	75.64	8.9	22.2
30-44	72.0	28.0	100.0	1.1	72.01	8.7	25.2
45-69	61.4	38.6	100.0	2.1	61.42	10.8	35.0
Total (15-39)	74.5	25.5	100.0	0.9	74.5	8.5	23.2
Total (40-69)	63.8	36.2	100.0	1.6	63.8	10.9	32.7
<b>Total (15-69)</b>	<b>70.9</b>	<b>29.1</b>	<b>100.0</b>	<b>0.0</b>	<b>70.9</b>	<b>9.3</b>	<b>26.4</b>
							<b>5593</b>

**Table 7.7 Currently controlling salt intake and methods: Total**

Percent of adults aged 15-69 who often to always, sometimes, never to rarely eat processed foods high in salt, according to background characteristics [Nepal STEPS, 2019]

		Amongst adults who are currently doing anything to controlling salt intake, percent of adults that use the method of							
		Percent who are currently doing anything to control salt intakes:							
Background characteristic		Number of participants (N)	Avoid/minimize consumption of processed foods	Look at the salt or sodium content on food label	Buy low salt/sodium alternatives	Avoid eating foods prepared outside of home	Eat meals without adding extra salt at the table	Cook meals such as rice or bread without adding salt	Number of participants (N)
Age									
15-24	2.0	815	40.6	23.5	6.3	45.8	38.5	41.5	38.3
25-39	2.4	2030	86.4	55.8	33.1	28.1	26.6	58.1	44.0
40-54	3.1	1514	76.5	18.3	36.3	21.5	61.5	86.4	49.0
55-69	3.3	1037	68.1	15.6	29.5	16.6	68.3	80.3	47.0
Sex									
Women	2.2	3470	70.7	32.8	27.3	28.7	44.5	65.0	43.9
Men	3.0	1926	63.2	21.0	14.5	31.4	44.7	56.4	43.7
Residence									
Metropolitan/ sub-metropolitan	1.9	689	83.4	16.9	39.2	41.6	49.6	50.5	56.2
Municipality	3.1	2653	79.0	46.4	38.1	28.1	36.0	65.3	38.2
Rural Municipality	1.9	2054	51.9	10.2	3.8	27.0	59.9	67.8	51.8
Province									
Province 1	4.4	774	70.5	35.0	30.2	24.6	27.6	43.4	46.7
Province 2	0.1	787	92.1	19.0	58.6	0.0	93.1	81.8	32.4
Province 3	1.6	753	89.6	47.6	32.5	23.3	37.7	68.6	40.1
Gandaki Province	3.8	775	50.0	0.0	0.0	6.6	14.3	56.8	3.3
Province 5	1.7	769	76.5	44.9	31.8	80.5	49.9	77.0	42.8

Karnali Province	2.6	760	60.4	35.7	20.1	37.5	49.0	70.2	58.5	19
Sudurpashchim Province	6.1	778								43
<b>Education</b>										
No education	1.8	2656	62.8	13.8	13.7	28.9	52.4	81.0	62.1	62
Primary	2.9	1019	83.6	41.6	56.7	22.9	35.2	57.5	29.1	33
Secondary	3.3	1068	80.6	48.7	13.0	24.1	47.2	54.6	30.0	36
More than secondary	2.8	651	57.8	52.7	22.9	44.5	38.0	45.0	35.4	29
<b>Wealth quintile</b>										
Lowest	1.8	1549	49.4	29.2	1.8	55.2	27.2	61.2	45.0	30
Second	1.1	1027	90.8	40.1	40.1	5.1	18.4	58.5	43.4	15
Middle	2.5	912	57.9	33.7	36.0	25.7	52.3	69.8	51.4	28
Fourth	3.7	867	66.0	27.8	6.8	11.6	43.7	56.4	34.3	33
Highest	3.6	1041	95.8	35.1	47.3	32.9	61.0	71.5	41.9	54
<b>Age (previous 2013)</b>										
15-29	2.4	1420	60.7	43.1	17.1	41.6	23.4	51.5	39.6	33
30-44	2.5	1977	65.9	36.7	29.6	24.9	51.4	61.7	47.3	56
45-69	3.0	1999	75.6	13.8	39.1	15.2	66.2	87.5	45.9	71
Total (15-39)	2.3	2845	68.8	43.4	22.8	34.9	31.2	51.7	42.1	63
Total (40-69)	3.2	2551	73.5	17.3	34.0	19.8	63.9	84.2	46.4	97
<b>Total (15-69)</b>	<b>2.6</b>	<b>5396</b>	<b>70.7</b>	<b>32.8</b>	<b>27.3</b>	<b>28.7</b>	<b>44.5</b>	<b>65.0</b>	<b>43.9</b>	<b>160</b>



## CHAPTER 8

# PHYSICAL ACTIVITY

### Key Findings

- **Time spent on physical activity**
  - Total physical activity (in moderate-intensity minutes):
    - On average 299.2 minutes per day
    - Half of the population spent 210.0 or more minutes per day.
- **Insufficient levels of physical activity**
  - Among adults aged 18-69 years: 7.4% of adults (6.6% in women, and 8.2% in men) have insufficient levels of physical activity defined as <150 minutes of moderate-intensity activity per week.
  - Among adolescents age 15-17 years: 10.8% of adolescents (15.8% in girls, 6.3% in boys) have insufficient levels of physical activity defined as <60 minutes of moderate to vigorous intensity activity daily.
- **Percent contribution to total physical activity from each domain:**
  - Work: 61.5%.
  - Travelling from and to places: 31.2%
  - Recreational activities: 7.3% of total physical activity minutes
- **Time spent on sedentary activities**
  - On average adults (15-69 years) spend 201.2 minutes per day sitting or reclining.
  - Half of the population spent 120.0 minutes or more per day sitting or reclining

Insufficient physical activity and sedentary behaviour is a leading risk factor for global mortality and has major implications for the rising prevalence of NCDs<sup>1</sup>. Additionally, it accrues staggering economic cost through increased health-care expenditure and loss of productivity<sup>2</sup>. Participation in regular physical activity and reducing sedentary behaviours has substantial effects on increasing life expectancy and the primary prevention of several chronic diseases such as, cardiovascular disease, diabetes, hypertension, cancer, obesity and mental health at a population level<sup>3,4,5</sup>.

The 2025 global physical activity target aims for a 10% reduction relative to 2010<sup>6</sup>. Nepal has also incorporated it as one of the key targets in its 5-year multisectoral action plan for 2014-2020<sup>7</sup>. Policies to promote physical activity (mass media campaign combined with community-based education, motivational and environmental

- 1 Lee I-M, Shiroma EJ, Lobelo F, Puska P, Blair SN, Katzmarzyk PT. Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. *The Lancet*. 2012;380(9838):219-229. doi:10.1016/S0140-6736(12)61031-9.
- 2 Ding D, Lawson KD, Kolbe-Alexander TL, et al. The economic burden of physical inactivity: a global analysis of major non-communicable diseases. *The Lancet*. 2016;388(10051):1311-1324. doi:10.1016/S0140-6736(16)30383-X
- 3 Reiner M, Niermann C, Jekauc D, Woll A. Long-term health benefits of physical activity – a systematic review of longitudinal studies. *BMC Public Health* 2013;13(1):813. doi:10.1186/1471-2458-13-813
- 4 Ekelund U, Steene-Johannessen J, Brown WJ, et al. Does physical activity attenuate, or even eliminate, the detrimental association of sitting time with mortality? A harmonised meta-analysis of data from more than 1 million men and women. *The Lancet*. 2016;388(10051):1302-1310. doi:10.1016/S0140-6736(16)30370-1
- 5 Warburton DER. Health benefits of physical activity: the evidence. *Canadian Medical Association Journal*. 2006;174(6):801-809. doi:10.1503/cmaj.051351
- 6 World Health Organization. Global action plan for the prevention and control of NCDs 2013-2020. Geneva.
- 7 Multisectoral Action Plan for the Prevention and Control of Non Communicable Diseases (2014-2020). Kathmandu: Government of Nepal.

programmes aimed at supporting behavioral change) are one of the recommended interventions to prevent and control non-communicable diseases<sup>8</sup>.

This chapter focuses on indicators related to physical activity and sedentary behavior. This information will help Nepal assess trends and progress towards physical activity targets specified in its multisectoral action plan as well as evaluation of current policies and programs in place.

#### **Current relevant policies and programs in Nepal for promoting physical activity:**

There are no specific current relevant policies and programs guidelines in Nepal for promoting physical activity. However, policies to promote physical activity for the prevention and control of NCDs, incorporated in Government of Nepal, multisectoral action plan (2014-2020) was mentioned above<sup>7</sup>. Besides that national health sector strategy 2015-20 has included as one of outcome and suggested key interventions to promote healthy lifestyle via school health program and other activities<sup>9</sup>.

Current WHO physical activity guidelines (**Figure 8.1**) for adults are expressed in minutes of physical activity throughout the week of two levels of intensities for ease of understanding amongst the public. The underlying standardized measurement to assess both quantity and intensity of physical activity is MET, metabolic equivalent of task, which is assigned to each domain of activity and levels of intensity as (**Figure 8.2**) which is based on the Global Physical Activity Questionnaire (GPAQ)<sup>10</sup>. An example is given on the calculations for standardized conversion between regular minutes of varying levels and MET minutes.

**Figure 8.1. WHO Physical activity guidelines 2010<sup>11</sup>:**

Age group	Current WHO guidelines
5-17 years*	<ul style="list-style-type: none"><li>at least 60 minutes of moderate- to vigorous-intensity physical activity daily for children and adolescents aged 5-17.</li></ul>
18 years and above*	<ul style="list-style-type: none"><li>at least 150 minutes of moderate-intensity physical activity per week OR</li><li>75 minutes of vigorous-intensity physical activity per week OR</li><li>an equivalent combination of moderate- and vigorous intensity physical activity which equates to 600 MET-minutes per week</li></ul>

\*refer to guidelines for more detailed guidelines.

**Figure 8.2. Metabolic equivalent of task per domain and intensity**

Domain	Intensity level and MET value per minute
Work	Moderate-intensity = 4 MET per minute Vigorous-intensity = 8 MET per minute
Transport (Cycling and walking)	Moderate-intensity = 4 MET
Recreation	Moderate-intensity = 4 MET per minute Vigorous-intensity = 8 MET per minute

#### **Example:**

**Activity:** 30 minutes of moderate-intensity physical activity and 60 min of vigorous-intensity physical activity in one day.

#### **MET value per day:**

(30 min x 4) METs + (60 min x 8) METs =600 METs /day

## **8.1 Time spent on physical activity**

Total minutes of physical activity were obtained by inquiring respondents about time spent on physical activity in three key domains (work, transport, and recreational) at moderate and vigorous intensity levels on a typical day each week. The vigorous intensity minutes were converted into moderate intensity minutes using a multiplication factor of 2 and ‘total’ physical activity minutes were expressed as moderate-intensity minutes per day.

8 WHO. The Updated Appendix of 3 of the Global Action Plan for the Prevention and Control of NCDs 2013-2020.

9 Ministry of Health and Population. Nepal Health Sector Strategy 2015-2020. Kathmandu: Government of Nepal,

10 Armstrong T, Bull F. Development of the World Health Organization Global Physical Activity Questionnaire (GPAQ). J Public Health 2006; 14:66-70.

11 WHO. Global recommendations on physical activity for health. Geneva, World Health Organization (WHO), 2010

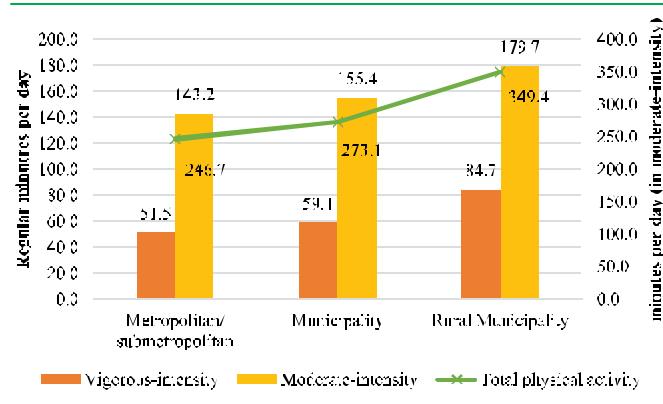
On average, adults aged 15-69 in Nepal spent 299.2 minutes on moderate-intensity or equivalent level physical activity per day while the median was 210.0 minutes. In other words, 50% of the population engaged in 210.0 or more minutes of moderate-intensity physical activity each day which is above current recommendations (**Table 8.1**).

In terms of intensity, the population average minutes per day for vigorous- and moderate-intensity physical activity were 68.0 and 161.3 minutes, respectively. Fifty percent of the population did not participate in any (median=0 minutes) vigorous-intensity physical activity. On the other hand, the median for moderate-intensity activity was 137.1 minutes, which is close to the current recommendations (**Table 8.1**).

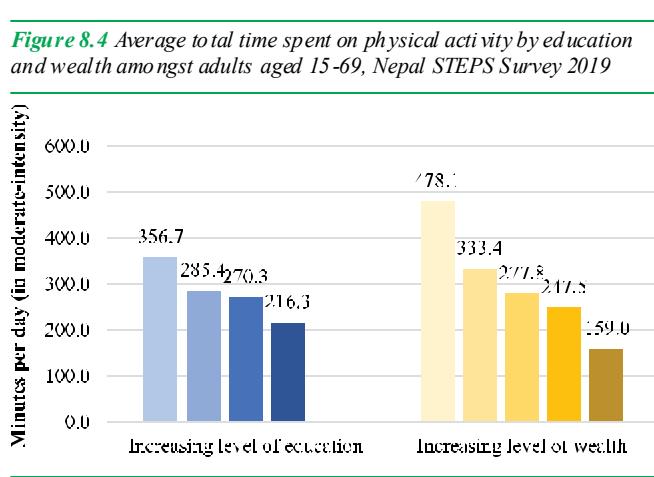
#### Patterns by background characteristics (**Table 8.1**):

- Total average minutes of physical activity is consistently higher than the median, which suggest the average is influenced by a number of adults that reported very long hours of engagement in physical activity .
- Average total minutes of physical activity were highest amongst 40-54 and 25-39 age groups whom are in their most labor productive years.
- Although women had lower average total minutes of physical activity than men (282.2 min vs 318.3), women participated in longer hours of moderate-intensity activities (169.8 min vs 156.1 min) while men participated in more vigorous-intensity activities (56.3 min for women vs 81.1 min for men) (**Table 8.1**)
- Participation in physical activity was higher in rural municipalities (**Figure 8.3**), as also reflected in highest average total minutes in Karnali province and Sudoorparashchim province, where 50% of adults participated in 300.0 min. and 282.9 min or more of physical activity per day respectively.
- Total minutes of physical activity increases with lower levels of education and household wealth (**Figure 8.4**).

**Figure 8.3** Average time spent on total physical activity, moderate-intensity activity and vigorous intensity activity by residence amongst adults aged 15-69, Nepal STEPS Survey 2019



**Figure 8.4** Average total time spent on physical activity by education and wealth amongst adults 15-69, Nepal STEPS Survey 2019



#### Trends between 2013<sup>12</sup> and 2019 survey:

- Average total time spent on physical activity has reduced from 326.8 to 299.2 between 2013 and 2019 (**Figure 8.5**).

<sup>12</sup> 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

- While average time spent on moderate-intensity physical activity reduced (208.0 min in 2013 vs 161.3 min in 2019), average time spent on vigorous-intensity increased (59.4 min in 2013 vs 68.0 min in 2019) (Figure 8.5).

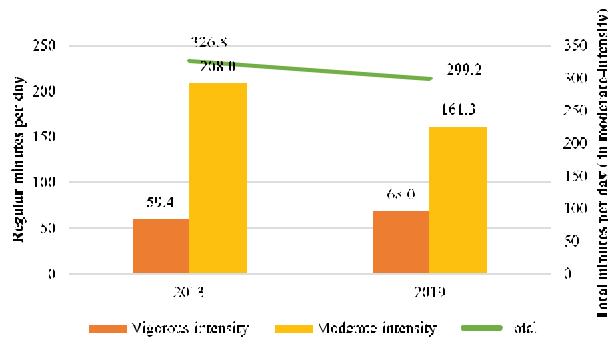
## 8.2 Insufficient levels of physical activity

Percent of insufficiently active population was estimated separately for 15-17 years and 18-69 year age group due to differences in recommendations as discussed earlier (Figure 8.1). The prevalence of insufficient levels of physical activity was 7.4% and 10.8% amongst adults aged 18-69 and adolescents aged 15-17, respectively (Table 8.2).

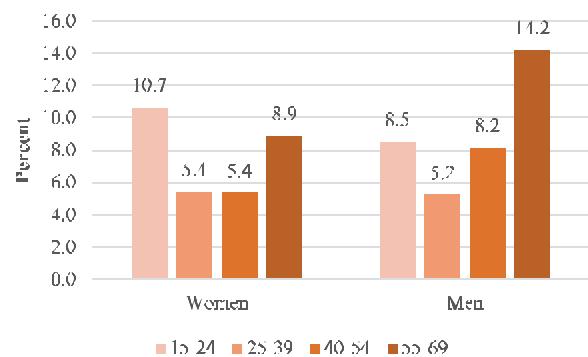
### Patterns by background characteristic (Table 8.2):

- Alarmingly, a higher proportion of adolescents were insufficiently physically active compared to adults. (10.8% in adolescent's vs 7.4% in adults).
- The highest proportion of adults with insufficient levels of physical activity was in the youngest age group amongst women, and in the oldest age group amongst men (Figure 8.6)
- Amongst adolescents 15-17 years old, prevalence of insufficient physical activity was substantially higher in girls than in boys (15.8% in girl's vs 6.3% boys). The opposite relationship is seen amongst adults, though the difference is smaller (8.2% in men vs 6.6% in women) (Table 8.2).
- Province 3 and *Gandaki province*, the two most urban provinces, have the highest prevalence of insufficient physical activity (Figure 8.7)
- The proportion of insufficiently active adults increased with increasing household wealth (Figure 8.8).

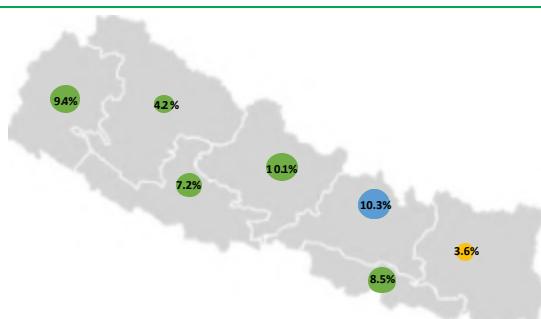
**Figure 8.5** Trends between 2013 and 2019 in average minutes of total physical activity, vigorous-intensity activity and moderate-intensity activity, Nepal STEPS Survey



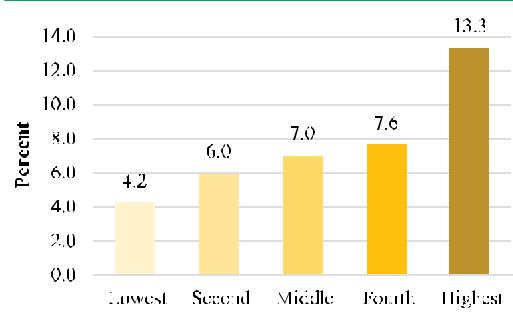
**Figure 8.6** Prevalence of insufficient physical activities by age group amongst women and men aged 15-69, Nepal STEPS Survey 2019



**Figure 8.7** Prevalence of insufficient physical activity by province amongst adults aged 15-69, Nepal STEPS Survey 2019



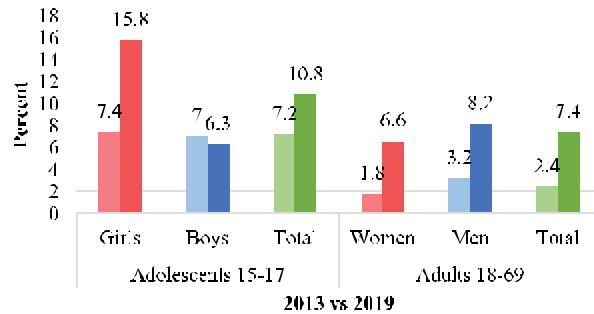
**Figure 8.8** Prevalence of insufficient physical activity by wealth amongst adults aged 15-69, Nepal STEPS Survey 2019



### Trends between 2013<sup>12</sup> and 2019 survey:

- Prevalence of insufficient physical activity has increased from 2.4% to 7.4% for adults aged 18-69 and from 7.2% to 10.8 % for adolescents aged 15-17 (**Figure 8.9**).
- The increase in prevalence is more noticeable for women than for men (**Figure 8.9**).

**Figure 8.9** Trends in prevalence of insufficient physical activity between 2013 to 2019, Nepal STEPS Survey



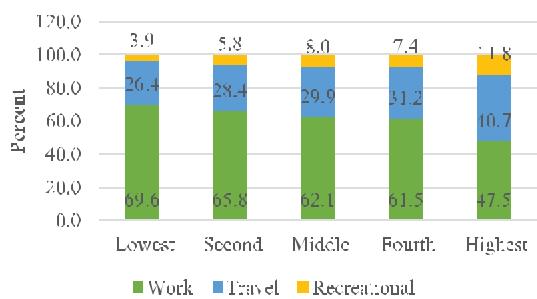
### 8.3. Percent contribution to physical activity from each domain.

Amongst adults who engaged in some level of physical activity, 61.5% of the total physical activity minutes came from physical activity at work, 31.2% from travel, and only 7.3% were from recreational activities.

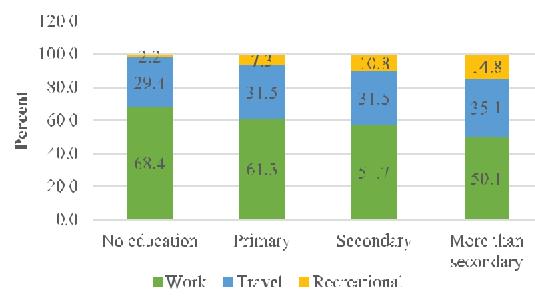
#### Patterns by background characteristics (Table 8.3):

- Women participate in less recreational physical activities compared to men (3.0% in women vs 12.2% in men).
- The contribution from travel was highest in metropolitan and sub metropolitan areas (39.6%), and the contribution from work was highest in rural municipalities (64.7%).
- The proportional contribution from work to the total physical activity declines with increasing household wealth (**Figure 8.10**), while the reverse is true for physical activity from travel and recreational activities. Similar patterns were observed with increasing educational levels. (**Figure 8.11**).

**Figure 8.10** Contribution to total physical activity from each domain by wealth amongst adults aged 15-69, Nepal STEPS Survey 2019



**Figure 8.11** Contribution to total physical activity from each domain by education level amongst adults aged 15-69, Nepal STEPS Survey 2019



#### **Trends between 2013<sup>12</sup> and 2019 survey:**

- Percent contribution of physical activity from work reduced (64.8% in 2013 to 61.5% in 2019), while contribution from travel (31.0% in 2013 to 31.2% in 2019) and recreational activities (4.2% in 2013 to 7.3% in 2019) increased.

#### **8.4 Time spent on sedentary activities**

On average, adults spend 201.2 minutes per day on sedentary activities such as sitting or reclining excluding sleep time. Fifty percent of adults spent 120.0 minutes or more per day on sedentary activities.

##### **Patterns by background characteristics (Table 8.4):**

- Average time spent on sedentary activities increased with age.
- The average time spent in sedentary activity is significantly higher in Metropolitan and submetropolitan areas.
- Province 2 had the highest average time (223.7 min) and Sudoorpaschim province had the lowest average time (170.8 min) (**Table 8.4**).
- Median time spent on sedentary activities increased with wealth.

##### **Trends between 2013<sup>12</sup> and 2019 survey:**

- Average time spent on sedentary activity increased from 152.7 min in 2013 to 201.2 min in 2019.

## **LIST OF TABLES:**

For more information on physical activity, see the following tables:

**Table 8.1 Average and median time spent on physical activity per day by intensity level: all participants**

**Table 8.2 Percent not meeting physical activity recommendations: all participants**

**Table 8.3 Proportional contribution of each domain to total physical activity: all participants**

**Table 8.4 Average and median time spent on sedentary activity on a typical day: all participants**

**Table 8.1 Average and median time spent on physical activity per day by intensity level: all participants**

		Average and median time (minutes per day) spent on vigorous- and moderate-intensity physical activity amongst adults (15-69 years), according to background characteristics [Nepal STEPS, 2019]													
		Vigorous intensity physical activity (min. per day)			Moderate intensity physical activity (min. per day)			Total physical activity in minutes of moderate-intensity activity (min. per day)**							
Background characteristic	Age	Average	Median	p25	Interquartile range	Total	Median	p25	Interquartile range	Total	Average	Median	p25	Interquartile range	Total participants (N)
		(N)	(N)	(N)	(N)	(N)	(N)	(N)	(N)	(N)	(N)	(N)	(N)	(N)	
<b>Sex</b>															
Women	56.3	0.0	0.0	68.6	357.5	169.8	150.0	68.6	240.0	354.6	282.2	188.6	90.0	368.6	3529
Men	81.1	25.7	0.0	102.9	198.9	156.1	124.3	60.0	214.3	197.1	318.3	231.4	98.6	420.0	1964
<b>Residence</b>															
Metropolitan/ submetropolitan Municipality	51.5	25.7	0.0	51.4	70.4	143.2	120.0	60.0	188.6	70.0	246.7	171.4	85.7	274.3	699
Rural Municipality	59.1	0.0	0.0	68.6	274.1	155.4	130.0	60.0	222.9	271.2	273.1	184.3	73.6	377.1	2700
Sudo orpashim Province	84.7	34.3	0.0	120.0	211.9	179.7	150.0	81.4	240.0	210.5	349.4	246.4	120.0	480.0	2094
<b>Province</b>															
Province 1	70.6	0.0	0.0	85.7	80.3	159.9	145.7	81.4	210.0	80.0	302.2	240.0	110.0	368.6	799
Province 2	46.8	0.0	0.0	51.4	79.9	138.5	120.0	64.3	188.6	80.0	233.7	171.4	83.6	300.0	796
Province 3	56.6	0.0	0.0	68.6	75.8	141.8	124.3	42.9	210.0	74.8	259.4	180.0	64.3	385.7	748
Gandaki Province	59.0	0.0	0.0	80.0	79.3	163.6	150.0	60.0	240.0	77.8	280.4	240.0	98.6	375.0	778
Province 5	64.5	0.0	0.0	70.0	79.4	173.3	180.0	68.6	240.0	79.2	302.7	210.0	102.9	398.6	789
Karnali Province	90.9	38.6	0.0	137.1	80.0	232.0	137.1	102.9	300.0	79.8	414.5	300.0	154.3	591.4	791
Sudo orpashim Province	116.1	51.4	0.0	180.0	81.7	172.4	154.3	53.6	257.1	80.1	410.8	282.9	98.6	600.0	792
<b>Education</b>															
No education	90.4	25.7	0.0	137.1	277.4	175.6	120.0	80.0	240.0	274.6	356.7	270.0	120.0	497.1	2732

Primary	67.5	8.6	0.0	85.7	1046	149.9	137.1	60.0	210.0	1036	285.4	180.0	77.1	372.9	1032
Secondary	53.5	0.0	0.0	68.6	1084	164.1	137.1	68.6	222.9	1078	270.3	197.1	94.3	342.9	1074
More than secondary	34.1	0.0	0.0	34.3	659	147.9	110.0	60.0	200.0	656	216.3	145.7	64.6	278.6	654
<b>Wealth quintile</b>															
Lowest	130.4	68.6	0.0	180.0	1640	218.6	180.0	120.0	300.0	1621	478.1	368.6	180.0	660.0	1612
Second	75.1	34.3	0.0	120.0	1056	183.7	162.9	57.1	240.0	1055	333.4	265.7	139.3	454.3	1049
Middle	61.3	0.0	0.0	77.1	945	154.3	141.4	68.6	215.7	933	277.8	222.9	111.4	385.7	930
Fourth	49.9	0.0	0.0	51.4	874	147.3	128.6	60.0	210.0	872	247.5	180.0	77.1	304.3	868
Highest	23.1	0.0	0.0	12.9	1049	112.5	85.7	38.5	162.9	1036	159.0	100.0	51.2	200.0	1034
<b>Age (previous 2013)</b>															
15-29	60.2	8.6	0.0	64.3	1456	161.5	137.1	64.6	222.9	1450	282.1	199.3	88.6	364.3	1441
30-44	77.3	8.6	0.0	107.1	2026	172.9	150.0	74.3	240.0	2008	327.1	237.1	110.0	450.0	1997
45-69	70.9	0.0	0.0	120.0	2082	1560	128.6	60.0	222.9	2059	297.9	205.7	85.7	420.0	2055
Total (15-17)	32.0	8.6	0.0	60.0	219	147.3	135.0	85.7	210.0	219	210.4	180.0	108.6	260.0	217
Total (18-69)	70.8	0.0	0.0	102.9	5,345	162.4	137.1	62.9	235.7	5298	3063	214.3	90.0	407.1	5,276
<b>Total (15-69)</b>	<b>68.0</b>	<b>0.0</b>	<b>0.0</b>	<b>85.7</b>	<b>5564</b>	<b>161.3</b>	<b>137.1</b>	<b>64.3</b>	<b>231.4</b>	<b>5517</b>	<b>299.2</b>	<b>210.0</b>	<b>90.0</b>	<b>394.3</b>	<b>5493</b>

\* MET (Metabolic equivalent of task): for vigorous activity 1 minute equate to 8 units of MET; for moderate activity 1 minute equate to 4 units of MET. \*\*Minutes spent on vigorous-intensity activities per day are multiplied by 2, to derive equivalent minutes of moderate-intensity activities, which is then summed up to derive total physical activity in minutes of moderate-intensity activity per day

**Table 8.2 Percent not meeting physical activity recommendations: all participants**

Percent of men and women (18-69 years) not meeting physical activity recommendations\*, according to background characteristics [Nepal STEPS, 2019]

Background characteristic	Percent adults not meeting WHO physical activity recommendations: Total respondents		Percent women not meeting WHO physical activity recommendations: Total women		Percent men not meeting WHO physical activity recommendations: Total men (N)	
	Percent	(N)	Percent	(N)	Percent	Total men (N)
<b>Age**</b>						
15-24	9.6	843	10.7	566	8.5	268
25-39	5.3	2038	5.4	1431	5.2	607
40-54	6.7	1553	5.4	952	8.2	601
55-69	11.6	1068	8.9	580	14.2	488
<b>Residence</b>						
Metropolitan/ submetropolitan	6.4	699	6.9	424	5.9	275
Municipality	9.4	2700	9.9	1757	8.8	943
Rural Municipality	5.4	2094	3.5	1348	7.5	746
<b>Province</b>						
Province 1	3.6	799	3.6	517	3.6	282
Province 2	8.5	796	8.3	446	8.8	350
Province 3	10.3	748	9.4	449	11.2	299
Gandaki Province	10.1	778	7.6	519	13.0	259
Province 5	7.2	789	6.7	522	7.9	267
Karnali Province	4.2	791	4.5	536	3.8	255
Sudurpashchim Province	9.4	792	10.5	540	7.9	252
<b>Education</b>						
No education	6.9	2732	6.2	1960	7.9	772
Primary	9.5	1032	9.2	613	9.8	419
Secondary	7.0	1074	6.4	612	7.4	462
More than secondary	8.2	654	8.9	343	7.4	311
<b>Wealth quintile</b>						
Lowest	4.2	1612	4.3	1121	4.1	491
Second	6.0	1049	6.0	687	6.0	362
Middle	7.0	930	7.9	593	6.0	337
Fourth	7.6	868	7.4	533	7.8	335
Highest	13.3	1034	11.7	595	14.8	439
<b>Age (previous, 2013)</b>						
15-29	7.8	1441	8.8	1000	6.7	441
30-44	5.8	1997	5.1	1369	6.6	628
45-69	9.3	2055	7.0	1160	11.6	895
Total (15-17)	10.8	217	15.8	132	6.3	85.0
<b>Total (18-69)</b>	<b>7.4</b>	<b>5276</b>	<b>6.6</b>	<b>3,397</b>	<b>8.2</b>	<b>1,879</b>

\*WHO physical activity recommendations per age group: [15-17 years] At least 60 minutes of moderate- to vigorous-intensity physical activity daily; [18-64] At least 600 METs (metabolic equivalent of tasks) of physical activity throughout the week or 150 minutes of moderate-intensity physical activity per week or 75 minutes of vigorous-intensity physical activity per week; [65 years and above] same as age group 18-64 years. (For complete recommendation, please refer to Global recommendation on physical activity for health, 2010).

**Table 8.3 Proportional contribution of each domain to total physical activity: all participants**

Proportional share of total physical activity from work, travel and recreational activities amongst adults (15-69) who participate in some level of physical activity, according to background characteristics\* [Nepal STEPS, 2019]

Background characteristic	Average percent contribution to overall physical activity from:			Total (%)	Total participants (N)**
	Work	Travel from and to places	Recreational activities:		
<b>Age*</b>					
15-24	51.7	31.7	16.6	100.0	804
25-39	65.2	29.8	5.0	100.0	1964
40-54	66.8	30.7	2.5	100.0	1487
55-69	61.9	35.4	2.7	100.0	984
<b>Sex</b>					
Women	67.5	29.5	3.0	100.0	3380
Men	54.6	33.1	12.2	100.0	1859
<b>Residence</b>					
Metropolitan/ submetropolitan	50.9	39.6	9.4	100.0	663
Municipality	61.0	31.0	8.0	100.0	2543
Rural Municipality	64.7	29.5	5.8	100.0	2033
<b>Province</b>					
Province 1	61.3	31.0	7.7	100.0	777
Province 2	58.3	36.1	5.6	100.0	728
Province 3	64.0	27.9	8.0	100.0	712
Gandaki Province	66.1	28.3	5.6	100.0	727
Province 5	61.0	32.0	7.1	100.0	762
Karnali Province	63.3	30.1	6.5	100.0	778
Sudurpashchim Province	60.1	29.5	10.4	100.0	755
<b>Education</b>					
No education	68.4	29.4	2.2	100.0	2602
Primary	61.3	31.5	7.3	100.0	988
Secondary	57.7	31.5	10.8	100.0	1024
More than secondary	50.1	35.1	14.8	100.0	624
<b>Wealth quintile</b>					
Lowest	69.6	26.4	3.9	100.0	1566
Second	65.8	28.4	5.8	100.0	1010
Middle	62.1	29.9	8.0	100.0	882
Fourth	61.5	31.2	7.4	100.0	824
Highest	47.5	40.7	11.8	100.0	957
<b>Age (previous, 2013)</b>					
15-29	56.4	31.0	12.6	100.0	1392
30-44	66.5	30.0	3.5	100.0	1918
45-69	64.6	33.0	2.4	100.0	1929
			0.0		
Total (15-17)	40.9	35.9	23.2	100.0	212
Total (18-69)	63.2	30.8	6.0	100.0	5027
			0.0		
<b>Total (15-69)</b>	<b>61.5</b>	<b>31.2</b>	<b>7.3</b>	<b>100.0</b>	<b>5239</b>

\*proportion calculation based on amount of METs per activity among total amount of METs of total physical activity \*\* Adults who reported no participation in any type of physical activities were excluded.

**Table 8.4 Average and median time spent on sedentary activity on a typical day: all participants**

Average time (minutes per day) spent sitting or reclining among adults (15-69 years), according to background characteristics [Nepal STEPS, 2019]

Background characteristic	Average	95% CI		Median p25	Interquartile range p75		Total participants (N)
<b>Age</b>							
15-24	192.3	166.8	217.9	120.0	90.0	240.0	843
25-39	195.2	167.9	222.4	120.0	90.0	240.0	2087
40-54	206.8	176.9	236.7	120.0	60.0	300.0	1574
5-69	227.9	199.2	256.5	180.0	120.0	300.0	1089
<b>Sex</b>							
Women	203.4	178.7	228.1	120.0	90.0	270.0	3595
Men	198.8	172.8	224.7	120.0	90.0	270.0	1998
<b>Residence</b>							
Metropolitan/ submetropolitan	234.0	132.7	335.3	120.0	120.0	420.0	705
Municipality	205.1	170.9	239.3	120.0	80.0	300.0	2755
Rural Municipality	187.7	152.7	222.7	120.0	90.0	240.0	2133
<b>Province</b>							
Province 1	189.9	125.9	254.0	120.0	90.0	180.0	804
Province 2	223.7	171.0	276.5	180.0	120.0	300.0	803
Province 3	206.4	135.1	277.7	120.0	60.0	300.0	759
Gandaki Province	197.2	141.0	253.5	150.0	90.0	240.0	793
Province 5	210.9	151.3	270.5	155.0	90.0	300.0	797
Karnali Province	178.8	134.5	223.1	120.0	60.0	240.0	808
Sudurpashchim Province	170.8	119.8	221.7	120.0	60.0	180.0	829
<b>Education</b>							
No education	205.2	178.4	232.0	135.0	90.0	300.0	2792
Primary	192.7	165.8	219.7	120.0	90.0	240.0	1051
Secondary	207.9	176.6	239.2	120.0	90.0	300.0	1088
More than secondary	191.1	158.5	223.8	120.0	90.0	180.0	661
<b>Wealth quintile</b>							
Lowest	195.1	165.8	224.5	120.0	60.0	300.0	1653
Second	184.2	154.3	214.1	120.0	60.0	240.0	1062
Middle	203.6	167.9	239.3	125.0	90.0	260.0	949
Fourth	213.9	179.0	248.7	150.0	120.0	300.0	878
Highest	209.3	171.5	247.1	150.0	120.0	300.0	1051
<b>Age (previous, 2013)</b>							
15-29	193.0	168.2	217.8	120.0	90.0	240.0	1466
30-44	200.8	172.2	229.3	120.0	90.0	270.0	2039
45-69	215.8	188.4	243.2	150.0	90.0	300.0	2088
Total (15-17)	181.6	148.8	214.5	120.0	60.0	240.0	221
Total (18-64)	202.8	177.5	228.1	120.0	90.0	300.0	5372
<b>Total (15-69)</b>	<b>201.2</b>	<b>176.8</b>	<b>225.7</b>	<b>120.0</b>	<b>90.0</b>	<b>270.0</b>	<b>5593</b>

## CHAPTER 9

# ANTHROPOMETRY

### Key Findings

- **Nutritional status:**
  - *Underweight*: 10.2% of adults (9.8% women, 10.7% men)
  - *Overweight*: 20.0% of adults (19.8% women, 20.2% men)
  - *Obesity*: 4.3% of adults (5.3% women, 3.2% men)
  - *Mean population Body-mass Index (BMI)*: 22.7 kg/m<sup>2</sup> (22.8 kg/m<sup>2</sup> in women, 22.6 kg/m<sup>2</sup> in men)
- **Waist circumference and waist-hip ratio:**
  - *High waist circumference (WC)* ( $>88\text{cm}$  for women,  $>104\text{cm}$  for men): 11.8% (19.5% in women, 3.3% in men)
  - *High waist-hip ratio (WHR)* ( $\geq 0.85$  for women,  $\geq 0.90$  for men): 63.6% (70.2% in women, 56.3% in men)
- **Disease risk based on body-mass index and waist circumference:**
  - *Increased risk*: 19.9% (18.7% women, 21.2% men)
  - *High risk*: 7.5% (10.8% women, 3.9% men)
  - *Very high risk*: 3.3% (4.9% women, 1.5% men)

The global epidemic of overweight and obesity is rapidly becoming a major public health problem that paradoxically coexists with undernutrition in many developing countries. The increasing prevalence of overweight and obesity is associated with many chronic diseases including type 2 diabetes mellitus, cardiovascular disease (CVD), stroke, hypertension, non-alcoholic fatty liver disease, and certain cancers<sup>1,2</sup>. One of the nine voluntary global targets set under WHO Global Action Plan against NCDs<sup>3</sup> is to halt the rise in diabetes and obesity by 2025. Hence, Nepal has incorporated it as one of the key targets in its 5-year multisectoral action plan for 2014-2020<sup>4</sup>.

This chapter summarizes anthropometric parameters that reflect both general obesity (body-mass Index (BMI)), and abdominal obesity as measured by waist circumference (WC) and waist-to-hip ratio (WHR) and its associated disease risk. The indicators presented will help Nepal to assess current trends in overall nutrition status and the risk for chronic diseases and metabolic disorders and the effectiveness of current policies and programs.

### 9.1 Nutritional Status

In 2019, mean BMI of adult population (15-69 years) was 22.7kg/m<sup>2</sup> which is within normal weight range (i.e 18.5 to 24.9 kg/m<sup>2</sup>). 10.2% of adults were underweight (BMI<18.5 kg/m<sup>2</sup>) while 20% and 4.3% of adults were overweight (BMI 25-29.9) kg/m<sup>2</sup> and obese (BMI $\geq 30\text{kg}/\text{m}^2$ ), respectively (**Table 9.1**).

1 Metabolic mediators of the effects of body-mass index, overweight, and obesity on coronary heart disease and stroke: a pooled analysis of 97 prospective cohorts with 1·8 million participants. *The Lancet*. 2014;383(9921):970-983. doi:10.1016/S0140-6736(13)61836-X

2 The GBD 2015 Obesity Collaborators. Health Effects of Overweight and Obesity in 195 Countries over 25 Years. *N Engl J Med*. 2017;377(1):13-27. doi:10.1056/NEJMoa1614362

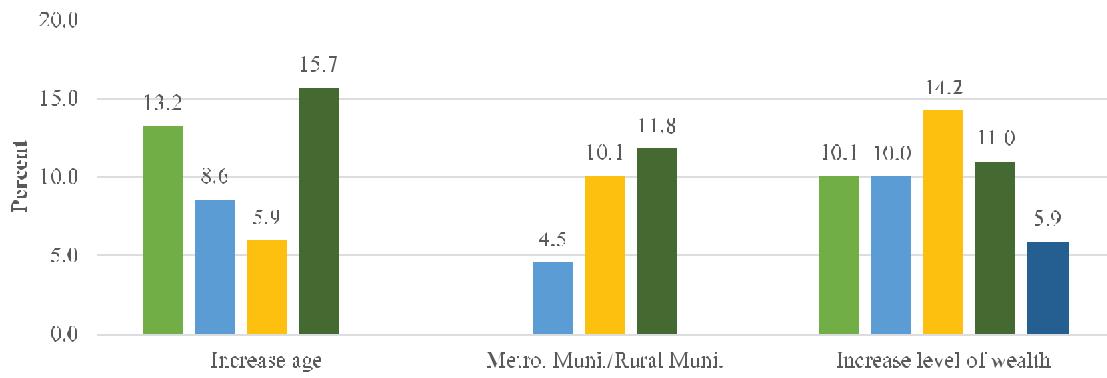
3 WHO. The Updated Appendix of 3 of the Global Action Plan for the Prevention and Control of NCDs 2013-2020. World Health Organization. Global action plan for the prevention and control of NCDs 2013-2020. Geneva.

4 Multisectoral Action Plan for the Prevention and Control of Non Communicable Diseases (2014-2020). Kathmandu: Government of Nepal.

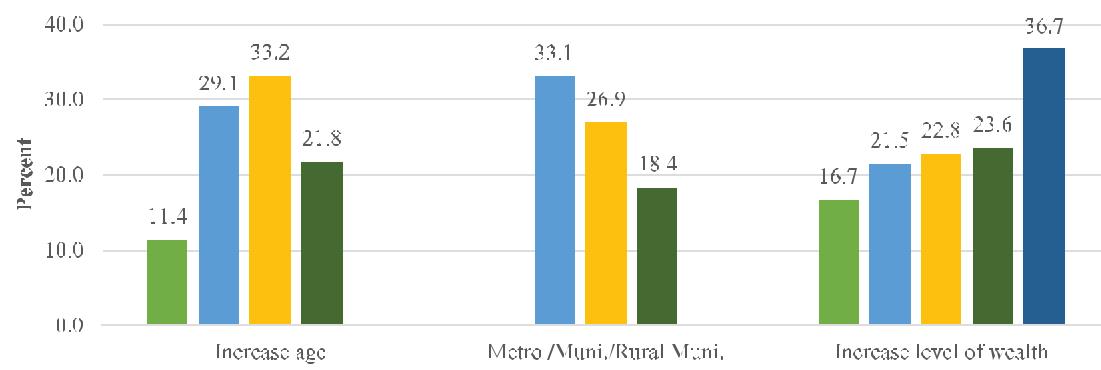
**Patterns by background characteristics for nutritional status (Table 9.1):**

- The oldest (55-69) and the youngest (15-24) age groups had both the highest prevalence of underweight and lowest prevalence of overweight and obesity.
- Mean BMI does not vary significantly by sex, residence or education level.
- Adults who lived in rural municipalities were more likely to be underweight. The mean BMI was the highest in Province 3 (24.3) and 4 (24.0) which were mainly urban Provinces, and lowest in more rural Karnali Province(21.4) and Sudoorpaschim Province (21.5).
- Participants with the highest household wealth had significantly higher mean BMI than all other wealth quintiles.
- Education and household wealth were associated with higher prevalence of overweight and lower prevalence of underweight (**Figure 9.2 and Figure 9.3**).
- The prevalence of underweight and overweight are both higher amongst men than women, while obesity prevalence is higher amongst women than men (**Table 9.1**).

**Figure 9.1** Prevalence of underweight by age, residence and wealth amongst adults aged 15-69, Nepal STEPS Survey 2019



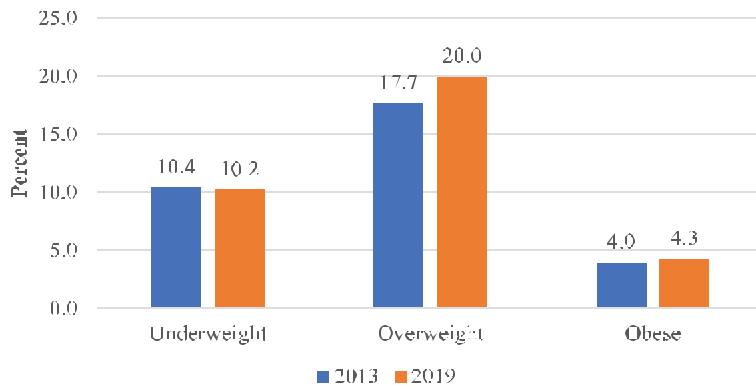
**Figure 9.2** Prevalence of overweight and obesity by age, residence and wealth amongst adults aged 15-69, Nepal STEPS Survey 2019



### Trends between 2013<sup>5</sup> and 2019 survey in adults aged 15-69:

- Population mean BMI has increased from 22.4kg/m<sup>2</sup> in 2013 to 22.7kg/m<sup>2</sup> in 2019 and this increase is higher amongst women (22.4kg/m<sup>2</sup> to 22.8kg/m<sup>2</sup>) than men (from 22.4kg/m<sup>2</sup> to 22.6kg/m<sup>2</sup>).
- Prevalence of underweight did not change much though it increased in age group 15-29 from 10.1% to 12.3%
- Prevalence for overweight and obesity increased, with a larger increase for overweight (17.7% to 20.0%) than obesity (4.0% to 4.3%) (**Figure 9.3**).

**Figure 9.3 Trends in nutrition status between 2013 to 2019 amongst adults aged 15-69, Nepal STEPS Survey 2019**



## 9.2 Waist Circumference and Waist-Hip Ratio

While BMI is a population-level measure for overweight and obesity, it does not reflect variation in body fat distribution and lean body mass. Both WC and WHR correlate more closely to abdominal obesity which in-turn is more reflective of metabolic abnormalities such as decreased glucose tolerance, reduced insulin sensitivity and adverse lipid profiles<sup>6</sup>. There is no definite evidence on appropriate universal or population-specific cut offs for WC or WHR<sup>7</sup> and variations in outcome measures used for reference. For the purpose of this report, cut-offs commonly attributed to WHO<sup>6,8</sup>(used for discussion below)and South Asian specific cut-offs established by International Diabetes Federation<sup>9</sup> (only shown in **Table 9.2**) that have been widely cited across studies were utilized for cross country comparison and trend analysis. Further analysis using validated country or population specific cut-offs may be required for more sensitive population risk assessment.

The population mean WC of all adults (15-69 years) was 79.7 cm and mean WHR was 0.90 (**Table 9.2**). 11.8% of adults had high WC (>88 cm for women, >102 cm for men). 63.6% of adults have high WHR (**Table 9.2**).

### Patterns by background characteristics for waist circumference and waist-hip ratio (**Table 9.2**):

- Age group 40-54 years had the highest mean WC followed by age group 55-69 years.
- The proportion of adults with high WC declined as education level increased (**Figure 9.4**) while no apparent relationship is seen for WHR and education.

5 Aryal, KK; Neupane, S; Mchata, 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

6 WHO. Waist circumference and waist-hip ratio: report of a WHO expert consultation, Geneva,2008.

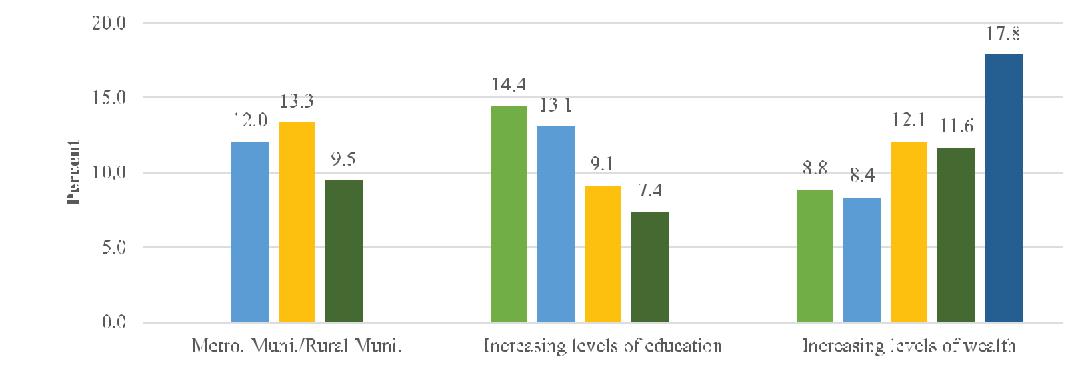
7 Lear SA, James PT, Ko GT, Kumanyika S. Appropriateness of waist circumference and waist-to-hip ratio cutoffs for different ethnic groups. Eur J Clin Nutr. 2010;64(1):42-61. doi:10.1038/ejcn.2009.70

8 WHO. Obesity: preventing and managing the global epidemic: report of a WHO consultation. Geneva, 2000.

9 Alberti KGMM, Zimmet P, Shaw J. Metabolic syndrome-a new world-wide definition. A Consensus Statement from the International Diabetes Federation. Diabet Med. 2006;23(5):469-480. doi:10.1111/j.1464-5491.2006.01858.x

- Adults with the highest household wealth had significantly higher mean WC compared to all other wealth quintiles (**Figure 9.4**). Similar patterns are seen for WHR across wealth quintile (**Table 9.2**).

**Figure 9.4** Percent adults aged 15-69 with high waist circumference by residence, education and wealth, Nepal STEPS Survey 2019



- A significantly higher proportion of women had high WC and WHR compared to men (WC:19.5% in women vs 3.3% in men; WHR:70.2% in women vs 56.3% in men).
- Gandaki Province (second most urban Province) had the highest prevalence of adults with high WC and lowest prevalence was in Karnali Province (most rural Province).

#### Trends between 2013<sup>10</sup> and 2019 survey in adults aged 15-69:

- Between 2013 and 2019, the prevalence of high WC increased much more among women than men (women: 14.5% to 19.5%; men 2.4% to 3.3%).
- While mean WHR did not change significantly between 2 survey rounds, the prevalence of high WHR increased amongst women (64.4% to 70.2%) and men (52.6% to 56.3%)

### 9.3 Disease risk based on body-mass index and waist circumference

Information from BMI and WC can be combined to capture both general obesity and abdominal obesity for the better categorization of risk status relative to individuals who have normal BMI and normal WC (**Figure 9.5**).

**Figure 9.5** Classification of Overweight and Obesity by BMI, Waist Circumference, and Associated Disease Risk\* (adapted from: NHLBI Obesity Education Initiative (2000)<sup>11</sup>)

BMI categories**	Waist Circumference	
	Men <=102 cm, Women <=88 cm	Men >102 cm, Women >88 cm
Normal (BMI 18.5-24.9)	Normal risk	Increased risk
Overweight (BMI 25.0-29.9)	Increased risk	High risk
Obese (BMI>=30.0)	High risk	Very high risk

\*Disease risk is relative to normal weight and waist circumference

\*\*Excluded underweight category

<sup>10</sup> Aryal , KK; Neupane, S; Mchata, 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

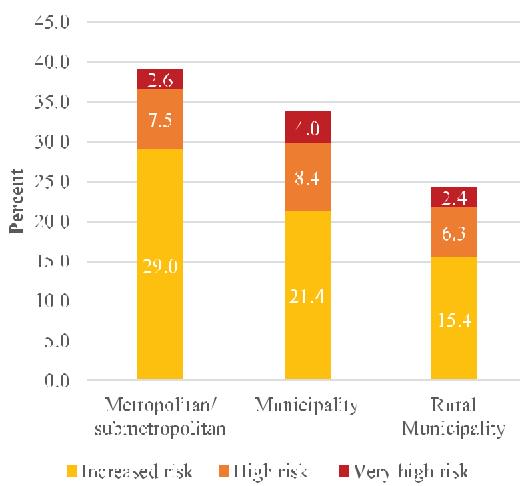
<sup>11</sup> National Institutes of Health.National Heart, Lung, and Blood Institute.NIH Publication Number 004084. October 2000. NHLBI Obesity Education Initiative.

In Nepal 69.2% of adults had both a normal BMI and a normal WC and hence falls in the normal risk group for chronic diseases (**Table 9.3**). 19.9% of adults were in “increased” risk group, while 7.5% and 3.3% of all adults were categorized into “high” and “very-high” risk group respectively (**Table 9.3**).

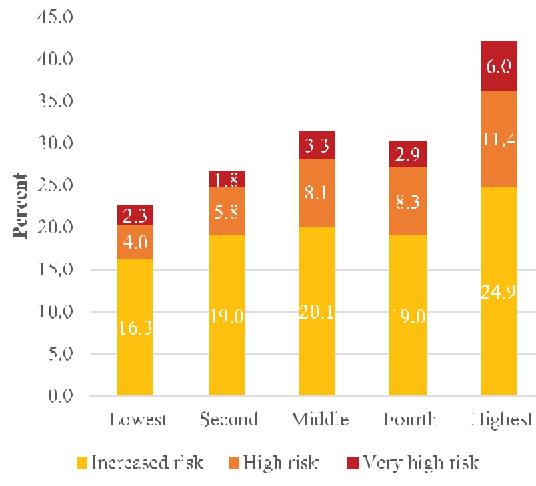
#### Patterns by background characteristics (Table 9.3):

- Age group 40-54 years had the lowest percent of adults with “normal” risk (60.8%) and highest percent of adults with “very high” risk (5.1%)
- The largest proportion of the population with “increased” risk was in metropolitan and sub-metropolitan regions (29.0%) and overall risk was lower in rural municipalities (**Figure 9.6**). This was also reflected in Karnali Province (most rural Province) having highest proportion of adult with normal risk and lowest proportion in Province 3.
- While the opposite relationship is seen for household wealth and normal risk (**Figure 9.7**).

**Figure 9.6** Differentials in disease risk based on BMI and WC amongst adults aged 15-69 by residence, Nepal STEPS Survey 2019



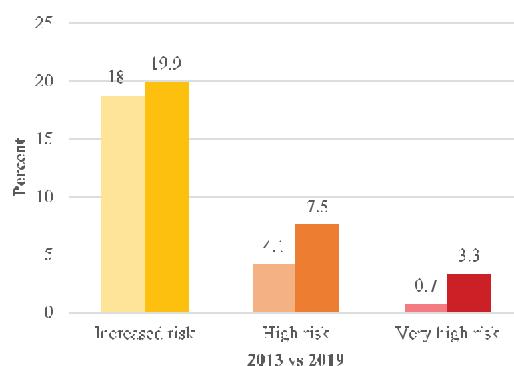
**Figure 9.7** Differentials in disease risk based on BMI and WC amongst adults aged 15-69 by wealth, Nepal STEPS Survey 2019



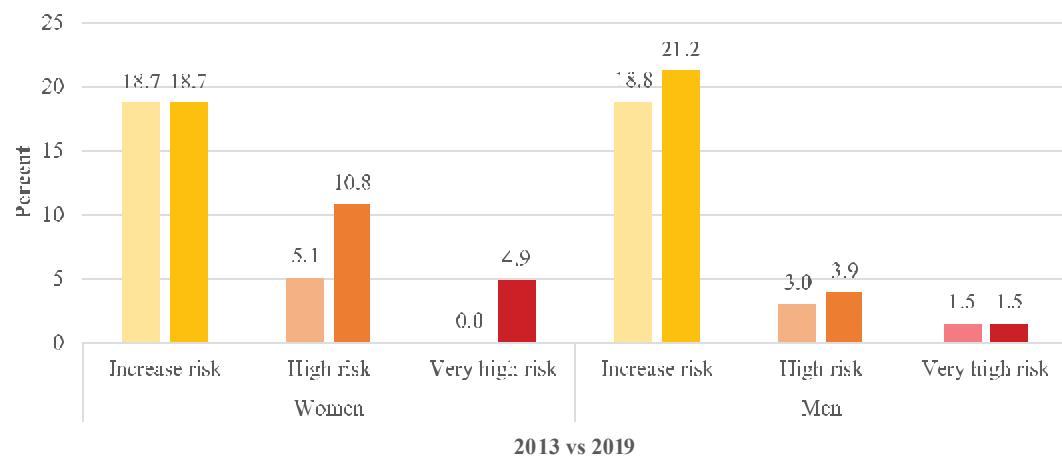
#### Trends between 2013<sup>5</sup> and 2019 survey in adults aged 15-69:

- A decrease in proportion of adults with normal risk (73.7% vs 69.2%).
- While the proportions of adults with increased risk are similar between 2013 and 2019, the proportion of adults with very high risk increased from 0.7% to 3.3% and those with high risk increased from 4.1% to 7.5% (**Figure 9.8**).
- The increase amongst risk groups are differential between men and women. The percentage of women at high/very high risk increased substantially amongst women (high risk: 5.1% to 10.8%; very high risk: 0% to 4.9%) while much smaller increases were seen for men (**Figure 9.9**).

**Figure 9.8** Trend in disease risk based on BMI and WC from 2013 to 2019 amongst adults aged 15-69, Nepal STEPS Survey 2019



**Figure 9.9** Trends in disease risk between 2013 and 2019 amongst adults aged 15-69 by sex, Nepal STEPS Survey



## **LIST OF TABLES:**

For more information on physical activity, see the following tables:

**Table 9.1 Nutritional status based on body-mass index: all participants (excluding pregnant women)**

**Table 9.2 Nutritional status based on waist circumference and waist-hip ratio: all participants (excluding pregnant women)**

**Table 9.3 Disease risk based on body-mass index and waist circumference: all participants (excluding pregnant women)**

**Table 9.1 Nutritional status based on Body-mass Index(BMI): all participants (excluding pregnant women)**

Mean population BMI and percentage of adults aged 15-69 who had normal BMI, were underweight, overweight or obese; by background characteristics, [Nepal STEPS, 2019]

Background characteristic	Mean BMI* (kg/m <sup>2</sup> )	Percent participants who's weight status is*:						Number of participants (N)	
		Normal (BMI 18.5-24.9)		Underweight (BMI<=18.4)		Overweight (BMI 25.0-29.9)			
		95 % CI							
<b>Age</b>									
15-24	21.0	20.6	-	21.4	75.4	13.2	10.5	0.9	801
25-39	23.4	23.1	-	23.7	62.3	8.6	23.5	5.5	2054
40-54	23.7	23.4	-	24.0	60.9	5.9	26.8	6.4	1565
55-69	22.5	22.1	-	22.9	62.5	15.7	17.8	4.0	1079
<b>Sex</b>									
Women	22.8	22.6	-	23.1	65.1	9.8	19.8	5.3	3507
Men	22.6	22.2	-	23.0	65.9	10.7	20.2	3.2	1992
<b>Residence</b>									
Metropolitan/ submetropolitan	23.8	23.2	-	24.5	62.4	4.5	28.8	4.2	694
Municipality	22.9	22.5	-	23.2	63.0	10.1	22.1	4.8	2702
Rural Municipality	22.3	21.9	-	22.6	69.9	11.8	14.8	3.6	2103
<b>Province</b>									
Province 1	22.9	22.4	-	23.4	64.6	9.9	21.6	3.8	790
Province 2	22.3	21.8	-	22.9	70.2	9.9	17.2	2.7	794
Province 3	24.3	23.7	-	25.0	49.0	8.4	34.2	8.4	755
Gandaki Province	24.0	23.5	-	24.5	62.2	3.1	26.6	8.0	787
Province 5	22.2	21.7	-	22.6	66.0	14.6	15.9	3.6	783
Karnali Province	21.4	20.9	-	21.8	76.8	11.9	9.7	1.6	788
Sudoropashchim Province	21.5	21.2	-	21.9	78.6	10.2	9.4	1.8	802
<b>Education</b>									
No education	22.7	22.4	-	23.0	63.0	12.0	20.4	4.6	2758
Primary	22.7	22.3	-	23.1	64.9	10.5	19.6	5.0	1033
Secondary	22.6	22.2	-	23.0	69.8	7.9	18.6	3.8	1067
More than secondary	22.9	22.4	-	23.4	65.8	8.9	21.7	3.5	640
<b>Wealth quintile</b>									
Lowest	22.3	21.9	-	22.6	73.2	10.1	13.8	3.0	1619
Second	22.3	22.0	-	22.7	68.5	10.0	19.0	2.5	1043
Middle	22.3	21.9	-	22.7	63.0	14.2	18.3	4.5	928
Fourth	22.6	22.2	-	23.1	65.4	11.0	19.4	4.2	867
Highest	24.0	23.5	-	24.6	57.5	5.9	29.4	7.3	1042
<b>Age (previous, 2013)</b>									
15-29	21.8	21.5	-	22.2	70.8	12.3	14.5	2.5	1407
30-44	23.8	23.5	-	24.2	61.8	5.4	26.4	6.4	2020
45-69	23.0	22.7	-	23.3	60.7	11.9	22.3	5.1	2072
Total (15-39)	22.5	22.2	-	22.7	67.6	10.5	18.3	3.7	2855
Total (40-69)	23.2	22.9	-	23.5	61.5	9.8	23.3	5.5	2644
<b>Total (15-69)</b>	<b>22.7</b>	<b>22.5</b>	<b>-</b>	<b>23.0</b>	<b>65.5</b>	<b>10.2</b>	<b>20.0</b>	<b>4.3</b>	<b>5499</b>

\* underweight BMI<18.5; overweight BMI >=25.0-29.9; obese BMI>=30.0. For participants aged 15-18, BMI classification is based on age: underweight BMI<-2SD, overweight BMI >=1-2SD, obese BMI>=2SD ([https://www.who.int/growthref/who2007\\_bmi\\_for\\_age/en/](https://www.who.int/growthref/who2007_bmi_for_age/en/))

**Table 9.2: Nutritional status based on waist circumference and waist-hip ratio: all participants (excluding pregnant women)**

Mean waist circumference (WC) and waist-hip ratio (WHR) and percentage of people age 15-69 (excluding pregnant women) who have high waist circumference and at-risk and high-risk waist-hip ratio, by background characteristics, [Nepal STEPS, 2019]

Background characteristic	Percent adults with high WC based on cut-offs:				Percent adults with high WHR			Number of participants (N)
	Mean WC (cm)	95% CI	women >88cm men >102cm*	women >80cm men >90cm**	Mean WHR ***	95% CI	with high WHR (>=0.85 women, >=0.90 men)	
<b>Age</b>								
15-24	74.2	73.1 - 75.3	4.1	11.3	0.88	0.86 - 0.90	45.2	802
25-39	81.2	80.1 - 82.2	14.1	31.5	0.91	0.90 - 0.92	67.2	2056
40-54	82.9	81.9 - 84.0	16.0	40.1	0.92	0.91 - 0.93	74.7	1571
55-69	80.9	79.6 - 82.1	13.4	32.9	0.92	0.91 - 0.93	72.1	1089
<b>Sex</b>								
Women	79.0	78.0 - 79.9	19.5	39.7	0.89	0.88 - 0.90	70.2	3521
Men	80.4	79.4 - 81.5	3.3	15.5	0.92	0.91 - 0.93	56.3	1997
<b>Residence</b>								
Metropolitan/ submetropolitan	81.6	79.7 - 83.6	12.0	31.7	0.92	0.90 - 0.93	73.9	698
Municipality	80.2	79.1 - 81.2	13.3	31.0	0.90	0.89 - 0.91	61.9	2712
Rural Municipality	78.5	77.0 - 80.0	9.5	23.3	0.91	0.89 - 0.92	63.6	2108
<b>Province</b>								
Province 1	79.8	77.2 - 82.4	15.3	30.8	0.91	0.89 - 0.93	69.4	794
Province 2	79.2	77.4 - 81.0	9.0	24.4	0.94	0.91 - 0.96	75.3	800
Province 3	81.6	79.8 - 83.4	12.3	36.0	0.91	0.89 - 0.92	69.1	755
Gandaki Province	81.7	79.3 - 84.0	18.3	36.0	0.90	0.88 - 0.93	62.2	788
Province 5	78.7	77.3 - 80.1	10.7	24.8	0.90	0.88 - 0.91	58.0	785
Karnali Province	76.7	75.1 - 78.3	6.5	19.7	0.87	0.86 - 0.89	44.4	789
Sudurpashchim Province	79.3	76.4 - 82.3	9.9	23.9	0.87	0.85 - 0.89	47.3	807
<b>Education</b>								
No education	80.4	79.3 - 81.5	14.4	33.8	0.91	0.90 - 0.92	67.4	2773
Primary	79.2	77.8 - 80.6	13.1	27.5	0.91	0.90 - 0.93	64.4	1036

Secondary	79.2	78.0	-	80.3	9.1	23.3	0.90	0.89	-	0.91	56.6	1069
More than secondary	79.2	77.5	-	80.9	7.4	22.2	0.90	0.88	-	0.91	64.1	639
<b>Wealth quintile</b>												
Lowest	78.6	76.8	-	80.4	8.8	24.6	0.89	0.87	-	0.91	58.0	1623
Second	77.2	76.1	-	78.4	8.4	23.4	0.89	0.88	-	0.90	58.7	1047
Middle	79.1	77.9	-	80.3	12.1	27.7	0.90	0.89	-	0.92	60.8	933
Fourth	80.2	78.8	-	81.5	11.6	27.1	0.91	0.90	-	0.93	68.5	871
Highest	83.2	81.7	-	84.7	17.8	38.0	0.92	0.91	-	0.94	72.1	1044

**Age (previous 2013)**

15-29	76.5	75.5	-	77.6	7.2	17.5	0.89	0.88	-	0.90	52.6	1408
30-44	82.6	81.6	-	83.5	16.0	37.7	0.91	0.91	-	0.92	72.3	2022
45-69	81.8	80.7	-	82.8	14.7	35.6	0.92	0.91	-	0.93	72.6	2088
Total (15-39)	78.4	77.4	-	79.3	10.0	23.3	0.90	0.89	-	0.91	58.3	2858
Total (40-69)	82.1	81.2	-	83.1	15.0	37.3	0.92	0.91	-	0.93	73.7	2660

**Total (15-69)**

79.7	78.8	-	80.5	11.8	28.2	0.90	0.90	-	0.91	63.6	5518
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\*WHO cut-offs for substantially increased risk by WC: >88 cm for women and >102 cm for men. \*\* International Diabetes Federation (IDF) cut-offs for increased risk by WC for South Asians: >80cm for women and >90 cm for men. \*\*\*WHO cut-offs for increased risk by WHR: >0.85 for women, >0.90 for men.

**Table 9.3 Disease risk based on body-mass index and waist circumference: all participants (excluding pregnant women)**

Prevalence of different levels of disease risk\* based on Body Mass Index and waist circumference amongst adults aged 15-69, by background characteristics, [Nepal STEPS, 2019]

Background characteristic	Percent of adults who's disease risk is:				Total	Number of participants (N)
	Normal risk**	Increased risk	High risk	Very high risk		
<b>Age</b>						
15-24	84.3	12.8	2.5	0.4	100.0	716
25-39	64.6	21.9	9.2	4.3	100.0	1917
40-54	60.8	24.3	9.8	5.1	100.0	1460
55-69	68.1	20.4	8.5	3.0	100.0	929
<b>Sex</b>						
Women	65.5	18.7	10.8	4.9	100.0	3200
Men	73.4	21.2	3.9	1.5	100.0	1822
<b>Residence</b>						
Metropolitan/ submetropolitan	60.9	29.0	7.5	2.6	100.0	670
Municipality	66.3	21.4	8.4	4.0	100.0	2466
Rural Municipality	75.8	15.4	6.3	2.4	100.0	1886
<b>Province</b>						
Province 1	66.9	20.0	9.8	3.3	100.0	735
Province 2	74.9	16.9	6.4	1.8	100.0	705
Province 3	51.5	33.8	8.8	5.9	100.0	722
Gandaki Province	60.8	21.8	11.0	6.3	100.0	763
Province 5	72.9	17.8	6.2	3.1	100.0	691
Karnali Province	83.9	11.6	3.2	1.3	100.0	701
Sudurpashchim Province	82.5	10.8	5.8	0.8	100.0	705
<b>Education</b>						
No education	66.0	22.1	7.9	4.0	100.0	2438
Primary	69.1	17.8	9.4	3.7	100.0	968
Secondary	73.3	17.9	6.0	2.8	100.0	1011
More than secondary	70.8	20.6	6.7	1.9	100.0	604
<b>Wealth quintile</b>						
Lowest	77.4	16.3	4.0	2.3	100.0	1448
Second	73.4	19.0	5.8	1.8	100.0	944
Middle	68.5	20.1	8.1	3.3	100.0	823
Fourth	69.8	19.0	8.3	2.9	100.0	801
Highest	57.8	24.9	11.4	6.0	100.0	1006
<b>Age (previous, 2013)</b>						
15-29	77.7	16.0	4.4	1.8	100.0	1271
30-44	61.4	23.7	10.3	4.6	100.0	1910
45-69	64.4	22.0	9.5	4.2	100.0	1841

Total (15-39)	72.3	18.3	6.6	2.8	100.0	2633
Total (40-69)	63.5	22.9	9.3	4.3	100.0	2389

<b>Total (15-69)</b>	<b>69.2</b>	<b>19.9</b>	<b>7.5</b>	<b>3.3</b>	<b>100.0</b>	<b>5022</b>
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\* Disease risk for type 2 diabetes, hypertension and CVD. Normal risk: Normal BMI and normal WC; increased risk: normal BMI and high WC or overweight and normal WC; High risk: overweight and high WC or Obese and normal WC; very high risk: obese and high WC. \*\* Adults who are underweight were excluded. Source: NHLBI Obesity Education Initiative (2000)

## CHAPTER 10

# BLOOD PRESSURE: PREVALENCE, DIAGNOSIS, TREATMENT AND SOURCES OF CARE

### Key Findings

- **Prevalence of raised blood pressure (BP) among adults age 15-69 years.**
  - *Based on actual measurement:* Based on the criteria of Systolic BP $\geq$ 140 or diastolic BP $\geq$ 90 mm Hg, the prevalence of raised blood pressure or hypertension was 24.5%. This includes people on medication who were normotensive at the time of the survey.
  - *Self-reported prevalence:* Among adults who had ever had their BP measured, 12.3% adults were ever told by a doctor or health care provider that they have raised BP or hypertension.
- **Diagnosis and treatment gap among those noted to have raised BP at the time of survey**
  - *Unaware about their raised BP:* 78.8% adults
  - *Not on treatment:* 11.7% for adults knew their raised BP or hypertension but were not on treatment.
  - *On treatment but not controlled:* 5.4% of adults.
  - *On treatment and controlled:* 4.1% of adults.
- **Screening coverage, prescription of medications, treatment compliance**
  - *Screening coverage:* 55.9% of adults (60.8 % among 40-69 years old) had had their BP ever measured by a doctor or a health care provider.
  - Slightly over half of the adults (51%) who were told to have raised BP or hypertension were prescribed medication to lower their blood pressure.
  - *Treatment compliance:* Among adults, who were prescribed medication to lower their BP, 82.1% reported ever taking medications and 70.7% reported currently taking their prescribed medication in the two weeks prior to the survey.
- **Sources of care and medications**
  - *Public and private sources of care:* 52.9% and 33.0% of adults reported seeking treatment and advice for raised BP or hypertension usually from only private and public facilities, respectively. 4.5% reported seeking care from government and private facilities.
  - *Sources of drugs/medications:* Majority of the adults (73.7%) who have ever taken medication reported usually getting them only from private sources and only 14.6% reported getting their medications only from government facilities.
  - Only 4.3% of adults reported ever seeking care from local healers while 2.5% reported using herbal medications to control their raised BP.
- **Reasons for not taking medications among those prescribed medication to control their hypertension**

“Medication not necessary” and “Blood pressure got normal” were the most common reasons given for not taking medication-- reported by 55.4% adults.

Elevated blood pressure or hypertension is a serious medical condition which significantly increases the risk of developing heart, brain, kidney and other diseases. An individual is considered hypertensive if when measured on two consecutive occasions, their systolic blood pressure is  $\geq 140$  mm Hg and their diastolic blood pressure is  $\geq 90$  mm Hg on both occasions.<sup>1</sup>

Hypertension is often considered a “silent killer” as most people with hypertension are unaware of the problem and the condition may present no warning signs or symptoms. Several modifiable risk factors may lead to hypertension. These include unhealthy diets (excessive salt consumption, a diet high in saturated fat and trans fats, low intake of fruits and vegetables), physical inactivity, consumption of tobacco and alcohol, and being overweight or obese.<sup>2</sup>

Under the WHO Global Action Plan, one of the nine voluntary targets is to achieve 25% relative reduction in the prevalence of raised blood pressure by 2025 relative to 2010 levels.<sup>3</sup> In line with the global NCD targets, Nepal has also adopted the same targets for hypertension control as stated under the WHO Global Action Plan<sup>4</sup>.

This chapter focuses on indicators related to blood pressure; assessing prevalence, diagnosis and treatment gaps and care seeking behaviors around blood pressure management. This information will help Nepal assess trends and progress towards hypertension management as specified in its multisectoral action plan as well as evaluation of current policies and programs in place to reduce population blood pressure levels. These will also guide future policy and programs to manage hypertension at population level.

## Blood Pressure Measurement

During the survey, blood pressure was measured with a digital, automated blood pressure monitor. Before taking the measurements, participants were asked to sit quietly and rest for 15 minutes with legs uncrossed. Three readings of 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 universal 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.

## Analysis

Hypertension was defined as having systolic blood pressure  $\geq 140$  mm Hg and/or diastolic blood pressure  $\geq 90$  mm Hg during the survey, or normotensive at the time of survey but previously diagnosed as having hypertension and currently taking medications to control blood pressure.

Observations which had systolic BP  $\leq 40$  mm Hg or  $\geq 300$  mm Hg were and Diastolic BP  $<30$  mm Hg or  $\geq 200$  mm Hg were excluded, though none of adults were recorded in this range. In case the third reading was invalid, the average of the first two readings was considered.

### 10.1. Prevalence of raised blood pressure based on measurement and medications history

Self-reported prevalence is likely to underestimate the true prevalence as many people may be asymptomatic and not aware of their BP status. Therefore, carrying out measurements in order to determine the actual prevalence

1 <https://www.who.int/news-room/fact-sheets/detail/hypertension>

2 <https://www.who.int/news-room/fact-sheets/detail/hypertension>

3 World Health Organization. Global action plan for the prevention and control of NCDs 2013-2020. Geneva.

4 [http://www.euro.who.int/nepal/mediacentre/ncd\\_multisectoral\\_action\\_plan.pdf](http://www.euro.who.int/nepal/mediacentre/ncd_multisectoral_action_plan.pdf)

is essential to understanding the overall risk of hypertension across the population.

Overall 24.5% of adults were measured to have raised BP based on both the measurement and medications history (Table 10.1). On the other hand, based on self-reports among individuals who ever got their BP measured, the prevalence was only 12.3% (**Table 10.2**).

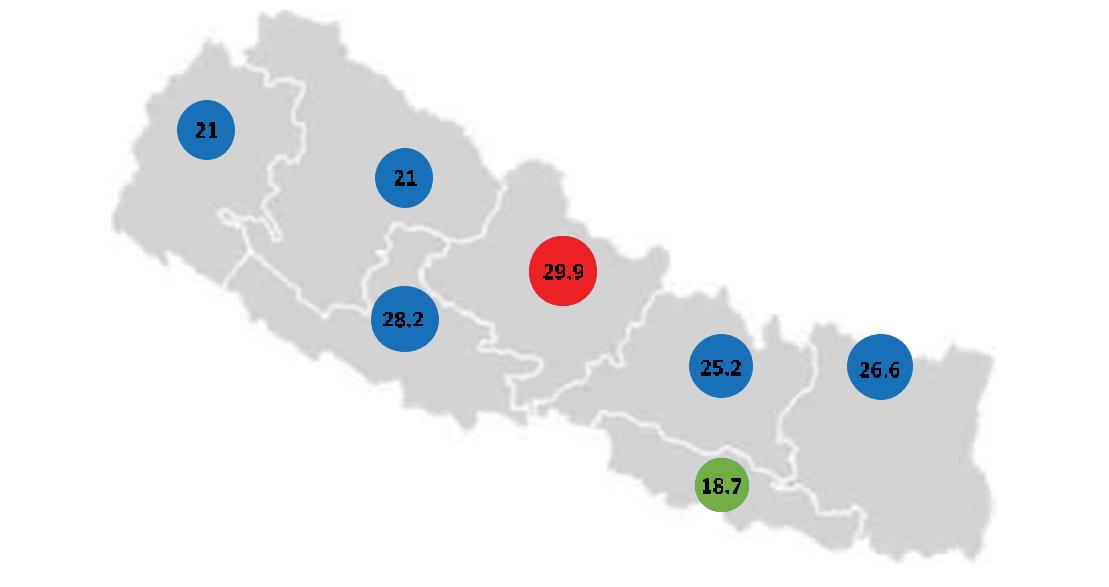
**Patterns by background characteristics (Table 10.1):**

- The prevalence of raised BP or hypertension in adults aged 15-24 years was 9.5% which increased substantially after the age 55 (45.5 % prevalence among adults aged 55-69 years). Prevalence of raised BP was significantly higher in men compared to women (29.8% vs 19.7%).
- The prevalence of raised BP or hypertension decreased with increase in education level with a 31.8% prevalence in the group which had “no education/less than primary” and 14.7% in the group which had more than secondary education. However, no significant trends were observed by household wealth.
- While no significant differences were observed by metropolitan/municipality or rural municipality, the raised BP prevalence was highest in Gandaki Province 4 (29.9%) and lowest in Province 2 (18.7%) (**Figure 10.1**).

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**Figure 10.1** Provincial differences in hypertension prevalence among 15-69 years population, Nepal STEPS survey 2019

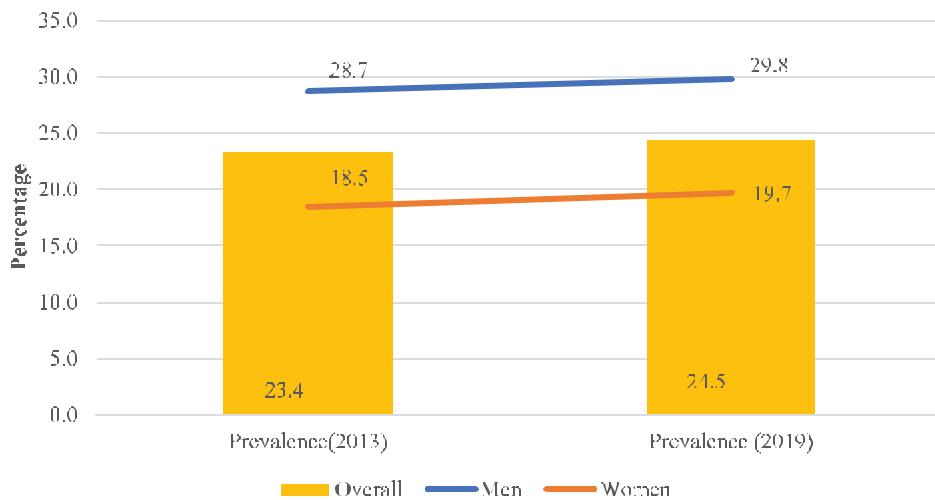
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### Trends between 2013<sup>5</sup> and 2019 survey:

The prevalence of raised BP among adults increased 23.4 % in 2013 to 24.5% in 2019. The increase was observed in both men and women(**Figure 10.2**).

**Figure 10.2** Trends in prevalence of raised blood pressure by sex, Nepal STEPS Survey 2013 and 2019



## 10.2. Diagnosis and treatment gap

Hypertension increases the risk of development of severe health complications such as heart disease or stroke. Ensuring early diagnosis and initiation of treatment enables adults to make necessary lifestyle adjustments and reduces the risk of lasting damage.

### Diagnosis gap (Table 10.1):

Of all the people who were diagnosed with raised BP (**Table 10.1**), 78.8% hypertensive adults were unaware of their hypertensive status.

- Percentage of people unaware of their raised BP status declined with age.
- More men were unaware of their raised BP status than women (81.3%- men vs 75.4%-women)
- The proportion of adults who were unaware of their diagnosis status decreased with increased wealth, but no consistent trends were seen with education level.

### Treatment gap (Table 10.1):

Overall, only one fifth of adults (22.2%) were aware of their hypertensive status at the time of survey. 11.7% of the people who were aware of their raised BP at the time of survey and were not on treatment. 9.5% adults(less than half of those who were aware of their raised BP reported to be on treatment. 5.4% adults on treatment had raised BP (uncontrolled) at the time of survey and only 4.1% of adults were on treatment and controlled.

- Similar to diagnosis gap, the proportion of adults who were on treatment increased with increasing age.
- The proportion of adults with raised BP who were on treatment which did not control their BP increased with increasing age group (1.2% in the 15-24 years age group to 11.4% in the 55-69 years age group)
- The proportion of adults who were on treatment increased with increasing household wealth, but no consistent trends was seen with education level.

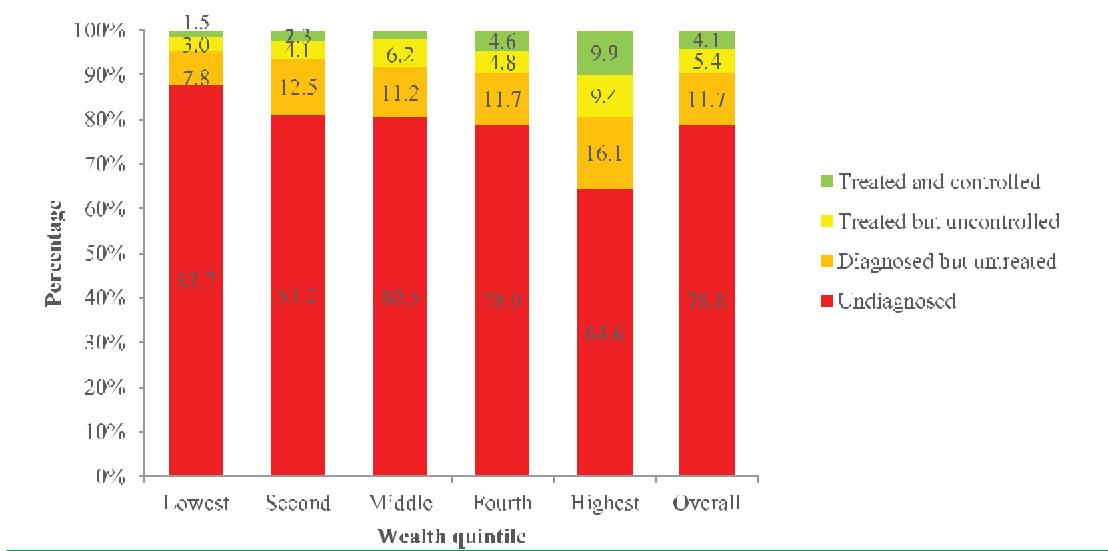
<sup>5</sup> Aryal, KK; Neupane, S; Mchata, S; Vaidya, A; Singh, S; Paulin, F; Madanlal, RG; Riley, LM; Cowan, M; Guthold, R; Singh, SP; Bhushal, CL; Lohani, GR; (2014) Non communicable diseases risk factors: STEPS Survey Nepal 2013. Kathmandu: Nepal Health Research Council

### **Quality of treatment (Table 10.1): Adults on treatment and controlled**

Overall, 4.1% of adults were on treatment with BP within normal limits at the time of survey.

The proportion of adults who were on treatment with controlled BP- 1.5% were in the lowest quintile which increased progressively to 9.9% in the highest quintile (**Figure 10.3**).

**Figure 10.3 Diagnosis and Treatment gaps among adults aged 15-69 by wealth quintile, Nepal STEPS survey 2019**



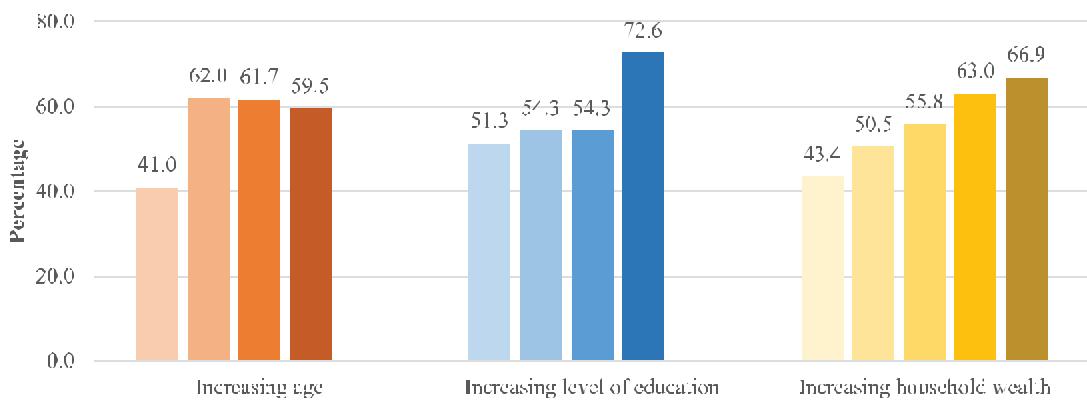
### **10.3. Screening coverage**

Early detection of raised BP through regular (at least annual) screening of healthy individuals is one of the key public health strategies for reduction the morbidity and mortality associated with hypertension. Though data were not elicited about annual screening, 55.9 % adults (60.8 % among the age group 40-69 years old) had had their blood pressure ever measured by a doctor or a health care provider.

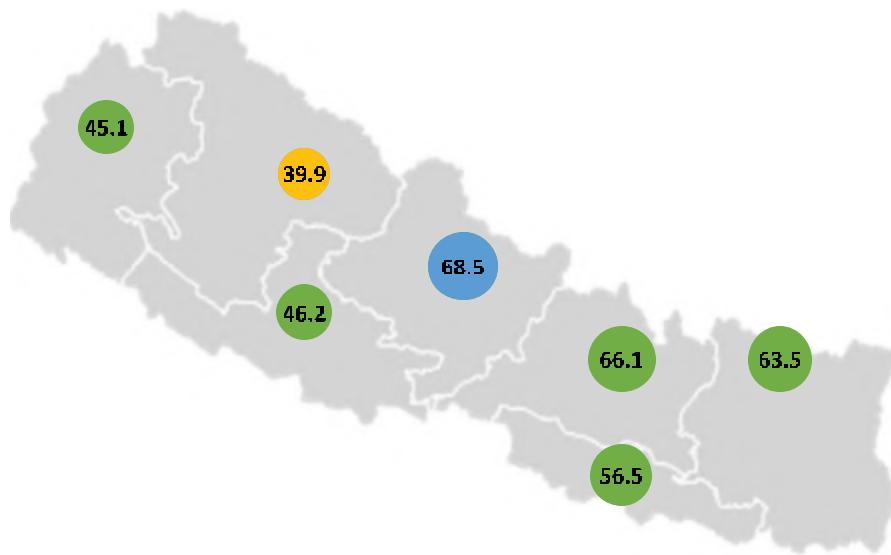
#### **Patterns by background characteristics (Table 10.2):**

- More women reported ever having their BP measured or hypertension (58.7%- women versus 52.8%- men).
- Younger adults age 15-24 years were much less likely to report their BP ever measured compared to other age-groups (**Figure 10.4**).
- The likelihood of ever having BP measured did not vary by residence types but varied by Province. In Karnali Province and Sudoorapashchim Province number of people who had their BP checked was significantly lower than other Provinces (**Figure 10.5**).
- The likelihood of having had BP measured increased with education level and by household wealth (**Figure 10.4**).

**Figure 10.4** Percent of adults who have ever had their BP measured by a doctor or health care provider among adults aged 15-69, Nepal STEPs survey 2019



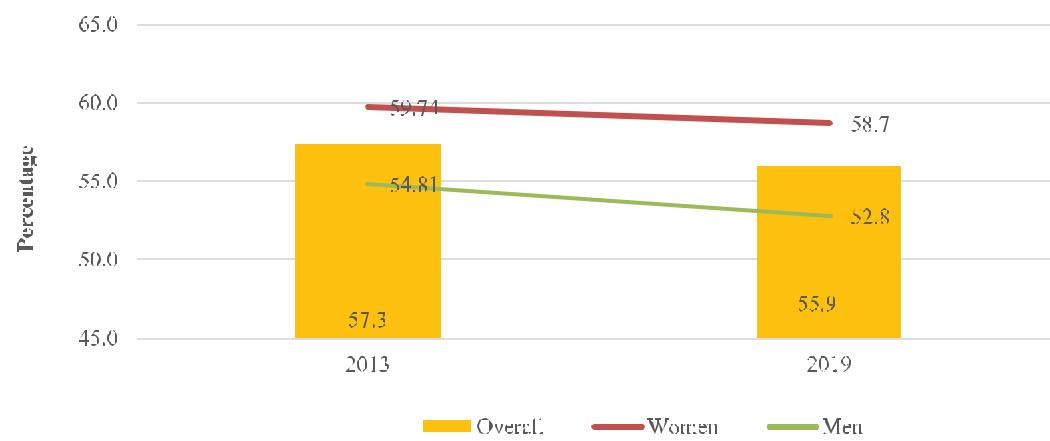
**Figure 10.5** Percent of adults who have ever had their BP measured by a doctor or health care provider among adults aged 15-59 by province, Nepal STEPs survey 2019



#### Trends between 2013<sup>5</sup> and 2019 survey:

The percentage of adults who reported ever measurement of their blood pressure levels by a doctor or health care provider decreased from 57.3% in 2013 to 55.9% in 2019. This decrease was observed across both sexes (Figure 10.6).

**Figure 10.6** Trends in percent of adults aged 15-69 who have ever had their blood pressure measured by sex, Nepal STEPS Survey 2013 and 2019



#### 10.4. Prescription of medications and compliance with treatment (Table 10.2)

Monitoring of prescription practices and treatment compliance is an important strategy for evaluating the outcomes at individual and at population level. Hypertension is a chronic risk factor, requiring treatment over the lifetime of a person, which may reduce the compliance with treatment as observed with many other chronic conditions such as HIV/AIDS or tuberculosis.

Overall, 9.7% - about a half of the adults (51.0%) who were ever told to have raised BP were actually prescribed the medications, and 41.9% ever took the medicines (or 83.6% of those who were prescribed) and 32.8% (or 72.0% of those who were prescribed medications) reported currently taking the medications, showing poor compliance with the prescriptions.

- Both the likelihood of being prescribed medication and compliance with treatment increased with age. So, if a person was diagnosed and prescribed medicine in 30-44 years age group, he/she was less likely to take drug compared to adults 45-69 years of age.
- The likelihood of being prescribed the medications to control blood pressure decreased with increasing education level.
- While the prescription of medicines did not vary by household wealth index, the proportion of the adults reported currently taking medications increased with household wealth.

#### 10.5. Sources of care for treatment and advice and medications for raised BP

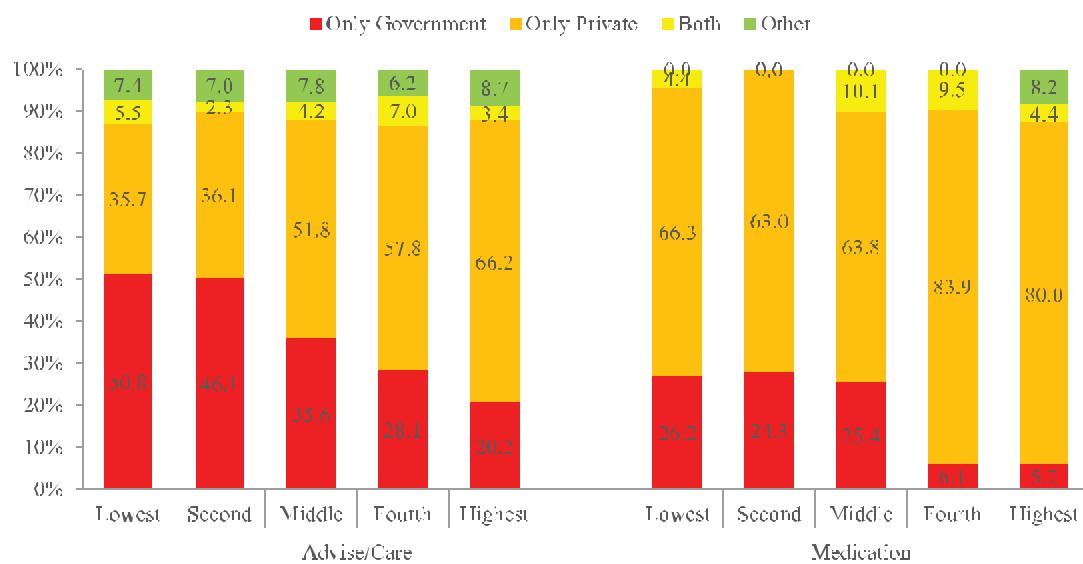
Overall a much higher proportion of adults sought treatment advise and care from private facilities (which include NGO run centers) (52.9 %) than from government (33%) or other sources (such as ayurvedic, homeopathic or naturopathic hospital/ clinic, medicine shops, pharmacies, etc.) (7.6%) (**Table 10.3**). Similarly, for medications, majority of the adults approached only private providers (73.7%), and only 14.6% of adults went to government providers. 6.0% of adults mentioned both government and private sources for medications for raised BP (**Table 10.4**).

##### Background patterns: (Table 10.3 and 10.4)

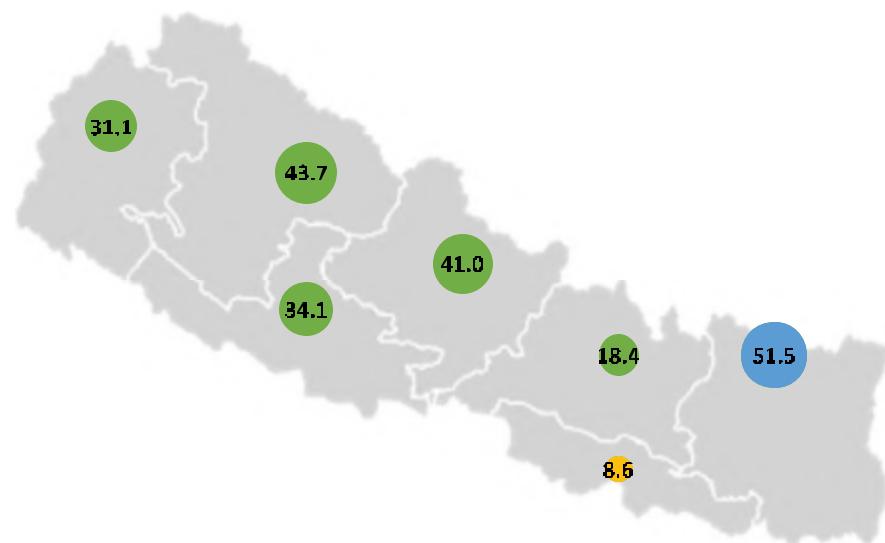
- The proportion of adults who usually visited private facilities for care and medication decreased with increasing age. Highest proportion of adults sought care from private sources (73.7%).
- Women were more likely to seek both treatment/advice (39.4%- women vs 27.3%-men) and medications (21.7%- women vs 6.2%-men) only from government facilities.

- Sources of care and household wealth: More than half of all adults, even in the poorest wealth quintile sought care from private facilities. The proportion of adults seeking treatment and advice at government had a reverse relationship with wealth quintile (Figure 10.7). Lower wealth quintiles were more likely to seek advice and consultation from government facilities (50.8% in the lowest wealth index group) while higher wealth quintiles usually seek care form private facilities (66.2% in the wealthiest group).
- Source of care and Province: In all the Provinces, irrespective of the residence in metropolitan or municipalities, more than 50% of adults sought both care/advice and medications from private providers. The use of government facilities for both advice/consultation and medications was lowest in Province 2 and 3, and higher in Provinces 5, Karnali Province, and Sudurpashchim Province. By residence, while use of government facilities was much higher in rural municipalities compared to metropolitan or municipalities, the same was not true for source of medication (Figure 10.8).

**Figure 10.7** Percent of adults (who were ever told to have raised BP) who sought treatment care/advise and medications from government and private facilities with respect to wealth quintile, Nepal STEPS survey 2019



**Figure 10.8** Percent of adults (who were ever told to have raised BP) who sought treatment care/advise from government facilities with respect to Province, Nepal STEPS survey 2019



## 10.6. Consultation with traditional healers and use of herbal remedies

- A negligible proportion of adults with raised BP reported visiting a traditional healer like Dhami/ Jhakri/ Purohit/Lama/Gubaji/ Matas for treatment and advise. The same trend was observed in adults who reported currently taking herbal remedies for their raised blood pressure.
- Additionally, the number of adults who reported usually going to seek care, advise or medications at ayurvedic, homeopathic or naturopathic hospitals/clinics was also negligible.

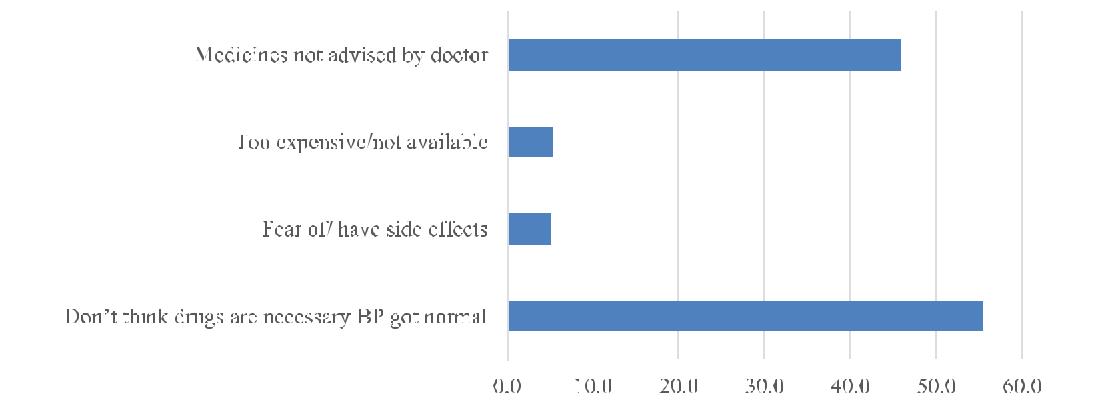
## 10.7. Reasons for not on treatment

55.4% of adults who were prescribed medications cited “didn’t think the drugs were necessary” and “their blood pressure got normal” as reasons for not currently taking medications/treatment (**Table 10.5**). The second most common reason given for not taking medications was “medicine not advised by doctor” as cited by 45.9% adults (**Figure 10.9**).

### Patterns by background characteristics (Table 10.5):

- The highest proportion of adults who reported “medicine not advised by doctor” were below 40 years of age groups (54.5%).
- A higher proportion of men (48.8%) gave the reasons “did not think drugs were necessary” or “their blood pressure was under control” compared to women (39.8%).
- The proportion of individuals gave the reasons that “drugs were not necessary” or “their blood pressure got normal” did not vary by education-level.
- However, the proportion of adults who stated that the medicines were too expensive decreased with increase in education level, decreasing from 9.2% in the lowest education group to 0% in the “higher than secondary education” group.

**Figure 10.9** Reasons for which adults reported not taking drugs for raised BP, Nepal STEPS Survey 2011





## **LIST OF TABLES:**

For more information on raised blood pressure prevalence, Screening and treatment coverage or sources of care, see the following tables:

**Table 10.1 Prevalence of raised BP and diagnosis, treatment and control rates**

**Table 10.2 Measurement of BP, prescription of medications, treatment compliance**

**Table 10.3 Sources of care for raised BP or hypertension**

**Table 10.4 Sources of medications for raised BP or hypertension**

**Table 10.5 Reasons for not taking medications among those told to have raised BP or hypertension and have been prescribed medications**

**Table 10.6 Care seeking from traditional healers and use of traditional/herbal remedies**

**Table 10.1 Prevalence of raised BP or hypertension and diagnosis, treatment and control rates**

Percentage of people 15-69 years who had raised BP or hypertension at the time of survey or on BP medications and who were aware of their diagnosis, on treatment or have their BP controlled or uncontrolled with medications, by background characteristics, [Nepal STEPS, 2019]

Background characteristic	Prevalence of raised BP <sup>1</sup> (N)	Among those with raised BP <sup>1</sup>					Total (N)
		Not aware of diagnosis	Aware of diagnosis but not on treatment	On treatment but not controlled	On treatment and controlled		
<b>Age</b>							
15-24	9.5	825	91.2	7.7	1.2	0.0	72
25-39	21.1	2065	85.2	11.0	1.0	2.8	413
40-54	36.4	1551	73.3	15.5	6.9	4.3	558
55-69	45.5	1065	71.7	9.7	11.4	7.1	495
<b>Sex</b>							
Women	19.7	3540	75.4	13.0	6.0	5.6	817
Men	29.8	1966	81.3	10.8	5.0	2.9	721
<b>Residence</b>							
Metropolitan/ submetropolitan	25.2	679	75.8	11.4	7.9	4.9	233
Municipality	24.8	2719	75.8	12.0	6.4	5.8	757
Rural Municipality	23.8	2108	84.0	11.5	3.5	1.1	548
<b>Province</b>							
Province 1	26.6	795	76.9	12.6	6.9	3.7	261
Province 2	18.7	796	76.3	11.1	6.1	6.4	180
Province 3	25.2	732	77.8	8.7	6.1	7.4	223
Gandaki Province	29.9	786	73.4	13.9	8.7	4.0	269
Province 5	28.2	780	84.4	10.2	3.3	2.1	235
Karnali Province	21.4	802	77.8	14.1	6.8	1.3	178
Sudurpashchim Province	21.0	815	80.2	16.2	1.7	1.9	192
<b>Education</b>							
None/Less than primary	31.8	2741	78.5	11.5	6.2	3.7	886
Primary	25.3	1037	78.1	12.9	5.0	4.0	270
Secondary	18.3	1077	82.7	9.1	3.4	4.8	241
More than secondary	14.7	650	73.6	15.4	6.3	4.7	140
<b>Wealth quintile</b>							
Lowest	26.9	1630	87.7	7.8	3.0	1.5	429
Second	22.4	1042	81.2	12.5	4.1	2.3	269
Middle	24.7	929	80.5	11.2	6.2	2.2	263
Fourth	24.5	869	78.9	11.7	4.8	4.6	257
Highest	23.9	1036	64.6	16.1	9.4	9.9	320
<b>Age (previous 2013)</b>							
15-29	13.0	1441	92.0	6.9	1.0	0.2	171
30-44	25.6	2016	79.6	14.6	2.4	3.5	475
45-69	42.9	2049	71.4	12.4	9.8	6.5	892
Total (15-39)	16.4	2890	86.6	10.2	1.0	2.1	485
Total (40-69)	40.0	2616	72.6	12.9	8.9	5.6	1053
<b>Total (15-69)</b>	<b>24.5</b>	<b>5506</b>	<b>78.8</b>	<b>11.7</b>	<b>5.4</b>	<b>4.1</b>	<b>1538</b>

<sup>1</sup>based on measurement of BP and medications history

**Table 10.2 Measurement of BP, prescription of medications, treatment compliance**

Percentage of people 15-69 who have ever had their blood pressure measured and who have been told by a health care provider that they have raised blood pressure or hypertension; among people who have been told they have high blood pressure, the percentage told in the past 12 months they have raised blood pressure or hypertension, prescribed medication to control blood pressure, and taking medication to control blood pressure, by background characteristics, [Nepal STEPS, 2019]

Background characteristic	Ever told have high blood pressure by doctor or health care provider (%)			Among all who have been told by a doctor or health care provider they have high blood pressure, the percentage who were:		
	(N)	(N)	(N)	Told in the past 12 months have high blood pressure (%) (among those ever told)	Prescribed medication to control blood pressure (%)	ever taken medication to control blood pressure (%)
<i>Age</i>						
15-24	41.0	843	4.1	360	55.0*	17.8*
25-39	62.0	2,087	8.5	1,279	74.8	28.9
40-54	61.7	1,574	18.9	960	66.2	38.9
55-69	59.5	1,089	24.1	632	65.8	65.0
<i>Sex</i>						
Women	58.7	3,595	10.6	2,116	67.3	54.8
Men	52.8	1,998	14.3	1,115	68.4	47.5
<i>Residence</i>						
Metropolitan/ sub metropolitan	52.0	705	16.0	516	65.4	49.0
Municipality	59.5	2,755	13.3	1,639	71.9	54.7
Rural Municipality	51.7	2,133	9.6	1,076	59.7	43.5
<i>Province</i>						
Province 1	63.5	804	13.5	551	60.1	50.1
Province 2	56.5	803	8.4	428	98.6	66.6
Province 3	66.1	759	10.4	556	70.4	55.8

Gandaki Province	68.5	793	14.1	587	50.5	48.7	46.5	39.1	101
Province 5	46.2	797	11.8	395	75.8	44.9	37.2	27.0	64
Karnali Province	39.9	808	17.3	325	55.6	42.2	34.9	23.3	59
Sudurpashchim Province	45.1	829	18.0	389	58.2	44.6	25.9	9.0	57

**Education**

None/Less than primary	51.3	2,792	16.1	1,430	66.3	61.3	48.2	36.1	251
Primary	54.3	1,051	11.5	614	65.2	55.3	44.5	35.6	94
Secondary	54.3	1,088	9.2	680	71.7	33.8	33.8	29.6	92
More than secondary	72.6	661	9.5	507	71.5	34.7	28.7	23.2	64

**Wealth quintile**

Lowest	43.4	1,653	10.0	660	61.0	50.8	41.3	26.5	97
Second	50.5	1,062	10.1	580	62.6	48.4	34.2	23.6	64
Middle	55.8	949	13.4	607	66.7	52.0	38.2	27.0	95
Fourth	63.0	878	11.6	591	68.8	46.2	37.6	31.3	96
Highest	66.9	1,051	15.0	793	73.8	55.4	52.0	45.8	149

**Age (previous 2013)**

15-29	48.9	1,466	5.3	747	73.1	20.7	17.3	5.5	50
30-44	63.0	2,039	11.0	1,241	67.8	37.3	31.6	21.0	153
45-69	60.2	2,088	23.3	1,243	66.3	68.0	55.2	47.8	298
Total (15-39)	53.4	2,930	7.1	1,639	71.2	30.0	26.9	13.1	148
Total (40-69)	60.8	2,663	20.9	1,592	66.0	63.1	50.5	44.1	353
<b>Total (15-69)</b>	<b>55.9</b>	<b>5,593</b>	<b>12.3</b>	<b>3,231</b>	<b>67.9</b>	<b>51.0</b>	<b>41.9</b>	<b>32.8</b>	<b>501</b>

\*interpret with caution due to small sample size

**Table 10.3 Source of care for treatment for raised BP**

Percentage of people 15-69 who were ever told to have raised BP or hypertension and who mentioned different sources of care for treatment/advise, by background characteristics, [Nepal STEPS, 2019]

Background characteristic	Government Only	Private only	Both government and private	Other Facilities**	government facilities		Private		N
					Primary <sup>1</sup>	Secondary <sup>2</sup>	Tertiary <sup>3</sup>	Primary <sup>4</sup>	
<b>Age</b>									
15-24	40.3*	54.2*	3.2*	0*	27.9*	4.7*	14.4*	13.2*	443*
25-39	25.1	64.9	3.7	5.6	18.1	7.8	4.2	27.4	454
40-54	42.7	46.0	4.7	3.6	31.1	12.2	10.0	24.2	31.9
55-69	27.6	48.5	5.2	16.4	20.8	8.4	14.3	32.9	35.0
<b>Sex</b>									
Women	39.4	48.8	3.2	6.2	24.3	11.3	12.4	29.9	25.9
Men	27.2	56.7	5.7	8.8	23.9	7.5	7.3	24.0	48.5
<b>Residence</b>									
Metropolitan/ submetropolitan	31.4	45.2	6.6	15.1	12.0	8.5	26.5	24.2	46.8
Municipality	28.8	59.9	2.3	6.9	20.1	7.7	8.2	29.3	38.6
Rural Municipality	43.4	39.8	8.5	6.2	38.3	13.5	6.6	22.4	31.8
<b>Province</b>									
Province 1	51.5	38.7	3.4	5.8	42.7	9.1	11.5	16.5	31.4
Province 2	8.6	69.3	9.4	7.8	6.4	10.5	2.7	45.2	42.9
Province 3	18.4	55.5	2.9	19.0	14.3	5.0	11.8	18.7	50.8
Gandaki Province	41.0	46.3	11.1	1.6	23.6	13.3	18.2	32.5	28.2
Province 5	34.1	57.9	2.4	5.5	25.3	7.0	10.3	24.3	39.9
Karnali Province	43.7	44.1	2.4	6.2	27.4	14.6	8.0	24.0	23.7
Sudurpashchim Province	31.1	60.4	0.9	4.8	19.9	10.9	4.6	35.3	38.2
<b>Education</b>									
None/Less than primary	37.2	45.9	3.8	10.4	23.6	12.9	10.6	30.7	25.2
Primary	24.6	67.1	2.3	4.1	21.8	5.7	4.0	25.8	50.3
Secondary	32.6	49.4	7.3	8.4	28.8	7.7	11.9	27.2	40.4
More than secondary	30.6	61.7	5.8	1.9	23.2	4.5	11.6	16.0	57.8
<b>Wealth quintile</b>									
Lowest	50.8	35.7	5.5	7.4	36.5	15.8	18.2	23.1	18.4
Second	46.1	36.1	2.3	7.0	41.0	8.5	2.9	18.8	25.2

	<b>Middle</b>	<b>Fourth</b>	<b>Highest</b>	<b>Total (15-39)</b>	<b>Total (40-69)</b>	<b>Total (15-69)</b>
Middle	35.6	51.8	4.2	7.8	23.0	14.6
Fourth	28.1	57.8	7.0	6.2	24.7	7.0
Highest	20.2	66.2	3.4	8.7	10.5	4.6
						11.1
Total (15-39)	27.9	63.0	3.6	4.6	19.9	7.3
Total (40-69)	36.0	47.1	4.9	9.3	26.5	10.5
<b>Total (15-69)</b>	<b>33.0</b>	<b>52.9</b>	<b>4.5</b>	<b>7.6</b>	<b>24.1</b>	<b>9.3</b>
						<b>9.8</b>
						<b>26.9</b>
						<b>37.6</b>
						<b>501</b>

Notes: \*interpret with caution due to small sample size; \*\*other includes ayurvedic/homeopathic providers (had only 2 respondents) as well as private medical shops.

<sup>1</sup> Primary government facilities include government primary health centres and government health posts

<sup>2</sup> Secondary government facilities include government district hospitals

<sup>3</sup> Tertiary government facilities include government tertiary level hospitals and government regional and sub regional hospitals

<sup>4</sup> Primary private facilities include Private Clinics

<sup>5</sup> Secondary private facilities include NGO run/community hospitals and private hospitals

**Table 10.4 Source of drugs/medications for BP: all**

Percentage of people 15-69 who have ever taken medication for raised BP or hypertension and who mentioned different sources medications, by background characteristics, [Nepal STEPS, 2019]

Background characteristic	Government Only*	Private Only**	Both government and private	Other Facilities	N
<b>Age</b>					
15-24	33.7*	66.3*	0*	0*	4*
25-39	21.3	56.6	7.1	14.5	38
40-54	17.3	75.5	2.4	0.0	94
55-69	8.1	80.9	8.5	0.0	111
<b>Sex</b>					
Women	21.7	61.9	7.4	4.1	148
Men	6.2	87.6	4.3	1.6	99
<b>Residence</b>					
Metropolitan/ submetropolitan	36.1	46.0	11.4	6.4	62
Municipality	9.3	80.7	3.5	3.2	129
Rural Municipality	20.2	65.8	11.6	0.0	56
<b>Province</b>					
Province 1	12.9	72.9	10.7	3.5	45
Province 2	0.9*	89.2*	1.7*	0.0*	29*
Province 3	8.5	86.4	2.1	0.0	45
Gandaki Province	17.0	70.2	10.9	0.0	57
Province 5	25.9*	47.6*	8.5*	15.3*	29*
Karnali Province	17.8*	82.2*	0*	0.0*	25*
Sudurpashchim Province	37.2*	59.0*	3.6*	0.0*	17*
<b>Education</b>					
None/Less than primary	15.0	69.6	6.4	4.0	132
Primary	15.8	82.8	1.4	0.0	45
Secondary	11.7	77.0	6.2	5.1	39
More than secondary	14.1*	73.8*	12.2*	0.0*	31*
<b>Wealth quintile</b>					
Lowest	26.2	66.3	4.4	0.0	40
Second	24.3*	63.0*	0*	0.0*	26*
Middle	25.4	63.8	10.1	0.0	46
Fourth	6.1	83.9	9.5	0.0	46
Highest	5.7	80.0	4.4	8.2	89
<b>Age (previous 2013)</b>					
15-29	50.7*	36.7*	12.6*	0.0*	10*
30-44	13.3	69.9	2.8	13.5	50
45-69	11.4	78.6	6.3	0.0	187
Total (15-39)	22.8	57.8	12.6	12.7	42
Total (40-69)	12.0	78.6	3.6	0.0	205
<b>Total (15-69)</b>	<b>14.6</b>	<b>73.7</b>	<b>6.0</b>	<b>0.0</b>	<b>247</b>

Notes: \*interpret data with caution due to small sample size

**Table 10.5 Reasons for not taking medications for raised BP or hypertension: all**

Percentage of people 15-69 who have been ever advised to take drugs but not taking drugs in the past 2 weeks and specified different reasons for not taking medication for raised BP or hypertension, by background characteristics, [Nepal STEPS, 2019]

Background characteristic	don't think drugs are necessary/BP got normal	fear or have side effects	too expensive/not available	Medicines not advised by doctor	(N)
<b>Age</b>					
15-24	49.2*	0*	0*	54.4*	15*
25-39	53.7	5.4	1.8	54.5	111
40-54	58.0	6.5	6.0	40.7	110
55-69	57.3	4.0	14.7	33.4	60
<b>Sex</b>					
Women	39.8	5.9	7.3	42.6	176
Men	48.8	4.2	3.8	48.7	120
<b>Residence</b>					
Metropolitan/ submetropolitan	71.2	1.9	3.8	24.5	42
Municipality	46.7	6.7	8.1	53.3	141
Rural Municipality	66.5	3.0	1.0	39.1	113
<b>Province</b>					
Province 1	63.8	3.2	8.2	35.3	51
Province 2	52.7*	2.9*	7.6*	58.0*	20*
Province 3	50.9	0.2	0.0	63.9	42
Gandaki Province	48.7	11.4	0.0	49.3	49
Province 5	65.8	9.8	2.9	34.2	41
Karnali Province	58.8	9.0	7.4	41.2	44
Sudoorpashchim Province	42.7	2.3	9.1	50.5	49
<b>Education</b>					
None/Less than primary	59.6	7.8	9.2	35.4	147
Primary	55.5	3.1	6.4	52.7	55
Secondary	46.4	0.0	0.7	62.7	57
More than secondary	54.3	5.0	0.0	47.7	37
<b>Wealth quintile</b>					
Lowest	72.0	6.8	4.6	32.9	74
Second	50.8	2.2	5.8	47.3	43
Middle	40.8	6.5	9.1	53.7	56
Fourth	56.7	2.7	3.8	39.6	55
Highest	62.6	6.7	3.4	50.4	68
Total (15-39)	52.8	4.3	1.4	54.5	126
Total (40-69)	57.7	5.6	9.0	38.2	170
<b>Total (15-69)</b>	<b>55.4</b>	<b>5.0</b>	<b>5.4</b>	<b>45.9</b>	<b>296</b>

Notes: \*interpret data with caution due to small sample size

**Table 10.6 Care seeking from traditional healers and use of traditional/herbal remedies: all**

Percentage of people 15-69 who have been ever told to have raised BP or hypertension and who sought care from a traditional healer or currently using a traditional/herbal remedy, by background characteristics, [Nepal STEPS, 2019]

Background characteristic	For raised BP			
	ever seen a local healer	Total Number (N)	currently taking a herbal remedy	Total Number (N)
<b>Age</b>				
15-24	0*	17	0*	17
25-39	8.6	131	7.6	131
40-54	2.1	193	0.0	193
55-69	3.6	160	0.8	160
<b>Sex</b>				
Women	2.9	293	0.0	293
Men	5.6	208	4.8	208
<b>Residence</b>				
Metropolitan/ submetropolitan	1.7	100	0.0	100
Municipality	6.3	252	4.0	252
Rural Municipality	0.8	149	0.0	149
<b>Province</b>				
Province 1	11.7	90	10.9	90
Province 2	0.0	44	0.0	44
Province 3	0.0	86	0.0	86
Gandaki Province	1.4	101	0.0	101
Province 5	7.4	64	0.0	64
Karnali Province	0.0	59	0.0	59
Sudurpashchim Province	1.9	57	0.0	57
<b>Education</b>				
None/Less than primary	3.8	251	0.0	251
Primary	1.2	94	1.2	94
Secondary	0.0	92	0.0	92
More than secondary	14.7	64	14.7	64
<b>Wealth quintile</b>				
Lowest	5.5	97	0.0	97
Second	2.3	64	0.0	64
Middle	13.6	95	11.4	95
Fourth	1.2	96	0.0	96
Highest	0.2	149	0.0	149
<b>Age (previous 2013)</b>				
15-29	13.5	50	13.5	50
30-44	2.1	153	0.0	153
45-69	2.6	298	0.4	298
Total (15-39)	7.0	148	6.2	148
Total (40-69)	2.8	353	0.3	353
<b>Total (15-69)</b>	<b>4.3</b>	<b>501</b>	<b>2.5</b>	<b>501</b>

Notes: \*data not shown as sample size <35;



## CHAPTER 11

# DIABETES: PREVALENCE, SCREENING COVERAGE, DIAGNOSIS AND TREATMENT

### Key Findings

- **Prevalence of raised blood sugar among adults age 15-69 years.**
  - *Actual measurement:* Based on the criteria of fasting blood glucose  $\geq 126$  mg/dl, the prevalence of raised blood sugar was 5.8%. This includes people on medication whose blood sugar levels were normal at the time of survey.
  - *Self-reported prevalence:* Among all, 2.0% adults were ever told by a doctor or a health care provider that they have raised blood sugar.
- **Diagnosis and treatment gap among those noted to have raised blood sugar at the time of survey**
  - *Unaware about their raised Blood sugar:* 73.5% adults
  - *Not on treatment:* 5.9% for adults knew they had raised blood sugar but were not on treatment.
  - *On treatment but not controlled:* 14.7% of adults.
  - *On treatment and controlled:* 6.0% of adults.
- **Screening coverage, prescription of medications, treatment compliance**
  - *Screening coverage:* 17.2% of adults (21.2 % among 40-69 years old) had had their blood sugar ever measured by a doctor or a health care provider.
  - 79.7% of the adults who were told to have raised blood sugar were prescribed medication to lower their blood sugar levels.
  - *Treatment compliance:* 70% adults who were told to have raised blood sugar reported *ever* taking any medications to control their blood sugar. A little over half adults (55%) reported currently taking their prescribed medications (including insulin) in the two weeks prior to the survey.
- **Sources of care and medications**
  - *Sources of care:* 78.6% of adults usually sought treatment and advice for raised blood sugar from private facilities only, and 11.0% reported so from government facilities only. 5.3% sought care from both government and private facilities.
  - *Sources of drugs/medication:* Majority of the adults who were prescribed medication reported usually getting them only from private facilities (82.2%) and 11.8% reported getting their medication only from government facilities.
  - No adult reported taking herbal remedies or visiting a traditional healer like *Dhami/Jhakri/Purohit/Lama/Gubaji/Matas* for controlling their diabetes or raised blood sugar.
- **Reasons for not taking medications among those prescribed medication to control their blood sugar**

“Medication not necessary” and “Blood sugar got normal” were the most common reasons given for not taking medication-- reported by 53.0% adults who were ever prescribed medications

Diabetes is a chronic metabolic disorder characterized by raised blood sugar or hyperglycemia that occurs when the pancreas does not produce sufficient insulin (Type 1 diabetes) or when the body cannot effectively use the insulin it produces (Type 2 diabetes). Over time, diabetes can cause damage to the heart, blood vessels, eyes, kidneys and nerves. Type 2 diabetes is much more common and affects older people (generally 35 years or older) around the world. The risk for Type 2 diabetes increases among obese and physically inactive individuals.<sup>1</sup> Smoking also notably increases the risk of diabetes and other cardiovascular diseases<sup>1</sup>. An individual is considered to be hyperglycemic/diabetic if their fasting blood glucose is  $\geq 7$  mmol/L or  $\geq 126$  mg/dl<sup>1</sup>.

Simple lifestyle changes have been shown to be effective in preventing or delaying the onset of type 2 diabetes. These include being physically active (at least 30 minutes of regular, moderate intensity activity on most days), achieving and maintaining a healthy body weight, eating a healthy diet and avoiding tobacco use.

Under the WHO Global Action Plan, two of the nine voluntary targets are directed at global diabetes control. These include attaining a 25% relative reduction in risk of premature mortality from cardiovascular diseases, cancer, diabetes, or chronic respiratory diseases and halting the rise in diabetes and obesity<sup>2</sup>. In line with the global NCD targets, Nepal has also adopted the same targets for diabetes control as stated under the WHO Global Action Plan<sup>3</sup>.

The availability of diabetes care services and quality of care are not structured and uniform in the country.<sup>4</sup> The report of the assessment of diabetic retinopathy and diabetic management system in Nepal, 2015, reports lack of diabetes services at the primary health-care level. The majority of the services are clustered in urban areas and are provided by nongovernmental organizations and the private sector<sup>5</sup>. Nepal has adapted and implemented WHO Package of Essential Noncommunicable (PEN) disease interventions for primary health care in low-resource settings as an essential package of cost-effective interventions with high impact, including those for early detection and management of type 2 diabetes, which are feasible for application in resource poor settings since 2017. This will provide opportunity for integrating diabetes services within the primary health care system.

This chapter focuses on indicators related to raised blood sugar; assessing prevalence, diagnosis and treatment gaps and care seeking behaviors around blood sugar and diabetes management. This information will help Nepal to assess trends and progress towards diabetes management as specified in its multisectoral action plan as well as evaluation of current policies and programs in place to reduce population blood sugar levels. These will also guide future policy and programs to manage diabetes at population level.

## Blood Glucose Measurement

Blood glucose was measured in the step 3 of the Survey in the whole blood obtained through a finger prick following the guidelines and using the validated equipment (cardiocheck PA glucometers and strips) mentioned in the data collection section. Appropriate consent was obtained from the participants to obtain blood sample and carry out the biochemical measurements.

## Analysis

Hyperglycemia or raised blood sugar was defined as having fasting blood glucose  $\geq 126$  mg / dl during the study, or blood sugar  $<126$  mg/dl but currently taking medications to lower blood sugar based on previous diagnosis.

Observations which had fasting blood glucose  $\leq 18$  mg / dl or  $\geq 630$  mg / dl were excluded, though none of adults were recorded in this range in the survey.

1 <https://www.who.int/news-room/fact-sheets/detail/diabetes>

2 [https://apps.who.int/iris/bitstream/handle/10665/94384/9789241506236\\_eng.pdf;jsessionid=169900F28726243CF630A2A0A691E886?sequence=1](https://apps.who.int/iris/bitstream/handle/10665/94384/9789241506236_eng.pdf;jsessionid=169900F28726243CF630A2A0A691E886?sequence=1)

3 [http://www.saro.who.int/nepal/media/ntre/ned\\_multisectoral\\_action\\_plan.pdf](http://www.saro.who.int/nepal/media/ntre/ned_multisectoral_action_plan.pdf)

4 World Health Organization (WHO). WHO South-East Asia Journal of Public Health | April 2016 | 5 (1).

5 Mishra, S. K., N. Jha, et al. (2016). "An Assessment of Diabetic Retinopathy and Diabetes Management System in Nepal." *JNepal Health Res Coun* 14(33): 104-110

## 11.1. Prevalence of raised blood sugar based on measurement and medications history

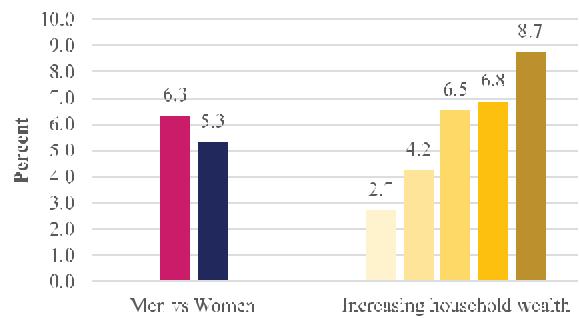
Self-reported prevalence is likely to underestimate the true prevalence as many people with raised blood sugar may not have any symptoms in the initial stages and few symptomatic people get their blood glucose measured regularly. Therefore, carrying out actual measurements of blood sugar levels is essential to determine the actual population-based prevalence.

Overall 5.8% of adults had raised blood sugar based on both the measurement and prior diagnosis and medications history. On the other hand, based on self-reports among individuals who ever got their blood sugar measured, the prevalence was only 2.0%.

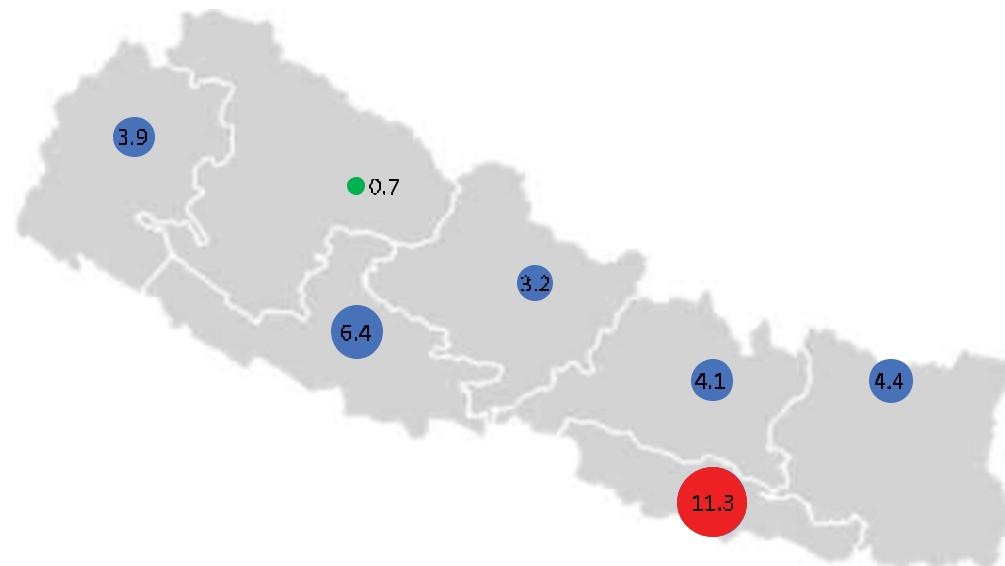
**Patterns by background characteristics (Table 11.1):**

- The prevalence of raised blood sugar increased with age. The prevalence increased substantially after the age of 40yrs (9.6 % prevalence among adults aged 40-54 years). Prevalence of diabetes was higher in men compared to women (6.3% vs 5.3%) (**Figure 11.1**).
- The prevalence of raised blood sugar decreased with increase in education level. 6.2% of adults with “no education/ less than primary education” and 4.1% adults with more than secondary education were determined to have raised blood sugar.
- The prevalence of raised blood sugar increased directly with increasing household wealth. (2.7% in the lowest group and 8.7% in the wealthiest group) (**Figure 11.1**).
- Adults from metropolitan/submetropolitan residences were most likely to have raised blood sugar (10.5%) compared to rural municipalities. The raised blood glucose prevalence was highest in Province 2 (11.3%) and lowest in Province 6 (0.7%) (**Figure 11.2**).

**Figure 11.1** Prevalence raised Blood among adults aged 15-69 years by age and household wealth, Nepal STEPS survey 2019



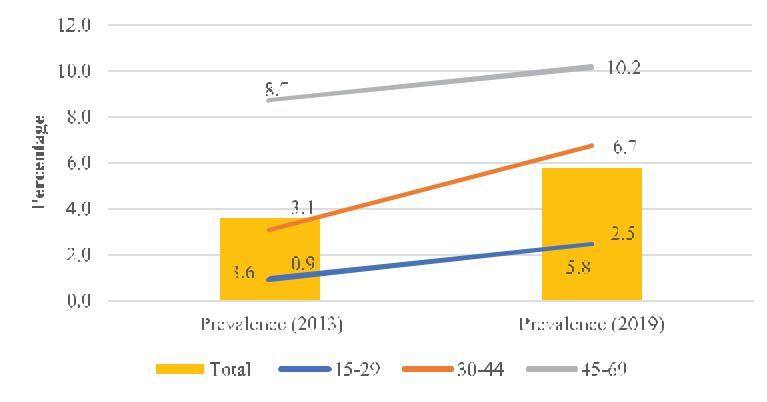
**Figure 11.2** Provincial differences in diabetes prevalence among 15-69 years population, Nepal STEPS survey 2019



### Trends between 2013<sup>6</sup> and 2019 survey:

The prevalence of diabetes among adults increased from 3.6 % in 2013 to 5.8% in 2019. The increase was noticed across all the age groups (**Figure 11.3**).

**Figure 11.3** Trends in prevalence of diabetes by age group, Nepal STEPS Survey 2013 and 2019



## 11.2. Diagnosis and treatment gap (Table 11.1)

Diabetes increases the risk of development of severe health complications such as heart disease or problems with nerves, blood vessels, eyes and kidneys. Ensuring early diagnosis and initiation of treatment enables adults to make necessary lifestyle adjustments and reduces the risk of lasting damage. Hence, early detection of diabetes by regular screening using fasting blood sugar levels (at least annually) is an important secondary prevention strategy to control morbidity and mortality associated with diabetes.

### Diagnosis gap

Of all the adults who were diagnosed to be diabetic as presented in (**Table 11.1**), 73.5 % diabetic adults were unaware of their raised blood sugar status. The largest proportion amongst this group was observed to be between the ages 30-44 years (80.1%).

- Percentage of diabetic adults unaware of their raised blood glucose status declined with age.
- More diabetic women were unaware of their raised blood glucose status than men (76.9%- women vs 70.1%- men)
- Residents of municipalities and rural municipalities were more likely to be unaware of their blood sugar status compared to metropolitan/sub metropolitan residents.
- The proportion of adults who were unaware of their diagnosis status decreased with increased wealth (**Figure 11.4**), but no consistent trends were seen with education level.

### Treatment gap:

Overall, 5.9% of the people with raised blood sugar were aware of diagnosis but not on treatment.

- The proportion of adults who were aware of their status not on treatment was highest in the age group of 40-54 years (12.1%)
- There were no consistent trends for adults on treatment in terms of household wealth (**Figure 11.4**) or education level.

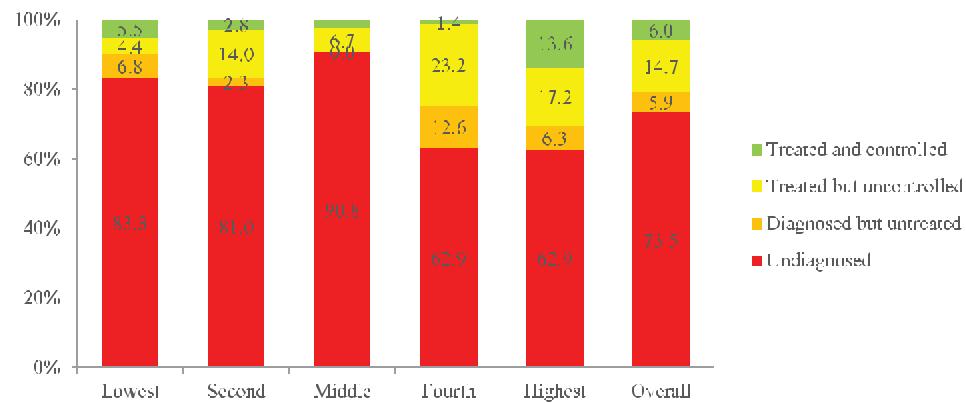
<sup>6</sup> Aryal, KK; Neupane, S; Mchata, S; Vaidya, A; Singh, S; Paulin, F; Madanlal, RG; Riley, LM; Cowan, M; Guthold, R; Singh, SP; Bhusal, CL; Lohani, GR; (2014) Non communicable diseases risk factors: STEPS Survey Nepal 2013. Kathmandu: Nepal Health Research Council

## Quality of treatment: controlled or uncontrolled while on treatment

Overall, 6.0% of adults with raised blood sugar and on treatment had their blood sugar under control and 14.7% on treatment did not have it under control

- The proportion on treatment who did not have their blood sugar under control increased with increasing age group (5.2% in 25-39 years age group to 24.5% in the 55-69 years age group). The proportion of participant under treatment and controlled blood sugar level was highest among adults aged 40-54 years (10.0%).

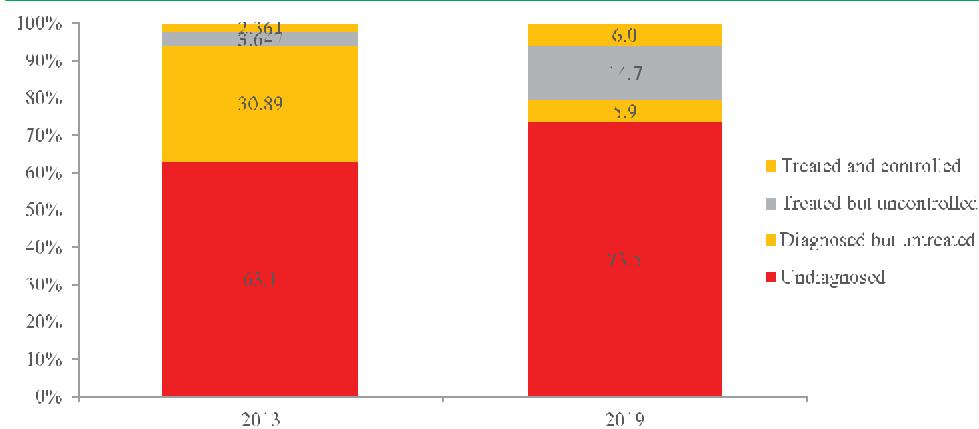
**Figure 11.4 Diagnosis and Treatment gaps among adults aged 15-69 years by wealth quintile, Nepal STEPS survey 2019**



## Trends between 2013<sup>6</sup> and 2019 survey (Figure 11.5):

There is an overall increase in the percentage of adults who are not aware of their raised blood glucose status compared to the 2013 survey, particularly in the younger age group (15-29 years). However, the percentage of adults who are aware of their raised blood sugar status and are not on treatment has significantly decreased. Overall, the number of diabetic individuals on treatment has significantly increased (20.7%).

**Figure 11.5 Trend in percent of adults aged 15-69 who are aware of their raised blood sugar status and are on treatment by age group, Nepal STEPS Survey 2013 and 2019**



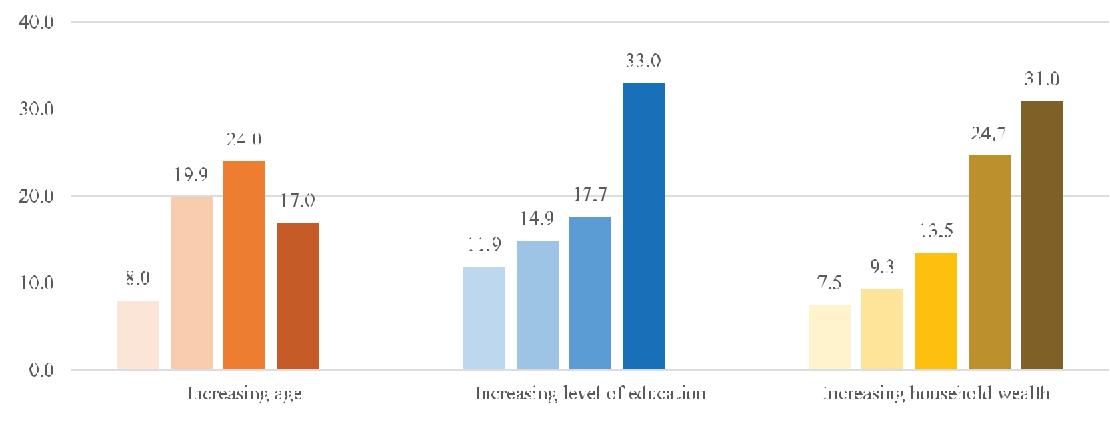
### 11.3. Screening coverage (Table 11.2)

Early detection of raised blood sugar through regular (at least annual) checkups of healthy individuals is one of the key public health strategies for reducing the morbidity and mortality associated with diabetes. Though data were not elicited about annual screening, 17.2 % adults (21.2 % among the age group 40-69 years old) had had their blood sugar ever measured by a doctor or a health care provider.

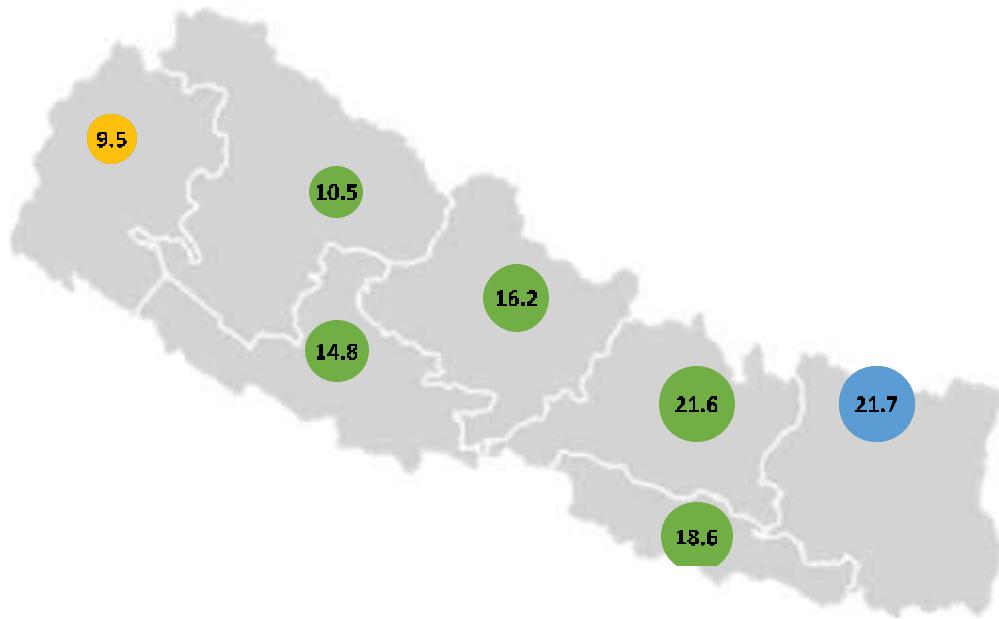
#### Patterns by background characteristics (Table 11.2 and Figure 11.6):

- No significant differences were observed by sex.
- Younger adults age 15-24 years were much less likely to report their blood sugar ever measured compared to other age-groups.
- The likelihood of ever having blood sugar measured was highest in metropolitan or sub-metropolitan areas (22.9%) and lowest in the rural municipalities (14.3%). The screening coverage in Karnali Province and Sudurpashchim Province was significantly lower than other Provinces, with highest screening coverage in Province 1 and Province 3 (**Figure 11.7**).
- The likelihood of having had blood sugar measured increased with education level and by household wealth.

**Figure 11.6** Percent of adults who have ever had their Blood Sugar measured by a doctor or health care provider among adults aged 15-69 years, Nepal STEPS survey 2011



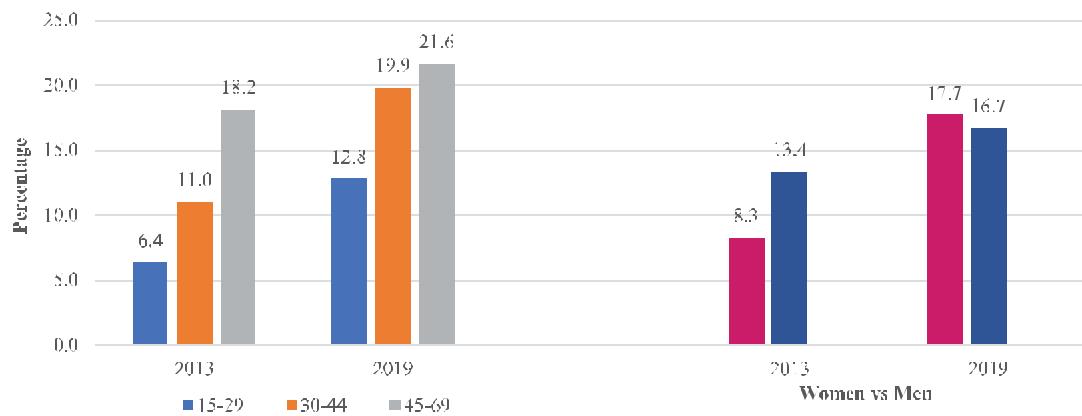
**Figure 11.7** Percent of adults who have ever had their Blood Sugar measured by a doctor or health care provider among adults aged 15-69 years by Province, Nepal STEPS survey 2019



#### Trends between 2013<sup>6</sup> and 2019 survey (Figure 11.8):

The percentage of adults who had ever had their blood sugar levels measured by a doctor or health care provider increased from 10.8% in 2013 to 17.2% in 2019. This increase was observed across all age groups and in both sexes.

**Figure 11.8** Trend in percent of adults aged 15-69 who have ever had their blood sugar measured by age group and sex, Nepal STEPS Survey 2013 and 2019



#### 11.4. Prescription of medications and compliance with treatment (Table 11.2)

Monitoring of prescription practices and treatment compliance is an important strategy for evaluating the outcomes at individual and at population level. Raised blood sugar is a chronic risk factor, requiring treatment over the lifetime of a person, which may reduce the compliance with treatment as observed with many other chronic conditions such as HIV/AIDS or tuberculosis.

Among adults who were ever told to have raised blood sugar majority of the participants (79.7%) were prescribed the medications, 70% (87.9% of those who were prescribed medications) ever took the medicines and 55% (or 69.0% of those who were prescribed medications) reported currently taking the medications, showing fairly good compliance with the prescriptions.

- Both the likelihood of being prescribed medication and compliance with treatment increased with age being highest in 40-69 years age groups (85.6% prescribed medication, 86% ever taken medication, 66.1% currently taking medication).
- The likelihood of being prescribed the medications increased with increase in household wealth.

## 11.5. Sources of care for treatment and advice and medications for raised blood sugar

Overall a much higher proportion of adults sought treatment advise and care from private facilities (which include NGO run centers) (78.6%) than from government (11%) or other sources (such as Ayurvedic, homeopathic or naturopathic hospital/clinic, medicine shops, pharmacies, etc.) (3.9%) (**Table 11.3**). Similarly, for medications, majority of the adults approached only private providers (82.2%), and only 11.8% of adults went to government providers. 5.7% of adults mentioned both government and private sources for medications for raised blood sugar (**Table 11.4**).

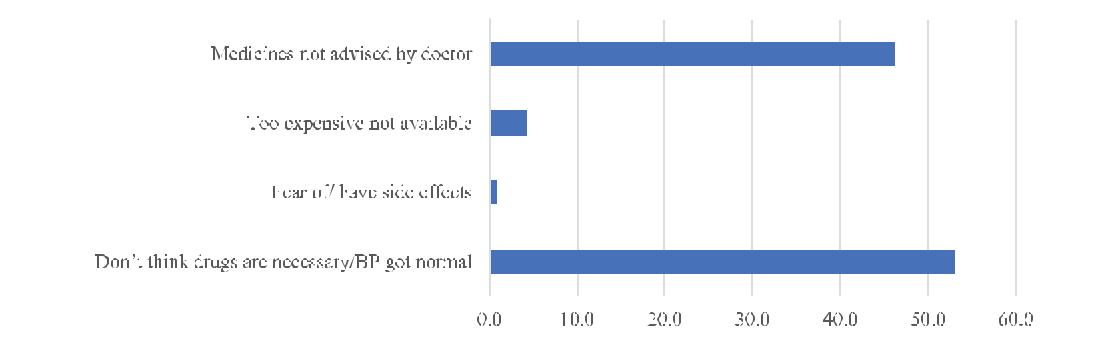
## 11.6. Consultation with traditional healers and use of herbal remedies

- A negligible proportion of adults with raised blood sugar reported visiting a traditional healer like Dhami/Jhakri/Purohit/Lama/Gubaji/ Matas for treatment and advise. The same trend was observed in adults who reported currently taking herbal remedies for their raised blood sugar. However, in 2013, 8.8% of the known diabetic participants had visited a traditional healer and 14.2% were taking herbal and traditional treatments for diabetes.
- Additionally, the percentage of adults who reported usually going to seek care, advise or medications at ayurvedic, homeopathic or naturopathic hospitals/clinics was also negligible.

## 11.7. Reasons for not on treatment

53.0% of adults who were prescribed medications cited “didn’t think the drugs were necessary” and “their blood sugar got normal” as reasons for not currently taking medications/treatment (**Table 11.5**). The second most common reason given for not taking medications was “medicines not advised by doctor” as cited by 46.2% adults.

**Figure 11.9** Reasons for which adults reported not taking drugs for raised Blood sugar, Nepal STEPS 2019



## **LIST OF TABLES:**

For more information on raised blood sugar prevalence, screening coverage and treatment coverage or sources of care, see the following tables:

**Table 11.1 Prevalence of raised Blood sugar and diagnosis, treatment and control rates**

**Table 11.2 Measurement of Blood sugar, prescription of medications, treatment compliance**

**Table 11.3 Sources of care for raised Blood sugar**

**Table 11.4 Sources of medications for raised Blood sugar**

**Table 11.5 Reasons for not taking medications among those told to have raised Blood sugar and have been prescribed medications**

**Table 11.1 Prevalence of raised Blood sugar and diagnosis, treatment and control rates: all**

Percentage of people 15-69 years who had raised blood sugar at the time of survey or on blood sugar medications and who were aware of their diagnosis, on treatment or have their Blood sugar controlled or uncontrolled with medications, by background characteristics, [Nepal STEPS, 2019]

Background characteristic	Prevalence of raised Blood sugar <sup>1</sup> (N)	Among those with raised Blood sugar levels <sup>1</sup>					Number of Participants
		Not aware of diagnosis	Aware of diagnosis but not treatment	On treat- ment but not controlled	On treat- ment and controlled		
<b>Age</b>							
15-24	2.1	775	100.0	0.0	0.0	0.0	15
25-39	5.0	1,931	90.0	2.3	5.2	2.6	93
40-54	9.6	1,457	56.8	12.1	21.0	10.0	133
55-69	9.2	1,028	64.8	3.5	24.5	7.2	102
<b>Sex</b>							
Women	5.3	3357	76.9	3.5	14.2	5.4	199
Men	6.3	1834	70.1	8.2	15.1	6.7	144
<b>Residence</b>							
Metropolitan/ submetropolitan	10.5	648	57.5	16.3	22.0	4.1	89
Municipality	6.1	2,570	76.2	3.6	11.7	8.4	184
Rural Municipality	4.1	1,973	77.5	4.2	16.6	1.8	70
<b>Province</b>							
Province 1	4.4	743	70.2	0.9	22.6	6.3	49
Province 2	11.3	759	79.9	4.3	12.7	3.1	102
Province 3	4.1	687	63.9	5.8	12.2	18.1	48
Gandaki Province	3.2	757	68.1	10.8	12.6	8.5	30
Province 5	6.4	748	65.9	12.6	17.8	3.6	58
Karnali Province	0.7	763	32.9	0.0	7.0	60.0	14
Sudurpashchim Province	3.9	734	93.6	0.0	6.0	0.4	42
<b>Education</b>							
None/Less than primary	6.2	2,595	78.6	2.9	13.1	5.4	177
Primary	6.5	975	65.7	8.0	18.6	7.8	76
Secondary	5.4	1,005	66.5	12.3	14.2	7.1	56
More than secondary	4.1	615	83.8	0.0	13.8	2.4	34
<b>Wealth quintile</b>							
Lowest	2.7	1,533	83.3	6.8	4.4	5.5	42
Second	4.2	998	81.0	2.3	14.0	2.8	50
Middle	6.5	890	90.8	0.0	6.7	2.6	66
Fourth	6.8	803	62.9	12.6	23.2	1.4	71
Highest	8.7	967	62.9	6.3	17.2	13.6	114
<b>Age (previous 2013)</b>							
15-29	2.5	1,356	100.0	0.0	0.0	0.0	30
30-44	6.7	1,876	80.1	6.9	9.8	3.2	112
45-69	10.2	1,959	58.9	7.4	23.5	10.2	201
Total (15-39)	3.8	2,706	92.3	1.8	4.0	2.0	108
Total (40-69)	9.4	2,485	59.9	8.8	22.4	8.9	235
<b>Total (15-69)</b>	<b>5.8</b>	<b>5191</b>	<b>73.5</b>	<b>5.9</b>	<b>14.7</b>	<b>6.0</b>	<b>343</b>

<sup>1</sup> Total DM prevalence based on measurement/self reported medication insulin/oral

**Table 11.2 Blood sugar measured, self-reported prevalence and treatment of raised blood sugar: all**

Percentage of participants age 15-69 years who ever had their blood sugar measured and who have been told by a health care provider that they have raised blood sugar; the percentage told in the past 12 months they have raised blood sugar, percentage prescribed medication to control diabetes, and percentage taking medication to control diabetes, by background characteristics, [Nepal STEPS, 2019]

Background characteristic	Among participants who have been told by a doctor or health care provider that they have raised blood sugar, the percentage who were:					
	Ever told have raised blood sugar by doctor or health care provider		Told in the past 12 months that they have raised blood sugar		Currently taking medication or insulin to control blood sugar	
	Number of participants	Ever told have raised blood sugar by doctor or health care provider	Prescribed medication to control blood sugar	Ever taken medication to control blood sugar	Number of participants	
<b>Age</b>						
15-24	8.0	0.0	843	0*	0*	1*
25-39	19.9	1.2	2,087	83.0*	63.5*	22.1*
40-54	24.0	4.5	1,574	81.3	88.6	86.0
55-69	17.0	3.9	1,089	86.5	80.3	75.3
<b>Sex</b>						
Women	16.7	1.6	3,595	73.2	76.1	77.3
Men	17.7	2.4	1,998	89.6	82.3	64.6
<b>Residence</b>						
Metropolitan/ submetropolitan	22.9	5.6	705	78.2	80.0	83.9
Municipality	18.2	1.9	2,755	85.4	86.0	64.9
Rural Municipality	14.3	1.2	2,133	81.3*	64.6*	65.7*
<b>Province</b>						
Province 1	21.7	2.6	804	84.3*	88.6*	51.7*
Province 2	18.6	1.9	803	87.4*	76.2*	82.4*
Province 3	21.6	1.6	759	86.8*	88.7*	85.6*
Gandaki Province	16.2	1.1	793	68.6*	71.7*	40.2*
Province 5	14.8	2.7	797	87.2*	78.6*	83.2*
Karnali Province	10.5	1.7	808	55.1*	49.4*	25.3*
Sudurpashchim Province	9.5	1.0	829	63.5*	71.1*	65.0*

	Total	15-69	70+ Total	70+ 550	15-69 130
<b>Education</b>					
None/Less than primary	11.9	1.7	2,792	72.4	15.9
Primary	14.9	2.2	1,051	86.9*	24.6*
Secondary	17.7	1.8	1,088	92.6*	15.2*
More than secondary	33.0	2.5	661	84.4*	29.3*
					25.5*
<b>Wealth quintile</b>					
Lowest	7.5	0.7	1,653	78.3*	42.9*
Second	9.3	1.0	1,062	65.6*	83.4*
Middle	13.5	1.6	949	85.8*	87.1*
Fourth	24.7	2.9	878	81.5	76.2
Highest	31.0	3.6	1,051	87.5	81.9
				80.4	65.0
<b>Age (previous 2013)</b>					
15-29	12.8	0.5	1,466	80.2*	80.2*
30-44	19.9	1.6	2,039	87.3*	66.3*
45-69	21.6	4.9	1,088	81.4	84.3
Total (15-39)	15.0	0.7	2,930	81.0*	61.9*
Total (40-69)	21.2	4.3	2,663	83.2	85.6
				86.0	66.1
<b>Total (15-69)</b>	<b>172</b>	<b>2.0</b>	<b>5593</b>	<b>82.6</b>	<b>79.7</b>
				<b>70.0</b>	<b>55.0</b>
					<b>130</b>

\*interpret with caution due to small sample size

**Table 11.3 Source of care for treatment or advice for diabetes: All**

Percentage of people 15-69 years who were ever told to have raised blood sugar and who mentioned different sources of care for treatment/advice, by background characteristics, [Nepal, 2019]

Background characteristic	Government Only <sup>1</sup>	Private only <sup>2</sup>	Both government and private	Other Facilities <sup>3</sup>	Total number (N)
<b>Age</b>					
15-24	0*	100*	0*	0*	1*
25-39	1.4*	93.2*	2.2*	3.2*	23*
40-54	6.7	82.0	6.7	2.0	60
55-69	27.3	59.0	5.8	8.0	46
<b>Sex</b>					
Women	8.7	75.3	8.9	4.2	69
Men	12.6	81.0	2.7	3.7	61
<b>Residence</b>					
Metropolitan/ submetropolitan	11.9	75.8	6.2	6.0	38
Municipality	5.9	75.8	3.7	2.6	61
Rural Municipality	21.6*	85.5*	8.0*	4.5*	31*
<b>Province</b>					
Province 1	7.8*	75.0*	10.7*	6.6*	25*
Province 2	0*	84.3*	2.4*	7.2*	19*
Province 3	6.1*	92.2*	0*	1.8*	22*
Gandaki Province	21.2*	78.3*	0*	0*	13*
Province 5	17.5*	72.4*	8.2*	1.9*	25*
Karnali Province	11.1*	85.3*	0*	3.7*	14*
Sudurpashchim Province	31.3*	68.7*	0*	0*	12*
<b>Education</b>					
None/Less than primary	13.3	62.1	14.1	7.1	65
Primary	14.9*	80.2*	1.8*	3.2*	24*
Secondary	11.4*	85.9*	0*	2.7*	24*
More than secondary	1.7*	97.9*	0*	0.4*	17*
<b>Wealth quintile</b>					
Lowest	33.2*	66.8*	0*	0*	14*
Second	30.0*	62.2*	5.3*	2.5*	15*
Middle	11.6*	68.1*	13.3*	7.0*	18*
Fourth	1.8	89.2	3.4	5.5	35
Highest	8.9	81.3	4.2	2.2	48
<b>Age (previous 2013)</b>					
15-29	0*	100*	0*	0*	5*
30-44	2.9*	91.4*	2.3*	3.4*	28*
45-69	15.6	70.6	7.3	4.7	97
Total (15-39)	1.4*	93.4*	2.1*	3.1*	24*
Total (40-69)	14.2	73.7	6.4	4.1	106
<b>Total (15-69)</b>	11.0	78.6	5.3	3.9	130

\*interpret with caution due to small sample size

1 Govt tertiary level hosp, Govt regional or sub regional hosp, Govt dist hosp, Govt PHC, Govt health post

2 NGO run/community hosp, private hosp, private clinic

3 Ayurvedic, homeopathic hosp/clinic, medical shops/pharmacies

**Table 11.4 Source of drugs/medications for raised blood sugar: all**

Percentage of people 15-69 years who have ever taken medication for raised Blood sugar and who mentioned different sources medications, by background characteristics, [Nepal STEPS, 2019]

Background characteristic	Government Only	Private only	Both government and private	Other Facilities	Total number (N)
<b>Age</b>					
15-24	0*	0*	0*	0*	0*
25-39	0*	100*	0*	0*	10*
40-54	6.6	86.3	6.4	0.6	37
55-69	22.2*	71.6*	6.2*	0*	32*
<b>Sex</b>					
Women	5.9	89.1	4.3	0.7	41
Men	17.4	75.6	7.0	0.0	38
<b>Residence</b>					
Metropolitan/ submetropolitan	6.8*	75.7*	17.3*	0*	26*
Municipality	6.9	91.1	1.5	0.6	37
Rural Municipality	27.1*	67.2*	5.7*	0*	16*
<b>Province</b>					
Province 1	0*	94.03*	6.0*	0*	16*
Province 2	5.0*	91.9*	3.1*	0*	15*
Province 3	0*	100*	0*	0*	15*
Gandaki Province	16.9*	75.4*	6.2*	0*	7*
Province 5	36.8*	57.3*	5.9*	0*	13*
Karnali Province	0*	83.5*	0*	16.5*	7*
Sudoorpashchim Province	28.1*	26.2*	45.7*	0*	6*
<b>Education</b>					
None/Less than primary	10.4*	79.1*	9.4*	0.9*	34*
Primary	16.7*	82.7*	0.6*	0*	16*
Secondary	7.0*	84.9*	8.1*	0*	19*
More than secondary	14.8*	85.2*	0*	0*	10*
<b>Wealth quintile</b>					
Lowest	34.7*	65.4*	0*	0*	4*
Second	46.8*	53.2*	0*	0*	9*
Middle	4.2*	64.3*	28.8*	2.7*	12*
Fourth	3.2*	92.7*	4.1*	0*	20*
Highest	9.8*	87.8*	2.4*	0*	34*
<b>Age (previous 2013)</b>					
15-29	0*	0*	0*	0*	0*
30-44	0*	100*	0*	0*	14*
45-69	14.2	78.5	6.9	0.4	65
Total (15-39)	0*	100*	0*	0*	10*
Total (40-69)	13.0	80.2	6.3	0.4	69
<b>Total (15-69)</b>	<b>11.8</b>	<b>82.2</b>	<b>5.7</b>	<b>0.3</b>	<b>79</b>

\*interpret with caution due to small sample size

1 Govt tertiary level hosp, Govt regional or sub regional hosp, Govt dist hosp, Govt PHC, Govt health post

2 NGO run/community hosp, private hosp, private clinic

3 Ayurvedic, homeopathic hosp/clinic, medical shops/pharmacies

**Table 11.5 Reasons for not taking medications for raised blood sugar: all**

Percentage of people 15-69 years who have been ever advised to take drugs but not taking drugs in the past 2 weeks and specified different reasons for not taking medication for raised blood sugar, by background characteristics, [Nepal, 2019]

Background characteristics	Don't think drug is necessary/Blood sugar got normal	Got side effects/ afraid of side effects	Too expensive/ medicines not available	Medicines not advised by doctor	Number of participants
<b>Age</b>					
15-24	0*	0*	0*	100*	1*
25-39	32.9*	0*	0*	71.5*	13*
40-54	70.1*	2.0*	7.4*	26.4*	23*
55-69	67.3*	0*	8.0*	24.8*	14*
<b>Sex</b>					
Women	54.2*	0*	7.2*	45.6*	28*
Men	52.4*	1.3*	2.7*	46.4*	23*
<b>Residence</b>					
Metropolitan/ submetropolitan	94.9*	2.5*	2.3*	6.0*	12*
Municipality	32.0*	0*	1.9*	68.2*	24*
Rural Municipality	34.7*	0*	12.8*	59.4*	15*
<b>Province</b>					
Province 1	6.7*	3.1*	0*	90.2*	9*
Province 2	89.5*	0*	0*	10.5*	4*
Province 3	37.9*	0*	14.6*	47.5*	7*
Gandaki Province	31.6*	0*	0*	85.1*	6*
Province 5	90.8*	0*	6.4*	6.9*	12*
Karnali Province	11.0*	0*	2.0*	87.0*	7*
Sudurpashchim Province	76*	0*	12.6*	34.3*	6*
<b>Education</b>					
None/Less than primary	60.6*	2.6*	13.2*	36.9*	31*
Primary	54.1*	0*	0*	45.9*	8*
Secondary	94.5*	0*	0*	5.5*	5*
More than secondary	20.0*	0*	0*	80.0*	7*
<b>Wealth quintile</b>					
Lowest	21.3*	0*	9.6*	69.0*	10*
Second	38.0*	0*	1.8*	79.9*	6*
Middle	10.0*	0*	0*	90.0*	6*
Fourth	78.7*	0*	7.4*	18.7*	15*
Highest	78.6*	2.9*	3.3*	18.8*	14*
<b>Age (previous 2013)</b>					
15-29	0*	0*	0*	100*	5*
30-44	67.1*	0*	2.5*	36.5*	14*
45-69	72.2*	1.8*	7.7*	23.5*	32*
Total(15-39)	31.9*	0*	0*	72.4*	14*
Total(40-69)	69.3	1.5	7.5	26.0	37
<b>Total(15-69)</b>	<b>53.0</b>	<b>0.8</b>	<b>4.3</b>	<b>46.2</b>	<b>51</b>

\*interpret with caution due to small sample size



## CHAPTER 12

# RAISED BLOOD CHOLESTEROL LEVELS: SCREENING, PREVALENCE AND TREATMENT

### Key Findings

- **Prevalence of raised blood cholesterol among adults age 15-69 yrs.**
  - o *Actual measurement:* Based on the criteria of total cholesterol  $\geq 190$  mg/dl, the prevalence of raised blood cholesterol was 11.0%. This includes those with raised blood cholesterol at the time of survey and those with normal levels but on medications to lower blood cholesterol at the time of survey.
  - o *Self-reported prevalence:* Among adults who had ever had their blood cholesterol measured, 13.4% adults were ever told by a doctor or a health care provider that they have raised blood cholesterol.
- **Diagnosis and treatment gap among those noted to have raised blood cholesterol at the time of survey**
  - o *Unaware about their raised Blood cholesterol:* 97.9% adults
  - o *Not on treatment:* 0.7% of adults who knew that they had raised blood cholesterol but were not on treatment.
  - o *On treatment but not controlled:* 1.4% of adults.
  - o *On treatment and controlled:* 0% of adults.
- **Screening coverage, prescription of medications, treatment compliance**
  - o *Screening coverage:* 4.6% of adults (5.5 % among 40-69 years old) had had their blood cholesterol ever measured by a doctor or a health care provider.
  - o 95.2% of the adults who were told to have raised blood cholesterol were prescribed medication to lower their blood cholesterol levels.
  - o *Treatment compliance:* 34.9% adults who were told to have raised blood cholesterol reported *ever* taking any medications to control their blood cholesterol. 24.4% reported currently taking their prescribed medications in the two weeks prior to the survey.
- **Sources of care and medications**
  - o *Sources of care:* 84.7% of adults usually sought treatment and advice for raised blood cholesterol from private facilities only, and 12.6% reported so from government facilities only.
  - o *Sources of drugs/medications:* Majority of the adults who were prescribed medication reported getting them only from private facilities (72.5%) and only 2.5% reported getting their medications only from government facilities.
  - o No adult reported taking herbal remedies or visiting a traditional healer like *Dhami/Jhakri/Purohit/Lama/Gubaji/Matas* for controlling their raised blood cholesterol.

High blood cholesterol is a condition characterized by high concentrations of bad fats, or lipid in the blood and increases the risk of cardiovascular diseases. Certain modifiable lifestyle factors such as diet, exercise, and tobacco smoking may influence the amount of cholesterol in the blood. Certain individuals may also be genetically predisposed to the condition and less commonly, it may result as a side effect of certain medical conditions or medications<sup>1</sup>.

An individual is considered to have raised total cholesterol levels if when measured through capillary blood, the total cholesterol level is  $\geq 190 \text{ mg/dl}$ <sup>2</sup>.

Considering, that high cholesterol is a significant biochemical risk factor for CVD, controlling it will contribute to attainment of goal of 25% reduction in premature mortality from NCDs included in Nepal Multisectoral action plan.

This chapter focuses on indicators related to raised blood cholesterol; assessing prevalence, diagnosis and treatment gaps and care seeking behaviors around blood cholesterol management. This information will help Nepal assess its current policies and programs in place to reduce population blood cholesterol levels. These will also guide future policy and programs to manage at hypercholesterolemia at population level to reduce CVD and its associated mortality.

## Blood Cholesterol Measurement

A biochemical assessment for total cholesterol was performed through dry chemistry using CardioCheck PA Analyser as part of the STEP 3 of the survey.

## Analysis

Raised blood cholesterol was defined as having total cholesterol of  $\geq 5.0 \text{ mmol/L}$  or  $\geq 190 \text{ mg/dl}$  during the study or normal cholesterol levels at the time of survey but previously diagnosed as having raised blood cholesterol and currently taking medications to control blood cholesterol.

Observations which had cholesterol levels  $<75 \text{ mg/dl}$  or  $>470 \text{ mg/dl}$  were excluded, though none of adults were recorded in this range.

### 12.1. Prevalence of raised blood cholesterol based on measurement and medications history

Overall 11.0% of adults were measured to have raised cholesterol based on both the measurement and medications history (Table 12.1). This was somewhat similar to the prevalence based on self-reports (13.4%) among individuals who ever got their Blood cholesterol measured (4.6%) (**Table 12.2**).

#### Patterns by background characteristics (Table 12.1):

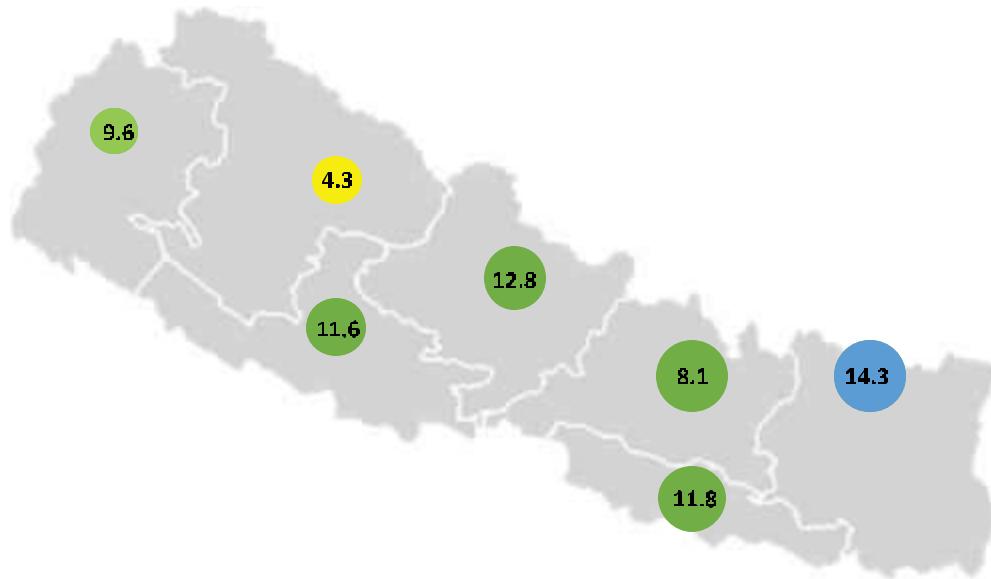
- The prevalence of raised cholesterol increased with age. The prevalence increased substantially after the age 40 (18.1 % prevalence among adults aged 40- 69 years). Prevalence of raised cholesterol was significantly higher in women compared to men (13.9% vs 7.7%).
- There were no significant trends observed in raised cholesterol prevalence by education level. However, raised cholesterol prevalence increased directly with increase in household wealth with a 6.9% prevalence in the poorest group and a 13.3% prevalence in the wealthiest group.

1 <https://www.nhlbi.nih.gov/health-topics/high-blood-cholesterol#targetText=Also%20known%20as%20Hypercholesterolemia,you%20inherit%20from%20your%20parents>.

2 [https://www.who.int/gho/ncd/risk\\_factors/cholesterol\\_text/en/](https://www.who.int/gho/ncd/risk_factors/cholesterol_text/en/)

- While no significant differences were observed by metropolitan/municipality or rural municipality, the raised blood cholesterol prevalence was highest in Province 1 (14.3%) and lowest in the Karnali Province (4.3%) (**Figure 12.1**).

**Figure 12.1** Provincial differences in raised cholesterol prevalence among 15-69 years population, Nepal's STEPS survey 2019



## 12.2. Diagnosis and treatment gap

Raised blood cholesterol increases the risk of development of severe health complications such as heart disease or stroke. Ensuring early diagnosis and initiation of treatment enables adults to make necessary lifestyle adjustments and reduces the risk of lasting damage.

### Diagnosis gap (Table 12.1):

Of all the people who were diagnosed to have raised blood cholesterol as presented in section 12.1, 97.9% adults with raised blood cholesterol were unaware of their raised blood cholesterol status (**Figure 12.2**).

- Percentage of people unaware of their raised cholesterol status declined with age.
- More women were unaware of their raised blood cholesterol status than men (98.6%- women vs 96.5%- men)
- No consistent trends were seen in the proportion of adults who were unaware of their diagnosis status by wealth or educational level.

### Treatment gap (Table 12.1):

Overall, 0.7% of the people with raised cholesterol at the time of survey were aware of diagnosis but were not on treatment. Similarly 1.4 % of adults who had received treatment had still raised blood cholesterol level(uncontrolled) and none of adults under medication had controlled level of cholesterol.

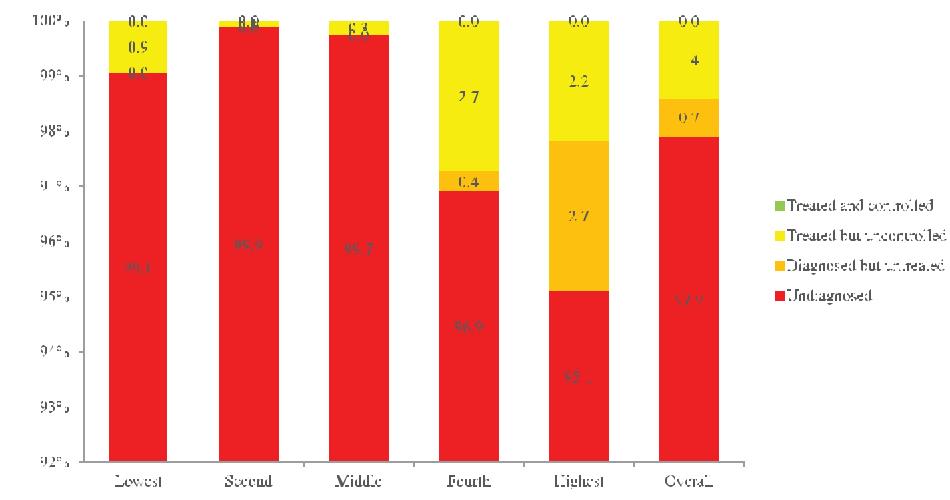
- Similar to diagnosis gap, the proportion of adults who were on treatment increased with increasing age.
- More men were on treatment which did not control their blood cholesterol than women (3.5%-men vs 0.3%- women)

- The proportion of adults who were on treatment increased with increasing household wealth, but no consistent trends were seen with education level.

#### **Quality of treatment (Table 12.1): Adults on treatment and controlled**

None of the adults surveyed reported being on treatment with controlled blood cholesterol levels; this is likely due to the majority of adults surveyed being unaware of their raised blood cholesterol status.

**Figure 12.2 Diagnosis and Treatment gaps among adults aged 15-69 years by wealth quintile, Nepal's STEPS survey 2019**



### **12.3. Screening coverage**

Early detection of raised blood cholesterol through regular (at least annual) screening of healthy individuals is one of the key public health strategies for reducing the morbidity and mortality associated with CVD. Though data were not elicited about annual screening, only 4.6 % adults (5.5 % of 40-69 years old) had had their blood cholesterol ever measured by a doctor or a health care provider.

### **12.4. Prescription of medications and compliance with treatment (Table 12.2)**

Monitoring of prescription practices and treatment compliance is an important strategy for evaluating the outcomes at individual and at population level. Raised blood cholesterol is a chronic risk factor, requiring treatment over the lifetime of a person, which may reduce the compliance with treatment as observed with many other chronic conditions such as HIV/AIDS or tuberculosis.

Overall, a majority (95.2%) who were ever told to have raised blood cholesterol was actually prescribed the medications, and 34.9% ever took the medicines and 24.4% reported currently taking the medications, showing poor compliance with the prescriptions.

- Both the likelihood of being prescribed medication and compliance with treatment increased with age. So, if a person is diagnosed and prescribed medicine in 30-44-year age group, he/she is less likely to take drug compared to adults 45-69 years of age.
- The likelihood of being prescribed the medications varied with educational level and household wealth, however, exact patterns were difficult to determine due to the small sample size of adults who responded.

## **12.5. Sources of care for treatment and advice and medications for raised blood cholesterol**

Overall a much higher proportion of adults sought treatment advice and care from only private facilities (which include NGO run centers) (84.7 %) than from only government facilities (12.6%) or other sources (such as Ayurvedic, homeopathic or naturopathic hospital/clinic, medicine shops, pharmacies, etc.) (2.4%) (**Table 12.3**). Similarly, for medications, majority of the adults approached only private providers (72.5%), and only 2.5% of adults went to government providers. 24.1% of adults mentioned both government and private sources for medications for raised blood cholesterol (**Table 12.4**). Disaggregation by background characteristics not shown due to small sample sizes.

## **12.6. Consultation with traditional healers and use of herbal remedies**

- A negligible proportion of adults with raised blood cholesterol reported visiting a traditional healer like *Dhami/ Jhakri/Purohit/Lama/Gubaji/ Matas* for treatment and advise. The same trend was observed in adults who reported currently taking herbal remedies for their raised blood cholesterol
- Additionally, the number of adults who reported usually going to seek care, advice or medications at ayurvedic, homeopathic or naturopathic hospitals/clinics was also negligible.

Of the 5 adults who cited reasons for not currently taking their prescribed medications, 1 responded that “didn’t think the drugs were necessary”, 2 responded that “their blood cholesterol got normal” and the other 2 responded “being advised against medications by their doctors”.



## **LIST OF TABLES:**

For more information on raised blood cholesterol prevalence, screening and treatment coverage or sources of care, see the following tables:

**Table: 12.1 Prevalence of raised blood cholesterol and diagnosis, treatment and control rates**

**Table: 12.2 Measurement of blood cholesterol, prescription of medications, treatment compliance**

**Table: 12.3 Sources of care for raised blood cholesterol**

**Table: 12.4 Sources of medications for raised blood cholesterol**

**Table 12.1 Prevalence of raised Blood cholesterol and diagnosis, treatment and control rates: all**

Percentage of people 15-69 who had raised blood cholesterol at the time of survey or on blood cholesterol medications and who were aware of their diagnosis, on treatment or have their blood cholesterol controlled or uncontrolled with medications, by background characteristics, [Nepal STEPS, 2019]

Background characteristic	Prevalence of raised Blood cholesterol <sup>1</sup> (N)	Among those with raised Blood cholesterol levels <sup>1</sup>			
		Not aware of diagnosis	Aware of diagnosis but not on treatment	On treatment but not controlled	On treatment and controlled
<b>Age</b>					
15-24	4.5	795	100.0	0.0	0.0
25-39	9.1	1990	98.7	0.1	1.2
40-54	16.7	1509	97.2	1.8	0.9
55-69	20.2	1048	96.8	0.5	2.7
<b>Sex</b>					
Women	13.9	3438	98.6	1.1	0.3
Men	7.7	1904	96.5	0.0	3.5
<b>Residence</b>					
Metropolitan/ submetropolitan	9.7	668	97.2	0.0	2.8
Municipality	11.7	2632	97.0	1.3	1.7
Rural Municipality	10.4	2042	99.5	0.0	0.5
<b>Province</b>					
Province 1	14.3	761	97.7	0.9	1.3
Province 2	11.8	770	97.5	0.0	2.5
Province 3	8.1	717	95.3	3.6	1.0
Gandaki Province	12.8	764	96.7	0.0	3.3
Province 5	11.6	766	99.5	0.4	0.1
Karnali Province	4.3	768	97.8	0.0	2.2
Sudurpashchim Province	9.6	796	99.7	0.0	0.3
<b>Education</b>					
None/Less than primary	14.8	2660	97.7	1.0	1.4
Primary	10.4	1006	98.2	0.0	1.8
Secondary	6.0	1040	97.0	1.4	1.6
More than secondary	10.1	635	99.2	0.3	0.5
<b>Wealth quintile</b>					
Lowest	6.9	1588	99.1	0.0	0.9
Second	10.6	1016	99.9	0.0	0.1
Middle	11.2	904	99.7	0.0	0.3
Fourth	13.2	833	96.9	0.4	2.7
Highest	13.3	1001	95.1	2.7	2.2
<b>Age (previous 2013)</b>					
15-29	5.7	1388	100.0	0.0	0.0
30-44	12.0	1943	98.5	0.2	1.3
45-69	18.7	2011	96.4	1.5	2.1
Total (15-39)	7.3	2785	99.1	0.1	0.9
Total (40-69)	18.1	2557	96.4	1.5	2.1
<b>Total (15-69)</b>	<b>11.0</b>	<b>5342</b>	<b>97.9</b>	<b>0.7</b>	<b>1.4</b>

1 Total Cholesterol prevalence based on measurement/ self-reported medication

**Table 12.2 Cholesterol measured and medicated: all**

Percentage of people 15-69 who have ever had their cholesterol measured and who have been told by a health care provider that they have raised cholesterol; among people who have been told they have high cholesterol, the percentage told in the past 12 months they have raised cholesterol, percentage prescribed medication to control cholesterol, and percentage taking medication to control cholesterol, by background characteristics. [Nepal STEPS, 2019]

Among all who have been told by a doctor or health care provider they have high cholesterol, the percentage who were:

Background characteristic	Ever had cholesterol measured by doctor or health care provider (%)	(N)	Ever told have high cholesterol by doctor or health care provider (%) among those ever measured	(N)	Told in the past 12 months have high blood cholesterol(%) (among those ever told)	Ever been told to take medicine by a doctor or health worker (%) (among those ever told)	Ever taken medicine to control raised cholesterol(%) (among those ever told)	Currently taking medication to control cholesterol(%) (N)
<b>Age</b>								
15-24	3.7	843	71*	24*	0*	100*	0*	2*
25-39	4.3	2,087	17.3	89	67.2*	100*	15.8*	12*
40-54	5.8	1,574	13.3	105	1.9*	83.6*	59.9*	17*
55-69	5.1	1,089	13.2	52	0*	100*	78.0*	8*
<b>Sex</b>								
Women	4.0	3,595	8.5	146	94.0*	100*	46.1*	14.5*
Men	5.2	1,998	17.7	124	56.7*	93.3*	30.1*	28.5*
<b>Residence</b>								
Metropolitan/ submetropolitan	3.9	705	9.3	85	90.6*	100*	89.9*	10*
Municipality	5.7	2,755	18.3	136	65.5*	94.7*	29.8*	18.4*
Rural Municipality	3.1	2,133	1.5	49	100*	100*	100*	27*
Rural Municipality							100*	27*
<b>Province</b>								
Province 1	7.1	804	17.3	53	27.5*	100*	19.6*	17.0*
Province 2	3.8	803	16.5*	22*	92.4*	85.6*	43.2*	5*
Province 3	8.8	759	11.9	95	99.4*	100*	33.0*	7.9*
Gandaki Province	3.3	793	18.9	39	51.8*	100*	76.7*	63.3*
Province 5	2.5	797	3.5*	26*	100*	100*	66.9*	16.6*

	Total (15-69)	4.6	5593	13.4	270	67.8	95.2	34.9	24.4	39
Karnali Province	1.9	808	20.5*	15*	100*	100*	24.1*	3*		
Sudurpashchim Province	1.8	829	1.7*	20*	100*	98.2*	100*	100*	1*	
<b>Education</b>										
None/Less than primary	2.0	2,792	22.2	56	99.7*	100*	74.4*	44.7*	13*	
Primary	3.9	1,051	12.0	46	29.4*	100*	37.7*	37.7*	4*	
Secondary	5.5	1,088	16.3	90	42.6*	100*	18.1*	12.5*	13*	
More than secondary	10.5	661	7.3	78	98.8*	55.2*	6.3*	6.3*	9*	
<b>Wealth quintile</b>										
Lowest	1.0	1,653	7.7*	16*	100*	100*	81.1*	81.1*	2*	
Second	2.9	1,062	0.4*	27*	100*	100*	100*	100*	1*	
Middle	2.1	949	10.4*	28*	78.8*	100*	27.4*	12.1*	5*	
Fourth	5.1	878	23.6	41	32.6*	100*	32.6*	28.8*	7*	
Highest	11.7	1,051	13.3	158	91.7*	91.1*	35.0*	19.3*	24*	
<b>Age (previous 2013)</b>										
15-29	3.9	1,466	11.4	44	40.4*	100*	0*	0*	4*	
30-44	4.9	2,039	15.5	105	63.7*	100*	44.4*	21.7*	15*	
45-69	5.4	2,088	13.8	121	99.8*	91.1*	59.5*	51.8*	20*	
Total (15-39)	4.0	2,930	13.5*	14*	45.9*	100*	12.7*	12.7*	14*	
Total (40-69)	5.5	2,663	13.3*	25*	98.8*	91.1*	66.5*	41.0*	25	

**Table 12.3 Sources of care for treatment for Cholesterol: All**

Percentage of people 15-69 who were ever told to have raised cholesterol and who mentioned different sources of care for treatment/advise, by background characteristics, [Nepal STEPS, 2019]

Background characteristic	Government Only <sup>1</sup>	Private only <sup>2</sup>	Other Facilities <sup>3</sup>	Total number (N)
<b>Age</b>				
15-24	0*	100*	0*	2*
25-39	1.7*	98.3*	0*	12*
40-54	37.5*	52.2*	9.1*	17*
55-69	12.9*	87.1*	0*	8*
<b>Sex</b>				
Women	30.9*	68.6*	0.2*	19*
Men	4.8*	91.5*	3.3*	20*
<b>Residence</b>				
Metropolitan/ sub metropolitan	81.8*	11.1*	1.0*	10*
Municipality	8.1*	89.4*	2.6*	27*
Rural Municipality	31.2*	68.8*	0*	2*
<b>Province</b>				
Province 1	11.7*	88.3*	0*	9*
Province 2	0*	88.4*	11.6*	5*
Province 3	24.9*	74.9*	0.2*	10*
Gandaki Province	10.6*	85.6*	0*	8*
Province 5	16.6*	83.4*	0*	3*
Karnali Province	0*	100*	0*	3*
Sudurpashchim Province	0*	100*	0*	1*
<b>Education</b>				
None/Less than primary	31.1*	68.4*	0.2*	13*
Primary	0*	100*	0*	4*
Secondary	10.2*	89.8*	0*	13*
More than secondary	0*	86.7*	12.1*	9*
<b>Wealth quintile</b>				
Lowest	81.1*	18.9*	0*	2*
Second	0*	100*	0*	1*
Middle	12.1*	87.9*	0*	5*
Fourth	0*	100*	0*	7*
Highest	19.11*	75.5*	4.8*	24*
<b>Age (previous 2013)</b>				
15-29	0*	100*	0*	4*
30-44	21.8*	77.6*	0*	15*
45-69	15.1*	77.2*	7.5*	20*
Total (15-39)	1.3*	98.7*	0*	14*
Total (40-69)	28.6*	64.8*	5.8*	25*
<b>Total (15-69)</b>	<b>12.6</b>	<b>84.7</b>	<b>2.4</b>	<b>39</b>

\*interpret with caution due to small sample size

<sup>1</sup> Govt tertiary level hosp, Govt regional or sub regional hosp, Govt dist hosp, Govt PHC, Govt health post

<sup>2</sup> NGO run/community hosp, private hosp, private clinic

<sup>3</sup> Ayurvedic, homeopathic hosp/clinic, medical shops/pharmacies

**Table 12.4 Sources of drugs/medications for raised cholesterol**

Percentage of people 15-69 who have ever taken medication for raised cholesterol and who mentioned different sources medications, by background characteristics, [Nepal STEPS, 2019]

Background characteristic	Government Only <sup>1</sup>	Private Only <sup>2</sup>	Both government and private	Total number (N)
<b>Age</b>				
15-24	0*	0*	0*	0*
25-39	0*	100*	0*	4*
40-54	5.6*	48.3*	44.1*	11*
55-69	0*	87.6*	12.4*	6*
<b>Sex</b>				
Women	0*	38.2*	61.3*	10*
Men	4.2*	94.7*	0*	11*
<b>Residence</b>				
Metropolitan/ submetropolitan	0*	62.5*	30.8*	8*
Municipality	0*	74.6*	25.4*	11*
Rural Municipality	31.2*	68.8*	0*	2*
<b>Province</b>				
Province 1	0*	79.8*	20.2*	6*
Province 2	0*	100*	0*	1*
Province 3	0*	24.4*	75.6*	4*
Gandaki Province	13.8*	81.3*	0*	6*
Province 5	0*	100*	0*	2*
Karnali Province	0*	100*	0*	1*
Sudoorparshim Province	0*	100*	0*	1*
<b>Education</b>				
None/Less than primary	0*	60.1*	39.6*	10*
Primary	0*	100*	0*	2*
Secondary	13.3*	86.7*	0*	6*
More than secondary	0*	80.3*	0*	3*
<b>Wealth quintile</b>				
Lowest	0*	100*	0*	1*
Second	0*	100*	0*	1*
Middle	44.0*	56.0*	0*	2*
Fourth	0*	100*	0*	5*
Highest	0*	50.7*	47.6*	12*
<b>Age (previous 2013)</b>				
15-29	0*	0*	0*	0*
30-44	0*	54.4*	44.1*	7*
45-69	4.6*	87.4*	7.6*	14*
Total (15-39)	0*	0*	0*	4*
Total (40-69)	3.2*	65.0*	30.6*	17*
<b>Total (15-69)</b>	<b>2.5*</b>	<b>72.5*</b>	<b>24.1*</b>	<b>21*</b>

\*interpret with caution due to small sample size

<sup>1</sup> Govt tertiary level hosp, Govt regional or sub regional hosp, Govt dist hosp, Govt PHC, Govt health post

<sup>2</sup>NGO run/community hosp, private hosp, private clinic

## CHAPTER 13

# CARDIOVASCULAR DISEASES HISTORY, PREDICTED CVD RISK AND LIFE-STYLE ADVICE

### Key Findings

- **History of cardiovascular disease**
  - o 1.1% of adults 15-69 years of age (1.4% in women, 0.8% in men) and 1.7% of 40-69 years old adults reported ever having a heart attack or chest pain from heart disease (angina) or a stroke (cerebrovascular accident or incident).
- **Predicted 10-year cardiovascular disease risk**
  - o 3.3% of adults aged 40-69 have a predicted 30% or more chance of having a fatal or non-fatal major cardiovascular event (myocardial infarction or stroke) in the next 10 years based on WHO/ISH risk prediction charts.
- **Lifestyle advice**
  - o The adults, who visited a health provider in the previous 12 months, most commonly reported receiving lifestyle advice from doctors and other health workers on: (1) “eat at least five servings of fruit and/or vegetables each day” (52.3%), (2) “reduce fat in your diet” (48.2%) and (3) “reduce salt in your diet” (46.1%). A much smaller proportion of adults reported advice on other behavioral risk factors.

Cardiovascular diseases (CVDs), the most common NCD, are responsible for over 17.8 million deaths globally and of which more than three quarters are in lower middle income countries<sup>1</sup>. In the WHO SEA region, CVDs are estimated to cause almost 44% of all the NCD-related deaths (~8.6 million deaths) and almost half of these deaths occur in the economically productive years between 30-69 years of age<sup>2</sup>. Therefore, reducing the burden of CVDs is critical to achieve the target of a 25% relative reduction in risk of premature mortality from NCDs<sup>3</sup>.

CVDs include diseases of the heart and blood vessels and vascular diseases of the brain. Atherosclerosis – a complex process involving deposits of plaques made in the blood vessels leading to the narrowing of blood vessels and formation of blood clots (thrombus) is implicated in many cases of CVD<sup>4</sup>. Modification of certain behaviour (tobacco use, physical inactivity, unhealthy diet, harmful alcohol use) and managing metabolic risk factors (raised blood pressure, raised blood sugar and cholesterol) can slow down the development of atherosclerosis and overall cardiovascular risk<sup>5</sup>.

While national health policies that address population-wide health are important tools for reducing behavioural risk factors, strategies targeted at high-risk individuals are essential in managing and reducing metabolic risks.

1 Roth GA, Abate D, Abate KH, et al. Global, regional, and national age-sex-specific mortality for 282 causes of death in 195 countries and territories, 1980–2017: a systematic analysis for the Global Burden of Disease Study 2017. *The Lancet*. 2018;392(10159):1736-1788. doi:10.1016/S0140-6736(18)32203-7

2 Global Burden of Disease Collaborative Network. Global burden of disease study 2016 (GBD 2016) Results. Seattle: Institute for Health Metrics and Evaluation (IHME); 2017. <http://ghdx.healthdata.org/gbd-results-tool> - accessed 24 May 2018.

3 World Health Organization. Global action plan for the prevention and control of NCDs 2013-2020. World Health Organization, Geneva.

4 World Health Organization. Global Atlas on Cardiovascular Disease Prevention and Control. Mendis S, Puska P, Norrvig B, editors. World Health Organization, Geneva 2011.

5 World Health Organization. Prevention of cardiovascular disease: Guidelines for assessment and management of cardiovascular risk. Geneva, WHO, 2007

WHO/ISH cardiovascular disease risk charts developed<sup>6</sup> and revised<sup>7</sup> for different WHO regions and sub-regions in 2007 are being used for clinical decision-making by physicians as well as for predicting the proportion of population with different levels of CVD risk for the purpose of planning of health service delivery and resource allocation<sup>8</sup>. These risk prediction charts take into account the age, sex, blood pressure, smoking status, total blood cholesterol and presence or absence of diabetes mellitus to compute the overall risk/probability of developing a CVD event in the next 10 years.

At the time of writing, WHO is working to revise the risk prediction charts. However, pending the availability of revised charts, this report uses 2007 risk prediction charts (SEAR D) to facilitate comparison with 2013 survey.

Nepal is committed to reducing CVDs burden and has included the 25% relative reduction in premature death from NCDs as one of the targets in its 5-year multisectoral action plan for 2014-2020<sup>9</sup>.

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#### **Current relevant policies and programs in Nepal for the prevention and treatment of CVDs:**

- To tackle with growing burden of CVDs Government of Nepal has adopted Package of Essential Non-communicable Diseases (PEN). This package has been introduced to screen, diagnose, treat and refer Cardio Vascular Diseases, COPD, cancer, diabetes, and mental health at health posts, primary health care centers and district hospitals for early detection and management of chronic diseases within the community<sup>10</sup>.
- 

This chapter describes self-reported history of cardiovascular diseases and lifestyle advice received from doctors or health workers. Additionally, 10-year cardiovascular disease risk is predicted for Nepalese population. This information will help Nepal assess trends and progress towards the reduction in CVDs burden as well as the evaluation of current policies and programs in place.

### **13.1 History of Cardiovascular disease**

Only 1.1% of adults age 15-69 years reported ever having a CVD event including heart attacks or chest pain from a heart disease or a stroke (**Table 13.1**). Amongst high risk age group (i.e. 40 years old and above), 1.7% of adults reported ever having a heart attack or chest pain (**Table 13.1**). However, these data may underestimate true prevalence of heart attacks/stroke due to survivor bias (people who died from fatal cardiovascular events were excluded from the survey), recall bias, and failure to take into account asymptomatic or undiagnosed non-fatal events.

#### **Patterns by background characteristics (Table 13.1):**

- A significantly higher proportion of adults aged 55-69 (1.0%) reported ever having a CVD event compared to 15-24-year-old (0.6%).
- Sudoor paschim (3.5%), a more rural Province, had significantly higher self-reported prevalence of CVD events compared to Province 3, the most urban Province, with the lowest prevalence (0.4%) (**Figure 13. 1**).

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6 Mendis S, Lindholm LH, Mancia G, et al. World Health Organization (WHO) and International Society of Hypertension (ISH) risk prediction charts: assessment of cardiovascular risk for prevention and control of cardiovascular disease in low and middle-income countries. *Journal of Hypertension*. 2007;25(8):1578-1582. doi:10.1097/HJH.0b013e3282861fd3

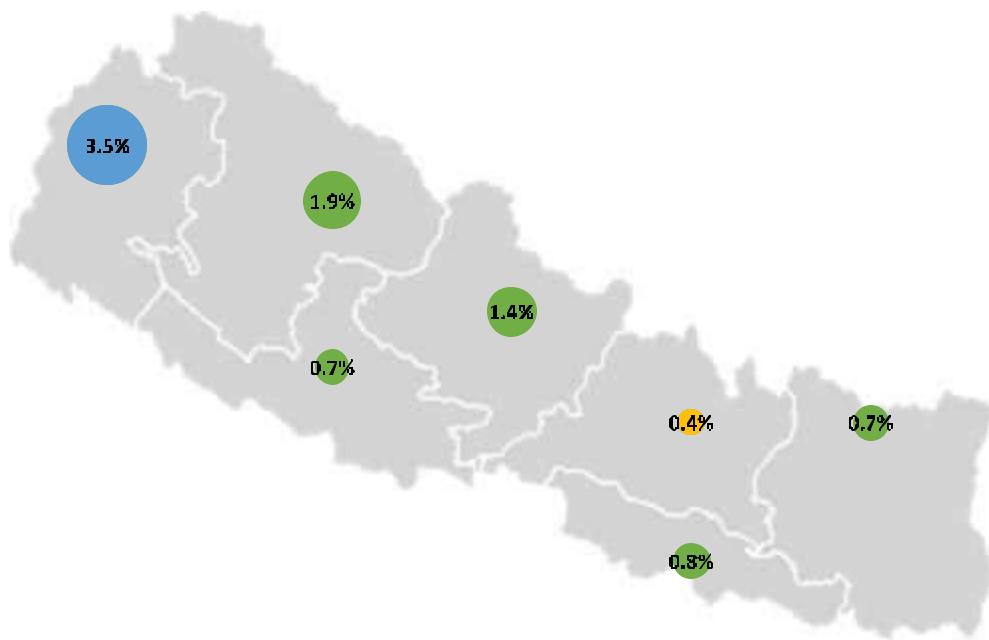
7 Kaptoge S, Pennells L, De Bacquer D, et al. World Health Organization cardiovascular disease risk charts: revised models to estimate risk in 21 global regions. *The Lancet Global Health*. 2019;7(10):e1332-e1345. doi:10.1016/S2214-109X(19)30318-3

8 Ongontuya D, Oum S, Buckley BS, Bonita R. Assessment of total cardiovascular risk using WHO/ISH risk prediction charts in three low and middle income countries in Asia. *BMC Public Health*. 2013;13(1):539. doi:10.1186/1471-2458-13-539

9 Multisectoral Action Plan for the Prevention and Control of Non Communicable Diseases (2014-2020). Kathmandu: Government of Nepal.

10 <https://www.mohp.gov.np/eng/index.php/ncd>

**Figure 13.1** Percent of adults aged 15-69 who reported ever having a CVD event by Province, Nepal STEPS Survey 2019



## 13.2 Predicted 10-year cardiovascular disease risk

10-year cardiovascular disease risk at population-level was estimated using WHO/ISH risk prediction chart (2007) for South-East Asia (SEARD)<sup>11</sup>. To calculate predicted risk for fatal or non-fatal CVD event (myocardial infarction or stroke), participants' information on age, sex, systolic blood pressure, total cholesterol and the presence or absence of type 2 diabetes are utilized and combined<sup>10</sup>.

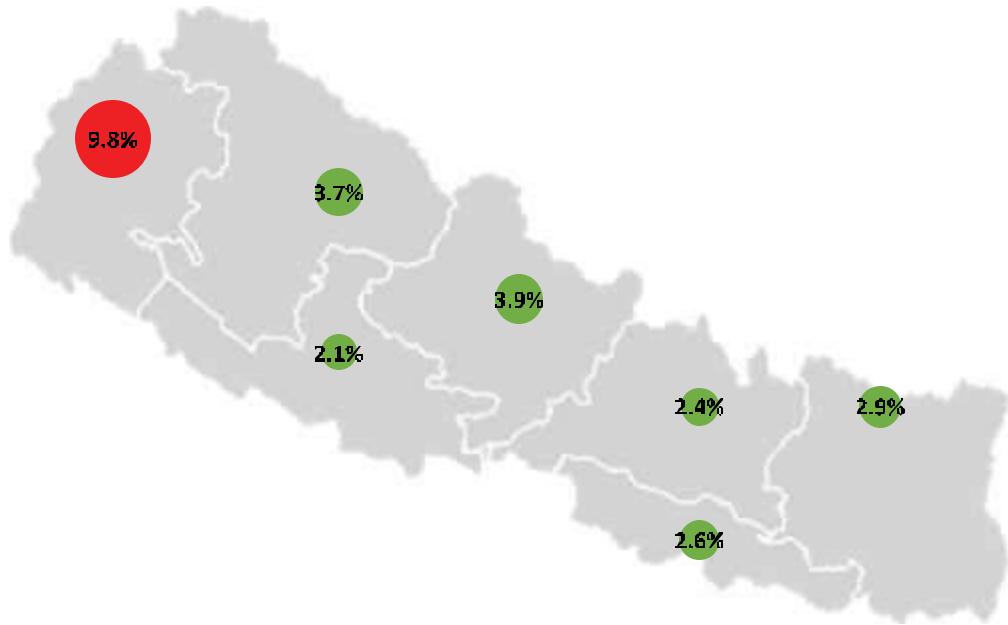
Amongst adults aged 40-69, 3.3% of adults have a predicted 10-year CVD risk of 30% or more.

### Patterns by background characteristics (Table 13.2)

- Sudurpashchim Province had a significantly higher percent (9.8%) of adults aged 40-69 with 30% or more CVD risk than almost all other Provinces (**Figure 13.2**).

<sup>11</sup> Mendis S, Lindholm LH, Mancia G, et al. World Health Organization (WHO) and International Society of Hypertension (ISH) risk prediction charts: assessment of cardiovascular risk for prevention and control of cardiovascular disease in low and middle-income countries: *Journal of Hypertension* 2007;25(8):1578-1582. doi:10.1097/HJH.0b013e3282861fd3

**Figure 13.2** Percent adults aged 40-69 who have a 30% or higher predicted 10-year cardiovascular disease risk, Nepal STEPS Survey 2019



#### Trends between 2013<sup>12</sup> and 2019 survey:

Prevalence of adults with a 30% or more 10-year predicted CVD risk did not change significantly between 2013 to 2019 (3.2% to 3.3%).

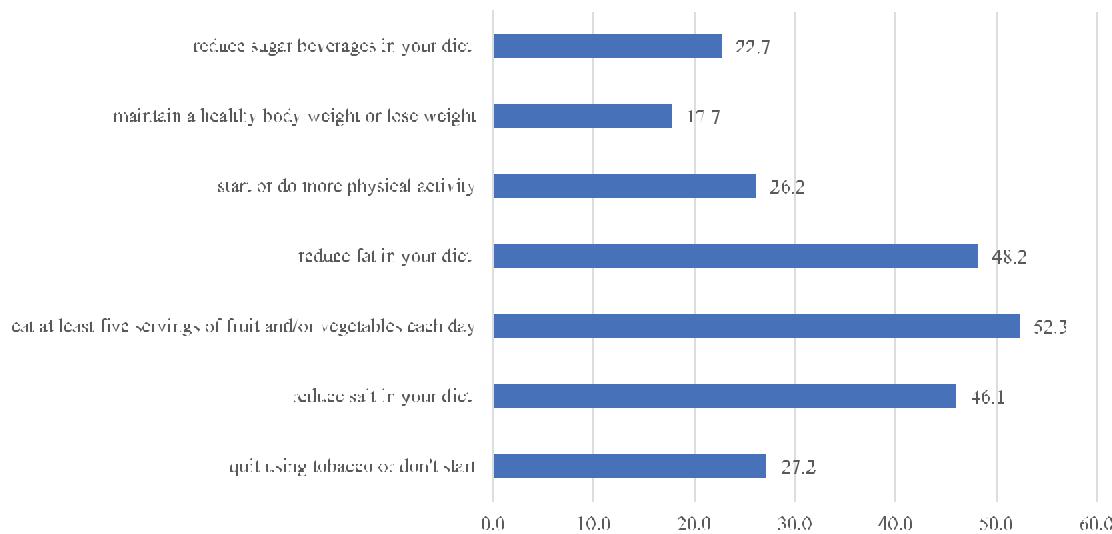
### 13.3 Lifestyle advice

Individual-based intervention involving life-style advice from doctors and health workers to modify key risk behaviors among high-risk individuals have an important place for overall NCD prevention and control along with population-based measures targeted at the whole population.

Amongst those who visited a doctor or health worker in the past 12 months, the three most common lifestyle advice that adults received were: (1) “eat at least five servings of fruit and/or vegetables each day” (52.3%), (2) “reduce fat in your diet” (48.2%) and (3) “reduce salt in your diet” (46.1%) (**Table 13.3 and Figure 13.3**). A smaller proportion of individuals received advice to quit using tobacco (27.2%), reduce sugary beverages (22.7%) or maintain a healthy weight (17.7%).

<sup>12</sup> Aryal, KK; Neupane, S; Mchata, 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

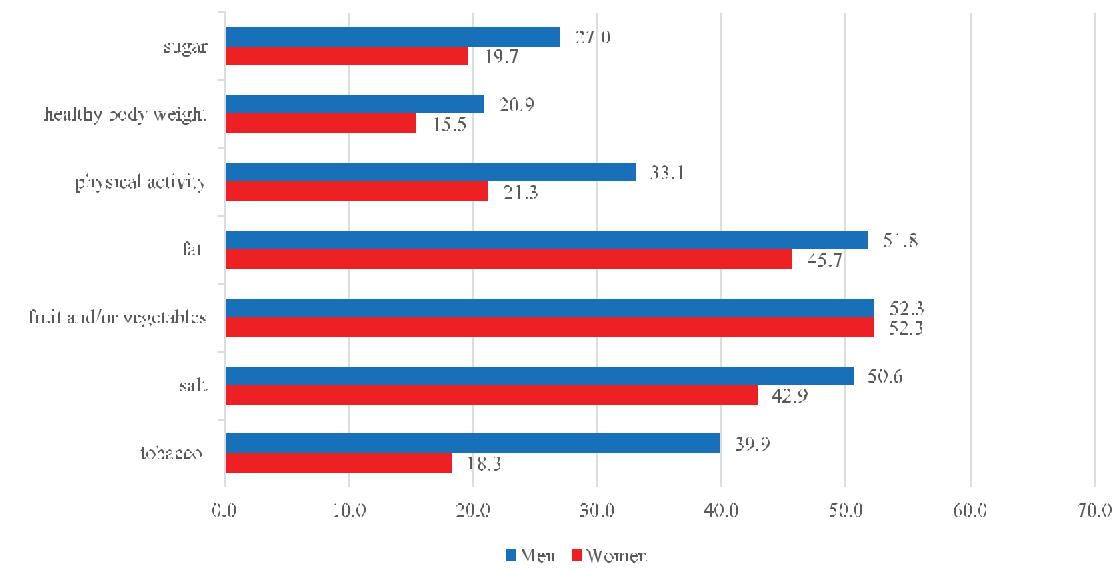
**Figure 13.3** Percent adults aged 15-69 who have received different lifestyle advice from a doctor or health worker; Nepal STEPS Survey 2019



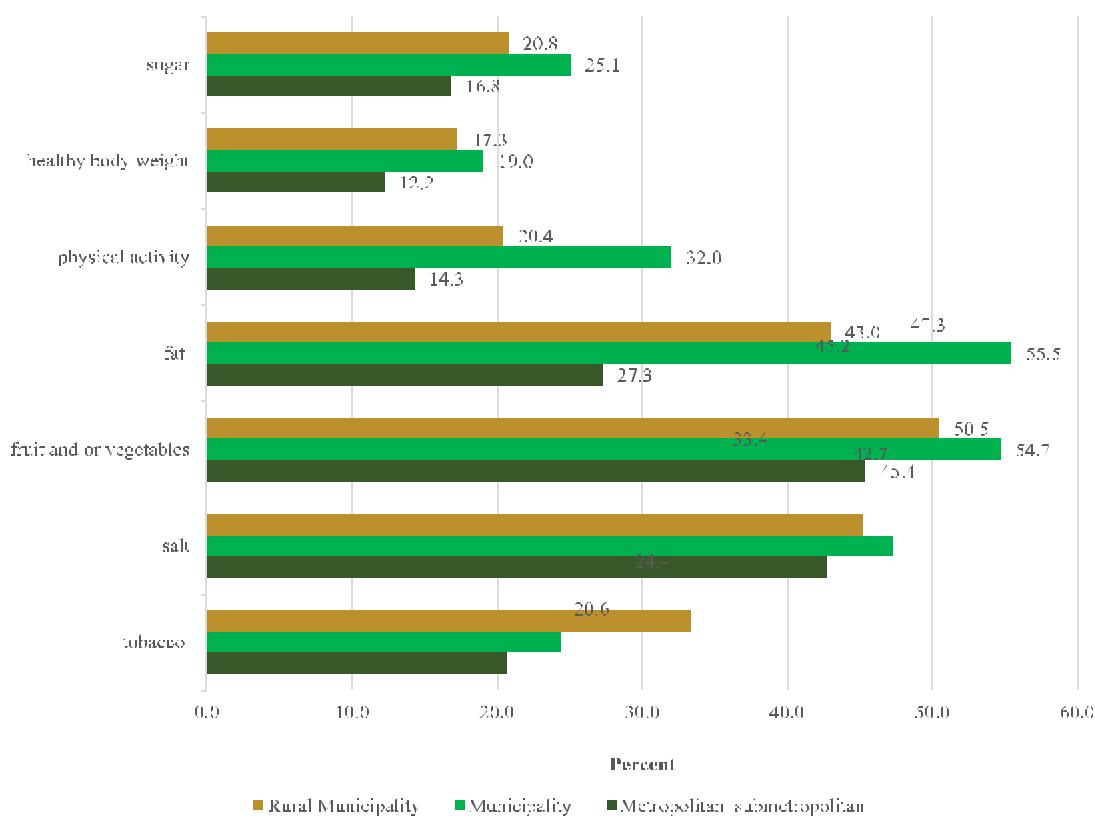
#### Patterns by background characteristic (Table 13.3):

- The likelihood of receiving a lifestyle advice increased with age.
- Men, aged 40-69, who resided in municipalities were more likely to receive any kind of lifestyle advice compared to women (**Figure 13.4** and **Figure 13.5**).

**Figure 13.4** Differentials in lifestyle advice received by sex amongst adults aged 15-69, Nepal STEPS Survey 2019

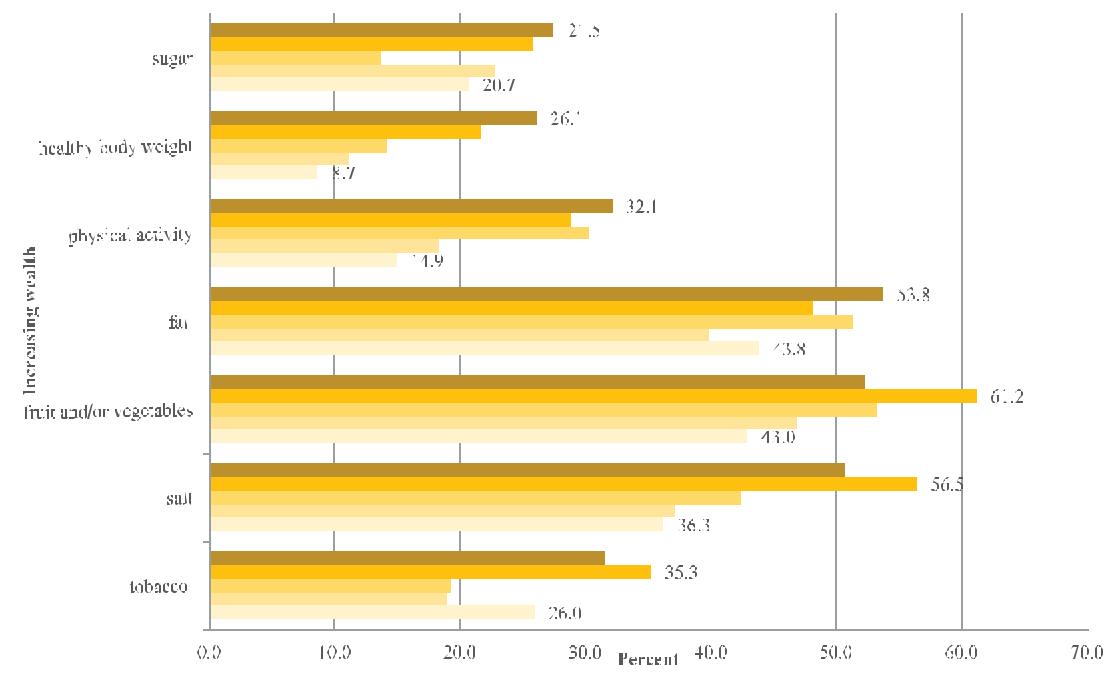


**Figure 13.5** Differentials in lifestyle advice received by residence amongst adults aged 15-69, Nepal STEPs Survey 2019



- Adults in Province 1, 2 and 3 received overall more lifestyle advice than other Provinces.
- Adults who are wealthier were more likely to receive any type of health advice than others (Figure 13.6).

**Figure 13.6** Differentials in lifestyle advice received amongst adults aged 15-69 by wealth, Nepal STEPs Survey 2019



#### Patterns by disease and risk conditions (Table 13.4):

- Presence of a physiological risk factor increased the probability of receiving an advice to reduce salt and dietary fat, increase physical activity or quit tobacco. Similarly, a significantly higher proportion of smokers reported receiving an advice to quit.
- Adults with predicted 10-year cardiovascular disease risk of 30% or more received more lifestyle advice than their counterparts.



## **LIST OF TABLES:**

For more information on cardiovascular diseases, see the following tables:

**Table 13.1 History of cardiovascular disease: all participants**

**Table 13.2 Predicted 10-year cardiovascular disease risk: all participants**

**Table 13.3 Lifestyle advice from doctors and other health workers: all participants (by background characteristics)**

**Table 13.4 Lifestyle advice from doctors and other health workers: all participants (by presence of a disease condition and/or risk factor)**

**Table 13.1 History of cardiovascular disease: all participants**

Percent of adults aged 15-69 who reported ever having a heart attack or chest pain from heart disease or stroke, by background characteristics, [Nepal STEPS, 2019]

Background characteristic	Ever having a heart attack or chest pain from heart disease or stroke		95 % CI		Number of participants (N)
<b>Age</b>					
15-24	0.6	0.2	1.5		843
25-39	1.0	0.6	1.8		2087
40-54	2.2	1.4	3.4		1574
55-69	1.0	1.6	1.7		1089
<b>Sex</b>					
Women	1.4	0.9	2.2		3595
Men	0.8	0.5	1.3		1998
<b>Residence</b>					
Metropolitan/ submetropolitan	0.3	0.1	1.4		705
Municipality	1.3	0.8	2.1		2755
Rural Municipality	1.1	0.6	2.0		2133
<b>Province</b>					
Province 1	0.7	0.3	1.6		804
Province 2	0.8	0.3	2.1		803
Province 3	0.4	0.1	1.4		759
Gandaki Province	1.4	0.5	3.9		793
Province 5	0.7	0.2	2.8		797
Karnali Province	1.9	0.8	4.4		808
Sudurpashchim Province	3.5	2.0	6.1		829
<b>Education</b>					
No education	1.5	1.0	2.3		2792
Primary	0.5	0.2	1.5		1051
Secondary	1.0	0.5	1.9		1088
More than secondary	1.1	0.4	3.5		661
<b>Wealth quintile</b>					
Lowest	1.5	0.8	2.9		1653
Second	1.4	0.7	2.8		1062
Middle	1.3	0.7	2.3		949
Fourth	0.6	0.3	1.4		878
Highest	0.8	0.3	1.9		1051
<b>Age (previous, 2013)</b>					
15-29	0.7	0.4	1.5		1466
30-44	1.4	0.8	2.2		2039
45-69	1.5	1.0	2.4		2088
Total (15-39)	0.8	0.5	1.4		2930
Total (40-69)	1.7	1.1	2.5		2663
<b>Total (15-69)</b>	<b>1.1</b>	<b>0.8</b>	<b>1.6</b>		<b>5593</b>

**Table 13.2 Predicted 10-year cardiovascular disease risk: all participants**

Percent of adults aged 40-69 who have different predicted risk levels for heart attacks or stroke in 10 years based on WHO/ISH risk prediction charts (2007)\* for South-East Asia Region D, by background characteristics, [Nepal STEPS, 2019]

Background characteristic	Percent population with 10-year risk levels of >=30%:	95% CI	Number of participants (N)	
<b>Age</b>				
40-54	2.8	1.9	4.2	1449
55-69	4.0	2.8	5.7	1024
<b>Sex</b>				
Women	3.3	2.4	4.7	1455
Men	3.2	2.1	4.8	1018
<b>Residence</b>				
Metropolitan/ submetropolitan	3.4	1.7	6.8	297
Municipality	3.9	2.7	5.5	1211
Rural Municipality	2.4	1.6	3.7	965
<b>Province</b>				
Province 1	2.9	1.7	5.0	386
Province 2	2.6	1.2	5.7	386
Province 3	2.4	1.2	4.9	366
Gandaki Province	3.9	1.8	8.2	376
Province 5	2.1	1.0	4.2	338
Karnali Province	3.7	1.8	7.5	339
Sudurpashchim Province	9.8	6.3	14.9	282
<b>Education</b>				
No education	3.8	2.8	5.0	1713
Primary	2.4	0.9	5.9	370
Secondary	1.4	0.5	4.1	246
More than secondary	3.2	1.0	9.7	143
<b>Wealth quintile</b>				
Lowest	3.3	1.9	5.5	767
Second	3.0	1.6	5.5	464
Middle	2.9	1.6	5.5	394
Fourth	4.5	2.6	7.4	377
Highest	2.8	1.1	6.5	471
<b>Total (40-69)</b>	<b>3.3</b>	<b>2.5</b>	<b>4.2</b>	<b>2473</b>

\*Revised WHO CVD risk charts (2019) for LMICs are currently underway, therefore 2007 risk charts for SEAR D was used: [https://www.who.int/ncds/management/WHO\\_ISH\\_Risk\\_Prediction\\_Charts.pdf?ua=1](https://www.who.int/ncds/management/WHO_ISH_Risk_Prediction_Charts.pdf?ua=1)

**Table 13.3 Lifestyle advice from doctors and other health workers all participants (By background characteristics)**

		Percent adults who reported receiving lifestyle advice to:							
		eat at least five servings of fruit and/or vegetables each day			start or do more physical activity			reduce sugar beverages in your diet	Number of participants
Background characteristic		quit using tobacco or don't start	reduce salt in your diet	reduce fat in your diet	reduce fat in your diet	reduce body weight or lose weight	maintain a healthy body weight or lose weight		
Age									
15-24	18.8	37.1	50.8	42.3	16.9	7.4	18.7	223	
25-39	24.1	42.2	49.7	45.3	24.9	16.0	19.0	670	
40-54	33.1	58.0	56.8	54.0	29.9	28.1	27.6	468	
55-69	43.0	55.9	56.4	58.9	40.3	25.7	34.2	312	
Sex									
Women	18.3	42.9	52.3	45.7	21.3	15.5	19.7	1128	
Men	39.9	50.6	52.3	51.8	33.1	20.9	27.0	545	
Residence									
Metropolitan/submetropolitan	20.6	42.7	45.4	27.3	14.3	12.2	16.8	263	
Municipality	24.4	47.3	54.7	55.5	32.0	19.0	25.1	803	
Rural Municipality	33.4	45.2	50.5	43.0	20.4	17.3	20.8	607	
Province									
Province 1	26.4	44.2	56.8	59.0	44.4	22.6	34.2	211	
Province 2	40.6	54.7	51.2	40.1	23.5	22.1	22.7	203	
Province 3	20.1	47.2	59.8	54.1	38.2	26.6	22.5	240	
Gandaki Province	29.0	53.6	54.6	45.4	24.2	20.6	19.0	299	
Province 5	22.1	44.4	50.3	46.0	15.2	10.0	20.4	229	
Karnali Province	16.5	33.4	47.0	42.3	19.3	12.3	22.1	235	
Sudurpashchim Province	24.6	35.6	45.9	53.0	21.1	9.2	16.9	256	

<b>Education</b>	<b>28.7</b>	<b>52.6</b>	<b>58.0</b>	<b>54.3</b>	<b>23.9</b>	<b>17.1</b>	<b>23.2</b>	<b>688</b>
No education								
Primary	28.5	43.0	50.8	55.5	33.3	21.1	25.7	331
Secondary	26.0	43.3	50.7	43.4	23.3	15.5	26.7	348
More than secondary	25.7	43.1	48.3	40.2	25.9	18.0	17.1	305
<b>Wealth quintile</b>								
Lowest	26.0	36.3	43.0	43.8	14.9	8.7	20.7	381
Second	18.9	37.1	46.9	39.8	18.4	11.1	22.9	301
Middle	19.3	42.4	53.3	51.4	30.3	14.3	13.8	304
Fourth	35.3	56.5	61.2	48.1	28.8	21.8	25.9	288
Highest	31.6	50.7	52.4	53.8	32.1	26.1	27.5	399
<b>Age (previous, 2013)</b>								
15-29	18.8	35.5	46.9	40.6	20.4	9.4	17.3	437
30-44	28.4	49.8	56.5	51.3	25.0	21.9	20.6	617
45-69	39.9	59.6	56.5	57.5	36.9	26.9	34.1	619
Total (15-39)	22.2	40.4	50.1	44.3	22.1	13.0	18.9	893
Total (40-69)	37.1	57.2	56.7	56.0	34.1	27.2	30.3	780
<b>Total (15-69)</b>	<b>27.2</b>	<b>46.1</b>	<b>52.3</b>	<b>48.2</b>	<b>26.2</b>	<b>17.7</b>	<b>22.7</b>	<b>1673</b>

**Table 13.4 Lifestyle advice from doctors and other health workers all participants (by disease and risk conditions)**

		Percent adults who reported receiving lifestyle advice to:							
		Percent of adults aged 15-69 who have ever visited a doctor or health worker and received lifestyle advice on behavioural risk factors for non-communicable diseases by disease and risk conditions, [Nepal STEPS, 2019]							
Disease and risk condition		Quit using tobacco or don't start diet	Reduce salt in your diet	Eat at least five servings of fruit and/or vegetables each day	Reduce fat in your diet	Start or do more physical activity	Maintain a healthy body weight or lose weight	Reduce sugar beverages in your diet	Number of participants
<b>Smoking status</b>									
Current smokers	70.8	57.1	54.0	50.1	33.2	20.3	27.1	277	
Previous smokers	27.1	41.1	48.6	61.0	36.7	19.5	19.8	168	
Never smokers	18.8	44.5	52.4	46.3	23.5	17.0	22.2	1228	
<b>Blood Pressure status</b>									
Raised blood pressure	32.3	65.6	60.2	64.3	40.8	34.1	31.9	1142	
Normal blood pressure	25.9	39.6	49.2	43.0	21.3	12.2	19.7	512	
<b>Diabetes</b>									
Raised blood sugar/ Diabetes	46.6	56.2	52.5	56.0	41.7	32.7	51.6	1443	
Normal blood-sugar/ Diabetes	26.9	46.1	51.5	46.6	24.0	16.0	21.2	117	
<b>Cholesterol</b>									
Raised cholesterol	32.9	66.3	70.9	71.7	36.1	26.5	26.0	1375	
Normal cholesterol	27.4	43.6	48.5	43.5	23.9	16.1	23.0	238	
<b>Nutrition Status</b>									
Obese	27.1	68.8	72.0	67.2	50.9	49.8	28.4	133	
Overweight	26.8	53.0	47.7	50.2	29.6	23.5	24.2	399	
Normal and underweight	28.3	42.9	51.0	45.3	23.2	14.0	21.9	1102	
<b>Predicted 10-year CVD risk (adults aged 40-69)</b>									
>=30%	57.5	82.7	81.9	85.2	46.1	43.0	58.1	728	
<b>Total (15-69)</b>	<b>27.2</b>	<b>46.1</b>	<b>52.3</b>	<b>48.2</b>	<b>26.2</b>	<b>17.7</b>	<b>22.7</b>	<b>1673</b>	

## CHAPTER 14

# CERVICAL CANCER: SCREENING AND TREATMENT

### Key Findings

- **Testing for cervical cancer**
  - *Ever tested for cervical cancer:* Among total, 168 (8.2%) (5.9% in the last 5 years) and 264 (5.2%) (4% in the last five years) of women age 30-49 years and 15-69 years, respectively, reported ever getting a cervical cancer test.
  - *Main reason for testing:* 49.4% of women who were tested reported getting test done as they were experiencing pain or other symptoms; 21.9% women reported the test as part of routine exam.
- **Source (type of facility) for the most recent test for cervical cancer (15-69 years)**
  - 55.6% of women got their most recent test at private clinics, NGO or community-run hospitals.
  - 38.4% of women got their most recent test at government facilities.
- **Treatment for cervical cancer**
  - *Treatment:* 63.5% of women who received abnormal or inconclusive test results received treatment
  - *Follow-up:* 50.0% of women who received abnormal or inconclusive test results received a follow-up visit.

Cervical cancer is the second most common cause of cancer morbidity and mortality among women in the Southeast Asia Region. The burden is particularly high in low- and middle-income countries (LMICs) accounting for 85% of deaths related to cervical cancer worldwide<sup>1,2</sup>. It is the most common cancer among women in Nepal. Human papillomavirus (HPV) infection is the main cause of cervical cancer and when detected early, cervical cancer is largely preventable and treatable form of cancer<sup>2,3</sup>. However, lack of access to timely and effective health services (vaccination, screening and treatment); social stigma and lack of awareness has posed major barriers to the reduction of cervical cancer related morbidity and mortality in low resource settings<sup>4</sup>.

It is estimated that without further intervention there would be 44.4 million cervical cancer cases diagnosed globally over the period 2020-69, with almost two-thirds of cases occurring in LMICs<sup>5</sup>. In May 2018, the WHO Director-General made a global call for action to eliminate<sup>6</sup> cervical cancer as a public health problem<sup>7</sup> and proposed targets for 2030 (**Figure 14.1**)<sup>8</sup>.

Current WHO recommendation for cervical cancer prevention and treatment include<sup>9</sup>: (1) HPV vaccination

- 1 Bray F, Ferlay J, Soerjomataram I, Siegel RL, Torre LA, Jemal A. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA: A Cancer Journal for Clinicians*. 2018;68(6):394-424. doi:10.3322/caac.21492
- 2 Ferlay J, Soerjomataram I, Dikshit R, et al. Cancer incidence and mortality worldwide: Sources, methods and major patterns in GLOBOCAN 2012. *Globocan 2012. Int J Cancer*. 2015;136(5):E359-E386. doi:10.1002/ijc.29210
- 3 Franco EL, Duarte Franco E, Ferenczy A. Cervical cancer: epidemiology, prevention and the role of human papillomavirus infection. *CMAJ*. 2001;164(7):1017-1025.
- 4 WHO. Comprehensive cervical cancer control: a guide to essential practice – 2<sup>nd</sup> ed. 2014 Geneva
- 5 Simms KT, Steinberg J, Caruana M, et al. Impact of scaled up human papilloma virus vaccination and cervical screening and the potential for global elimination of cervical cancer in 181 countries, 2020-99: a modelling study. *The Lancet Oncology*. 2019;20(3):394-407. doi:10.1016/S1470-2045(18)30836-6
- 6 Elimination defined as age-adjusted incidence rate less than 4 per 100,000 women-years.
- 7 Ghebreyesus, T. *Cervical Cancer: An NCD We Can Overcome*. 2018, World Health Organization: Geneva, Switzerland.
- 8 WHO. [Draft] Global Strategy Towards the Elimination of Cervical Cancer as a Public Health Problem. 2019, World Health Organization: Geneva, Switzerland. [Assessed on: Sep 24, 2019]<https://www.who.int/docs/default-source/documents/cervical-cancer-elimination-draft-strategy.pdf>
- 9 Not an exhaustive list of recommendations, please see original document for comprehensive guidelines. WHO. Comprehensive cervical cancer control: a guide to essential practice – 2<sup>nd</sup> ed. 2014 World Health Organization: Geneva, Switzerland.

**Figure 14.1** Global Targets for the elimination of Cervical Cancer by 2030

- **90%** of girls fully vaccinated with HPV vaccine by 15 years of age.
- **70%** of women are screened with a high-precision test at 35 and 45 years of age.
- **90%** of women identified with cervical disease receive treatment and care.

for girls aged 9-13 before they initiate sexual activity; (2) Every woman aged 30-49 should be screened for cervical cancer at least once in a lifetime regardless of vaccination status and should be repeated at least every 5 years if previous results are negative; (3) Adopt the “screen-and-treat” approach where treatment is given ideally on the same day and same location after positive diagnosis of pre-cancerous lesions to prevent loss to follow-up and delayed treatment.

### Current relevant policies and programs in Nepal for the prevention and treatment of cervical cancer:

In Nepal, the National Guideline for Cervical Cancer Screening and Prevention program was launched in 2010<sup>10</sup> and since then has included the expansion of its cervical cancer screening program in its 5-year multisectoral action plan for 2014-2020<sup>11</sup>. As of 2017/18 DoHS annual report, national coverage on cervical cancer screening program has been achieved. Cervical cancer screening is done by visual inspection of the cervix by trained nurses or doctors using acetic acid<sup>12</sup>.

This chapter focuses on the health service component of cervical cancer prevention and treatment. This information will help Nepal assess trends and progress towards the elimination of cervical cancer as well as the evaluation of current policies and programs in place.

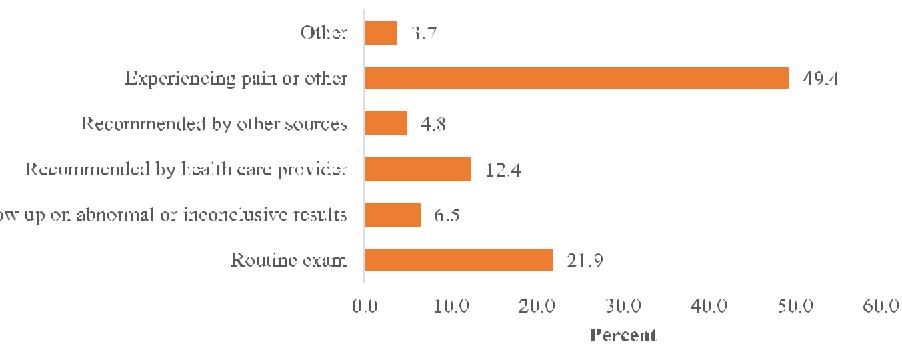
## 14.1 Testing for cervical cancer

Only 5.4% of women age 15-69 years reported ever tested for cervical cancer and 4.0% were tested within the past 5 years (**Table 14.1**). In the age recommended for screening (i.e. 30-49 years of age), 8.2% of women got ever tested for cervical cancer, and 5.9% were tested within the last 5 years.

Amongst those who have ever been tested, 49.5% received their first testing between the age of 30-49 years, 34.2% were first tested between the age of 15-29 years and 5.4% between 50-69 years (**Table 14.1**).

Amongst women who have ever been tested for cervical cancer, 49.4% of women stated the main reason for their last test was due to experiencing pain or some other symptoms; 21.9% of women stated that it was a routine exam and 12.4% of women reported getting tested as per advice by a health care provider. 93.3% of women who have ever been tested for cervical cancer received their test results (**Table 14.2** and **Figure 14.2**).

**Figure 14.2** Percent women aged 15-69 who cited different reasons for seeking cervical cancer testing, Nepal STEPS Survey 2019



10 Ranjit, A., et al., Awareness and prevalence of cervical cancer screening among women in Nepal. Int J Gynaecol Obstet, 2016. 134(1): p. 37-40.

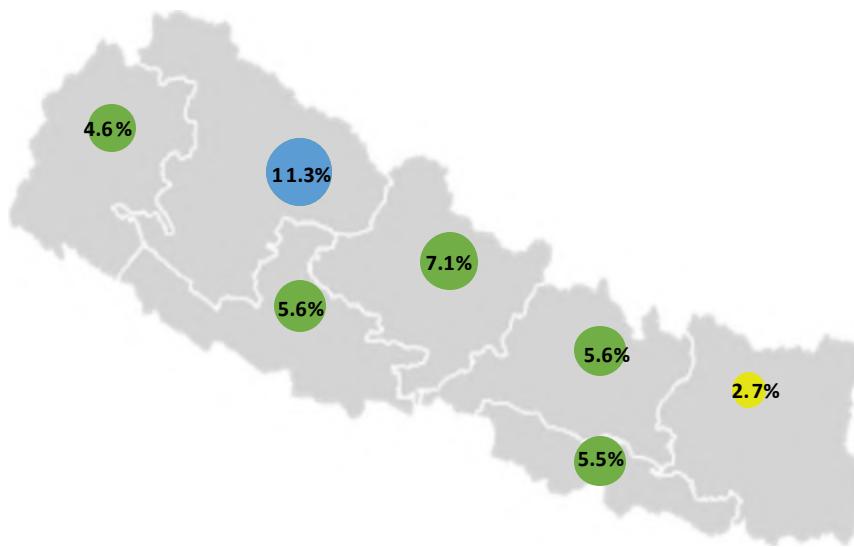
11 Multisectoral Action Plan for the Prevention and Control of Non Communicable Diseases (2014-2020). Kathmandu: Government of Nepal.

12 Department of Health Services (DoHS). Annual Report 2074/75 (2017/18). Government of Nepal, Kathmandu.

### Patterns by background characteristics (Table 14.1 and 14.2):

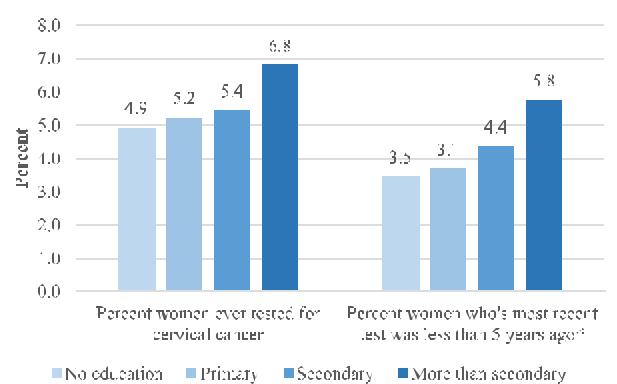
- The highest percentage of women who were ever tested for cervical cancer and highest percentage of women who received their last test less than 5 years ago was amongst women aged 30-49 (8.2% and 5.9% respectively).
- Karnali Province had substantially higher proportion (11.3%) of women who were tested compared to all other Provinces (**Figure 14.3**).
- Percentage of women who have ever been tested and those who were tested within the last 5 years increased with increasing levels of education (**Figure 14.4**).

**Figure 14.3** Percent of women aged 15-69 who have ever received testing for cervical cancer; Nepal STEPS Survey 2019

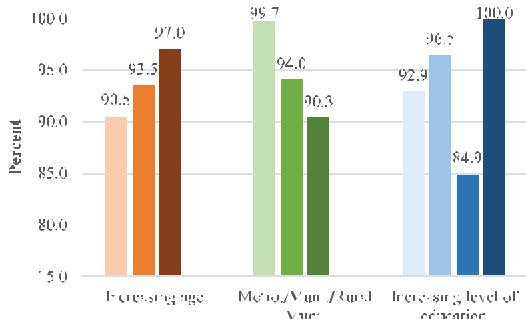


- Older women who reside in metropolitan or sub-metropolitan areas who are more educated are most likely to receive their test results (**Figure 14.5**). Although those who have secondary level education were least likely to receive their test results (**Table 14.1**).
- Younger women who were more educated were more likely to get tested as part of a routine examination or get tested as recommended by a health care provider than their counterparts (**Figure 14.6**).
- Residents of rural municipalities were most likely to get tested as part of a routine exam while residents of metropolitan or sub-metropolitan areas were more likely to be tested as recommended by a health care provider (**Figure 14.7**).
- Older women, who were less educated, were more likely to get tested due to symptoms of pain or others (**Table 14.2**).

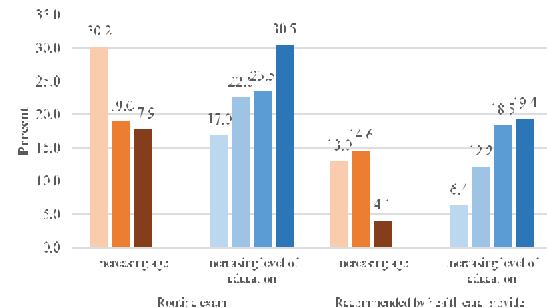
**Figure 14.4** Percent women aged 15-69 who have ever tested for cervical cancer, whose most recent test was less than 5 years ago by education, Nepal STEPS Survey 2019



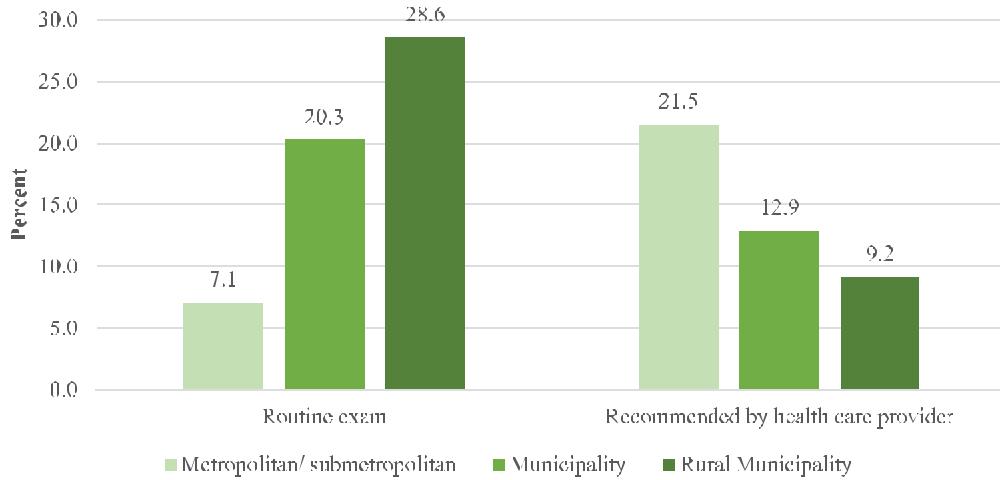
**Figure 14.5** Percent women aged 15-69 who received their test results, Nepal STEPS Survey 2019



**Figure 14.6** Differentials between reasons for testing for cervical cancer by age and education amongst women aged 15-69, Nepal STEPS Survey 2019



**Figure 14.7** Differentials between reasons for seeking testing for cervical cancer by residence amongst women aged 15-69, Nepal STEPS Survey 2019



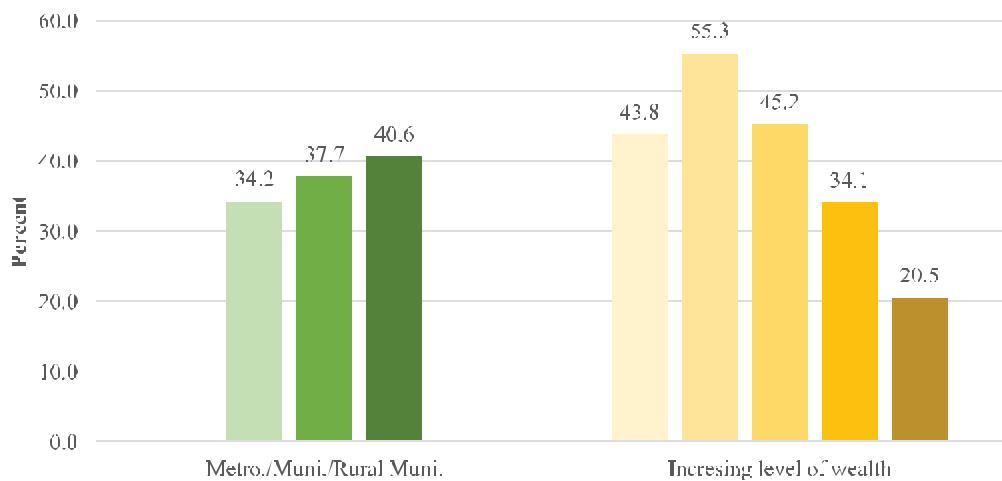
## 14.2 Sources of care for cervical cancer

55.6% of women (15-69 year of age) received their most recent test at private clinics, NGO- or community-run hospitals and 38.4% of women received their most recent test at government facilities (**Table 14.3**).

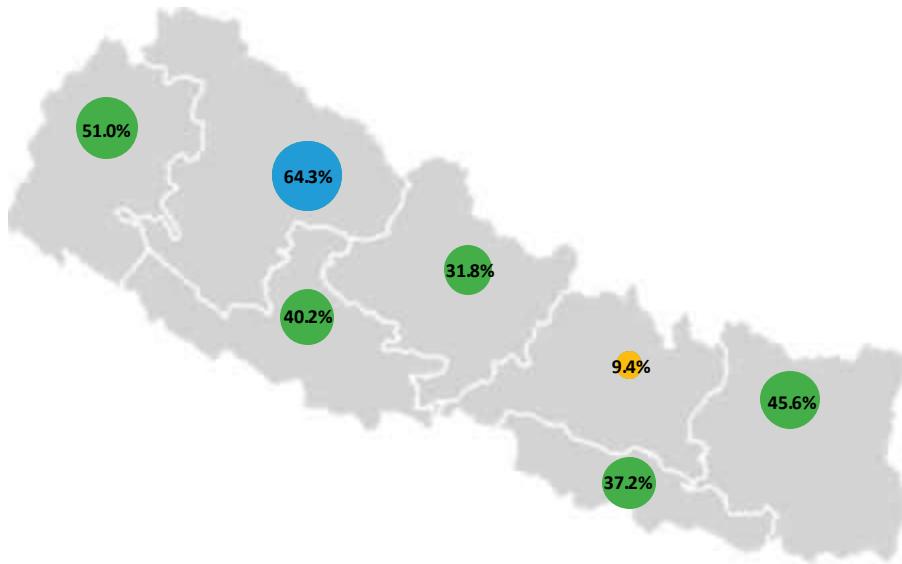
### Patterns by background characteristic (**Table 14.3**):

- More women who reside in rural municipalities and who have lower household wealth got the test done at government facilities than their counterparts. The reverse relationship was seen with use of private facilities. Even among the poorest wealth quintile, more than 50% of women got their test done at private facilities (**Figure 14.8**).
- Lowest government facilities usage for testing was in Province 3 (9.4%) and highest was in Karnali Province (64.3%) (**Figure 14.9**). As noted before Karnali Province also had the highest proportion of women who ever received testing. The reverse relationship was observed for use of private facilities (**Table 14.3**).

**Figure 14.8** Differentials in percent women aged 15-69 who received testing at government facilities by residence and wealth, Nepal STEPS Survey 2019



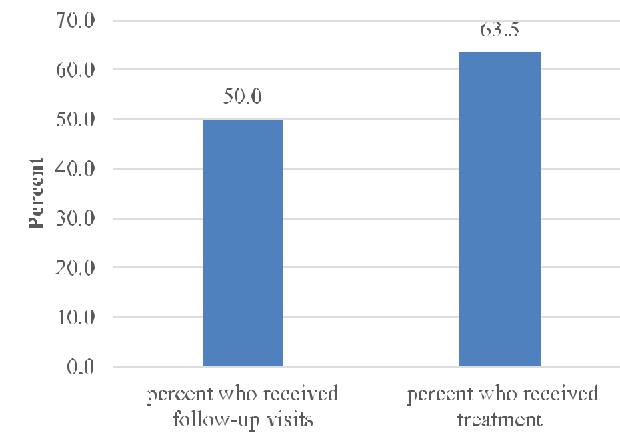
**Figure 14.9** Percent women aged 15-69 who reported receiving testing at government facilities, Nepal STEPS Survey 2019



### 14.3 Treatment for cervical cancer

Amongst women with a cervical cancer test and those who received abnormal or inconclusive test results, 63.5% reported receiving treatment while 50% reported having a follow-up visit as a result of the test<sup>13</sup> (**Figure 14.10**).

**Figure 14.10** Percent women aged 15-69 who have received follow-up visits or treatment amongst those who have been tested for cervical cancer and received abnormal or inconclusive results, Nepal STEPS Survey 2019



13 This data is not presented in tables due to small sample size (n=56).

## **LIST OF TABLES:**

For more information on cervical cancer, see the following tables:

**Table 14.1 Testing for cervical cancer: all women**

**Table 14.2: Reasons for testing for cervical cancer: all women**

**Table 14.3 Sources of care for testing and treatment of cervical cancer**

**Table 14.1 Testing for cervical cancer: all women**

Percent of women aged 15-69 years who have ever tested for cervical cancer; timing of the last test; age of first testing and percent who received test results, amongst women aged 15-69 years, by background characteristics [Nepal STEPS, 2019]

Background characteristic	Percent women ever tested for cervical cancer	Percent women whose most recent test was less than 5 years ago*	Number of women (N)	Amongst those who have ever been tested for cervical cancer:			percent who received test results	Number of women (N)
				15-29	30-49	50-69		
<b>Age</b>								
15-29	3.8	3.3	860	81.3	0.0	0.0	90.5	43
30-49	8.2	5.9	1663	20.8	73.5	0.0	93.5	168
50-69	5.1	3.2	794	0.6	52.2	31.7	97.0	53
<b>Residence</b>								
Metropolitan/submetropolitan	5.3	2.8	416	14.0	61.8	0.7	99.7	41
Municipality	5.8	4.4	1718	34.7	47.4	5.3	94.0	132
Rural Municipality	4.8	3.8	1305	38.4	50.0	6.8	90.3	91
<b>Province</b>								
Province 1	2.7	2.1	506	30.1	59.8	10.1	99.1	25
Province 2	5.5	3.5	431	31.6	34.1	0.0	100.0	24
Province 3	5.6	3.3	444	23.2	58.5	12.2	96.9	42
Gandaki Province	7.1	4.8	510	22.4	73.6	1.2	86.3	38
Province 5	5.6	4.9	504	38.2	52.5	3.0	100.0	36
Karnali Province	11.3	9.1	520	57.8	27.0	7.2	73.4	57
Sudurpashchim Province	4.6	4.0	524	35.9	48.6	8.0	86.5	42
<b>Education</b>								
No education	4.9	3.5	1884	22.9	54.3	12.8	92.9	134
Primary	5.2	3.7	612	44.3	40.1	0.0	96.5	41
Secondary	5.4	4.4	602	48.5	47.6	0.3	84.9	46
More than secondary	6.8	5.8	340	33.9	50.1	0.0	100.0	43
<b>Wealth quintile</b>								
Lowest	5.0	4.3	1067	48.1	39.1	7.0	90.0	68
Second	5.3	4.3	668	35.7	53.2	5.6	83.0	53
Middle	3.7	2.6	582	43.1	43.2	9.0	99.2	37
Fourth	5.1	4.0	526	31.3	43.4	3.3	98.0	38
Highest	8.2	5.0	596	20.1	61.3	3.6	97.7	68
<b>Total (15-69)</b>	<b>5.4</b>	<b>4.0</b>	<b>3439</b>	<b>34.2</b>	<b>49.5</b>	<b>5.4</b>	<b>93.3</b>	<b>264</b>

\* Women who refused to respond or stated "don't know" for these two questions are not presented here but included in the denominator at the time of the analysis.

**Table 14.2: Reasons for testing for cervical cancer: all women**

Percent of women aged 15-69 years who have ever received cervical cancer testing and cited different reasons for seeking the test, by background characteristics [ Nepal STEPS, 2019]

Background characteristic	Percent whose main reason for the last test was*:						Number of women (N)
	Routine exam	Follow up on abnormal or inconclusive results	Recommended by health care provider	Recommended by other sources	Experiencing pain or other	Other	
<b>Age</b>							
15-29	30.2	12.0	13.0	3.8	37.0	2.8	43
30-49	19.0	4.9	14.6	4.5	53.0	3.0	168
50-69	17.9	2.3	4.1	7.7	58.0	7.6	53
<b>Residence</b>							
Metropolitan/ sub-metropolitan	7.1	6.9	21.5	0.6	50.0	13.9	41
Municipality	20.3	8.1	12.9	4.8	48.7	3.6	132
Rural Municipality	28.6	3.4	9.2	6.0	50.5	1.4	91
<b>Province</b>							
Province 1	24.9	8.5	14.7	0.5	51.4	0.0	25
Province 2	31.4	21.3	7.9	0.0	38.6	0.0	24
Province 3	34.4	5.9	6.8	3.1	45.6	4.2	42
Gandaki Province	34.0	1.9	13.9	6.6	36.3	7.4	38
Province 5	14.9	0.0	13.9	10.2	54.4	5.9	36
Karnali Province	5.1	4.0	24.2	4.3	54.9	5.3	57
Sudurpashchim Province	5.6	0.5	8.7	7.1	68.7	2.8	42
<b>Education</b>							
No education	17.0	2.2	6.4	6.0	60.1	6.3	134
Primary	22.6	9.9	12.2	0.0	52.0	2.5	41
Secondary	23.5	4.0	18.5	8.8	42.1	3.0	46
More than secondary	30.5	15.1	19.4	2.8	30.5	0.0	43
<b>Wealth quintile</b>							
Lowest	15.7	5.3	7.3	4.8	59.3	4.9	68
Second	18.2	1.0	16.6	17.0	43.6	3.6	53
Middle	38.8	3.3	9.0	1.4	42.8	1.3	37
Fourth	11.3	13.7	13.8	0.0	52.0	7.7	38
Highest	27.5	8.7	13.8	0.2	48.2	1.7	68
<b>Total (15-69)</b>	<b>21.9</b>	<b>6.5</b>	<b>12.4</b>	<b>4.8</b>	<b>49.4</b>	<b>3.7</b>	<b>264</b>

\* Women who refused to respond or stated "don't know" for these two questions are not presented here but included in the denominator.

**Table 14.3 Sources of care for testing and treatment of cervical cancer**

Percent of women aged 15-69 who received testing from difference sources by background characteristics [Nepal STEPS, 2019].

Background characteristics	Source of care for testing			Number of women (N)
	Government facilities	Private hospital/ Private Clinic / NGO or community hospital	Other	
<b>Age</b>				
15-29	39.7	57.2	3.1	42
30-49	40.2	54.9	4.9	168
50-69	30.1	55.0	14.9	52
<b>Residence</b>				
Metropolitan/ submetropolitan	34.2	51.5	14.3	41
Municipality	37.7	57.4	5.0	130
Rural Municipality	40.6	53.5	6.0	91
<b>Province</b>				
Province 1	45.6	48.9	5.5	25
Province 2	37.2	62.9	0.0	23
Province 3	9.4	78.9	11.7	42
Gandaki Province	31.8	65.1	3.2	38
Province 5	40.2	51.2	8.6	36
Karnali Province	64.3	35.5	0.3	57
Sudoorapashchim Province	51.0	35.8	13.3	41
<b>Education</b>				
No education	37.4	53.9	8.7	133
Primary	32.5	64.2	3.3	41
Secondary	40.8	54.9	4.3	46
More than secondary	43.7	51.3	5.0	42
<b>Wealth quintile</b>				
Lowest	43.8	51.9	4.3	68
Second	55.3	41.0	3.6	53
Middle	45.2	46.4	8.4	35
Fourth	34.1	51.0	15.0	38
Highest	20.5	76.9	2.6	68
<b>Total (15-69)</b>	<b>38.4</b>	<b>55.6</b>	<b>6.1</b>	<b>262</b>

## CHAPTER 15

# ORAL HEALTH

### Key Findings

#### • Oral hygiene practices

- o *Cleaning of teeth:* majority of adults (89.9%) reported that they clean their teeth daily or twice in a day whereas 8.6% participants did not clean their teeth every day.
- o *Cleaning materials:* most of the participants used toothpaste (85.7%) and toothbrush (96.7%) followed by wooden toothpicks (*Neem stick*) 12.2%.

#### • Self-reported state of teeth/gums

- o *State of teeth:* more than 4 out of 5 (81.3%) of adults reported their teeth are in either good or average state. While one out of ten participants reported their teeth in excellent or very good state and 8.6% reported their teeth to be in poor or very poor condition.
- o *State of gums:* similarly, 84.2% of adults reported good or average, 10.8% of adults reported excellent or very good state of their gums and 4.9% reported their gum to be poor to very poor.

#### • Care seeking for oral health issues

- o *Ever visited dentist:* only 5.3% of adults (7.0% in women, 3.4% in men) reported that they ever visited dentist in the past.
- o *Timing of recent visit:* half of them (52.2%) among those who have ever seen a dentist visited within last one year followed by 39.8% visited between 1-5 years and rest of them (8.0%) visited more than 5 years ago.
- o *Reason for visit:* among those who ever visited a dentist, only 2.4% of adults visited for a preventive visit while others (97.6%) visited for consultation or treatment.

#### • Self-reported oral health issues

- o Dental caries was the most common oral health issue reported by 23.0% adults (26.4% in women, 19.2% in men), followed by bleeding from gums (8.2%), difficulty in chewing (7.1%) and swelling in gums (5.9%).

#### • Sources of care for oral health issues

- o *Visited health facility:* one-fourth (24.8%) of adults (31.1% in women, 15.0% in men) reported that they visited health facility for their oral health issues.
- o *Source of care:* among those who visited health facility, half of them (50.6%) visited private facilities exclusively and 30.4% visited government facilities exclusively. Only 8.1% of participants reported that they have visited dental homes or hospitals.

#### • Reason for not seeking care for oral health issues

- o *Demand side reasons:* more than half 54.5% of adults reported that they didn't think it was required, 12.8% of participants said they don't know how or where to get treatment while 9.5% said they don't have time to visit health facility for oral health issues.
- o *Supply-side reasons:* nearly one-fourth (23.3%) said health facility is too far, 13.7% said treatment is too expensive and 2.8% reported poor service in the health facilities.

Oral diseases are one of the most common non communicable diseases affecting 3.6 billion people worldwide in 2016. Amongst those, the majority of oral diseases (2.4 billion) are dental caries carries of the permanent teeth, followed by periodontal diseases and caries of deciduous teeth<sup>1</sup>.

Oral health implies being free of chronic oro-facial pain, oral and pharyngeal cancers, oral tissue lesions, birth defects such as cleft lip and palate, and other diseases and disorders that affect the oral, dental and craniofacial tissues<sup>2</sup>. It is integral and essential to general health and quality of life and have significant economic implications from both direct treatment costs and costs incurred due to loss of productivity<sup>3</sup>.

Most oral diseases and conditions share modifiable risk factors (such as tobacco use, alcohol consumption and unhealthy diets high in free sugars) common to the other NCDs. Rapidly increasing levels of oral disease, have been observed in LMICs in parallel with changes in living conditions and the increasing adoption of unhealthy lifestyles. However, unequal distribution of oral health professionals, lack of appropriate health facilities, lack of awareness and socio-economic inequalities in most LMICs means that access to primary oral health services is often low<sup>4,5</sup>.

Oral health care systems often focus on disease treatment which require intensive health care resources and personnel that are often in critical shortage in LMICs, while attention on primary prevention and oral health promotion is lacking<sup>6</sup>.

South-East Asia Regional oral health strategy suggested two overall targets for 2025: (1) A 25% relative reduction of premature mortality from oral cancer (2) A 25% relative reduction of prevalence of dental caries. It also highlighted 5 priority action areas (**Figure 15.1**)<sup>7</sup>.

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**Figure 15.1** Strategy for oral health in South-East Asia (2013 - 2020)

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**5 priority action areas:**

- (1) Integrating oral diseases into prevention and control of NCDs
  - (2) Addressing oral cancer
  - (3) Promoting oral health through fluorides
  - (4) Increasing and diversifying the health workforce
  - (5) Oral health through school health
- 

Nepal has developed national oral health policy aiming to provide high quality and effective basic oral health care to public<sup>8</sup>. This includes the emphasis on promotive, preventive, curative and rehabilitative care. The National Oral Health Policy and the National Strategic Plan for Oral Health addresses the following health outcomes:

- Reduced incidence and prevalence of dental caries (decay)
- Reduced incidence of oral cancers
- Reduced incidence and prevalence of periodontal diseases
- Reduced disability and handicap resulting from oro-facial defects (cleft lips and cleft palates)

This chapter focuses on oral hygiene practices, reported oral health issues and access and usage of oral health services. This information will help Nepal assess trends and progress of the national oral health status as well as the evaluation of current policies and programs in place that are related to oral health.

## 15.1 Oral hygiene practices

Most adults (89.9%) aged 15-69 in Nepal reported cleaning their teeth once or more than once a day. Toothbrush usage for teeth cleaning was nearly universal (96.7%) and most adults used toothpastes (85.7%) (**Table 15.1**).

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1 Global, regional, and national incidence, prevalence, and years lived with disability for 328 diseases and injuries for 195 countries, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. *The Lancet*. 2017;390(10100):1211-1259. doi:10.1016/S0140-6736(17)32154-2

2 P.E. Petersen. World Oral Health Report 2003. Geneva: World Health Organization.

3 Listl, S. et al. Global economic impact of dental diseases. *J. Dent. Res.* 94, 1355–1361 (2015)

4 Hosseinpoor AR, Itani L, Petersen PE. Socio-economic Inequality in Oral Healthcare Coverage: Results from the World Health Survey. *J Dent Res.* 2012;91(3):275-281. doi:10.1177/0022034511432341

5 Kandelman D, Arpin S, Bæz RJ, Bæhni PC, Petersen PE. Oral health care systems in developing and developed countries: Oral health care systems. *Periodontology 2000*. 2012;60(1):98-109. doi:10.1111/j.1600-0757.2011.00427.x

6 Listl, S. et al. Global economic impact of dental diseases. *J. Dent. Res.* 94, 1355–1361 (2015)

7 World Health Organization Regional Office for South-East Asia. Strategy for oral health in South-East Asia, 2013-2020. New Delhi, India: World Health Organization Regional Office for South-East Asia, 2013.

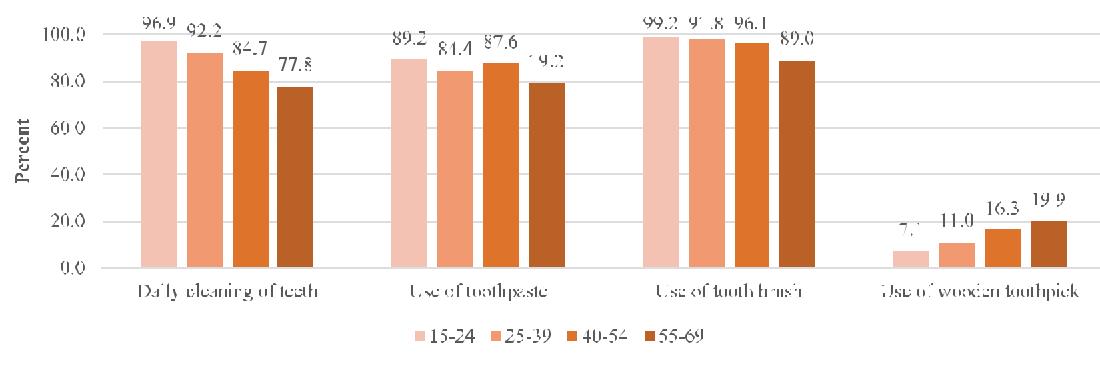
8 Ministry of Health and Population, Nepal. National Oral Health Policy 2070. Department of Health Services.

12.2% of adults reported use of wooden toothpicks (*Neem* stick) to clean their teeth (**Table 15.1**).

#### Patterns by background characteristics (Table 15.1)

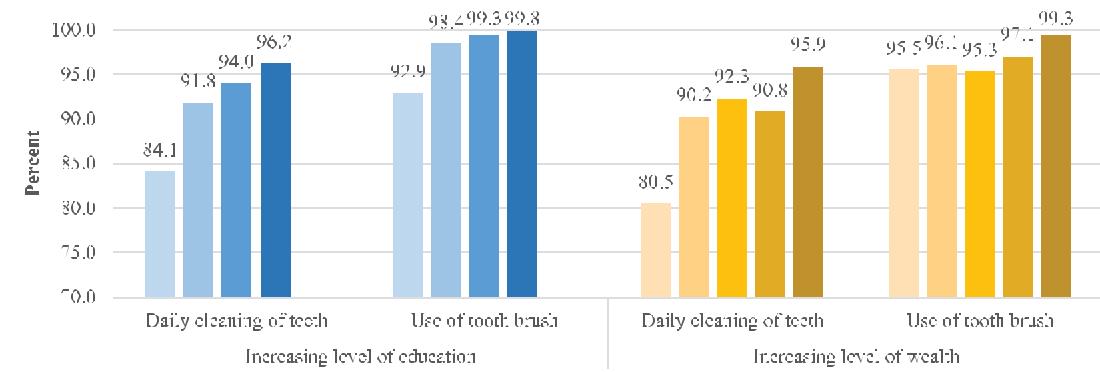
- Adults aged 15-24 were most likely to practice oral hygiene including cleaning teeth daily (96.9%), using a tooth brush (99.2%) and toothpaste (89.2%) for teeth cleaning compared to older adults (**Figure 15.2**). On the other hand, use of wooden toothpicks (*neem* sticks) was most common amongst adults aged 55-69 (**Figure 15.2**).

**Figure 15.2** Differentials in oral hygiene practices amongst adults aged 15-69 by age, Nepal STEPS Survey 2019



- Interestingly, the lowest percentage of adults who clean their teeth daily (86.5%) and use tooth pastes (76.0%) was in Metropolitan and sub-metropolitan regions.
- Karnali Province had the lowest percentage of adults who cleaned their teeth daily (85.6%) and the highest in Province 1 (93.5%).
- Adults with lower level of education and wealth were least likely to clean their teeth daily and use toothbrush (**Figure 15.3**).

**Figure 15.3** Differentials in oral hygiene practices amongst adults aged 15-69 by education and wealth, Nepal STEPS Survey 2019

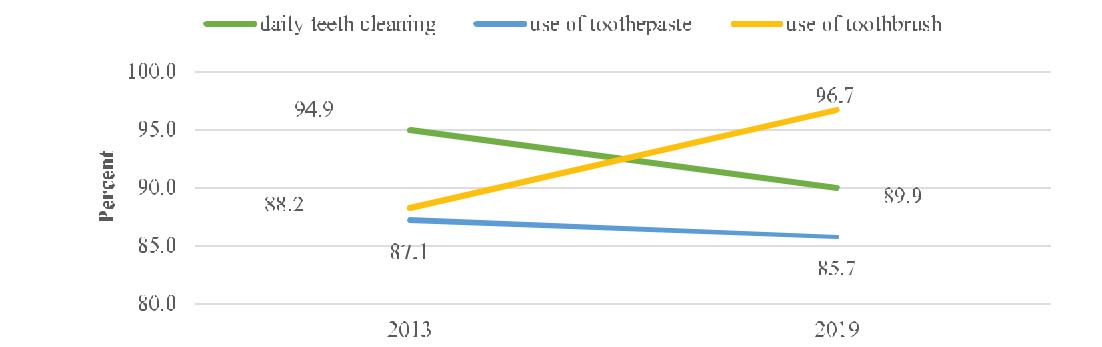


#### Trends between 2013<sup>9</sup> and 2019 survey:

- Reported use of tooth brush increased from 88.2% to 96.7% (**Figure 15. 4**). However some decline is seen for percent adults who clean their teeth at least once a day (94.9% to 89.9%) and use of toothpaste (87.1% to 85.7%) (**Figure 15. 4**).

<sup>9</sup> 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

**Figure 15.4** Trends between 2013 and 2019 in oral hygiene practices amongst adults aged 15-69, Nepal STEPS Survey



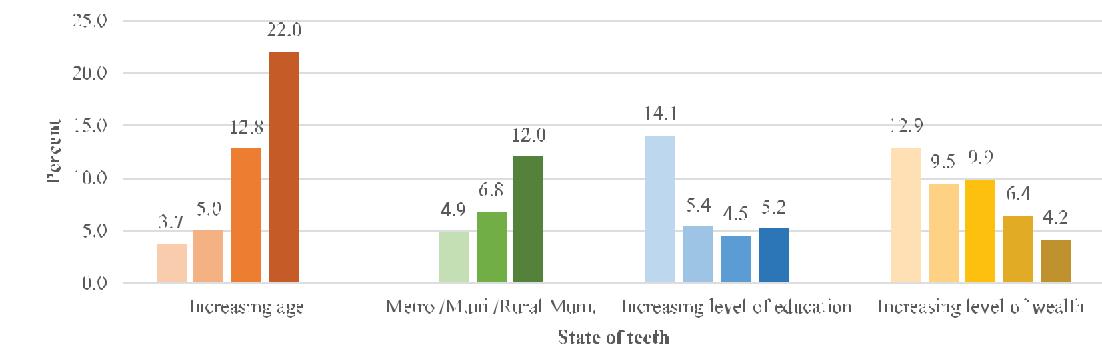
## 15.2 Self-reported state of teeth and gum

8.6% and 4.9% of adults reported their state of teeth and gum, respectively to be poor (**Table 15.2**). Most adults reported their state of teeth (81.3%) and gum (84.2%) to be good or average (**Table 15.2**).

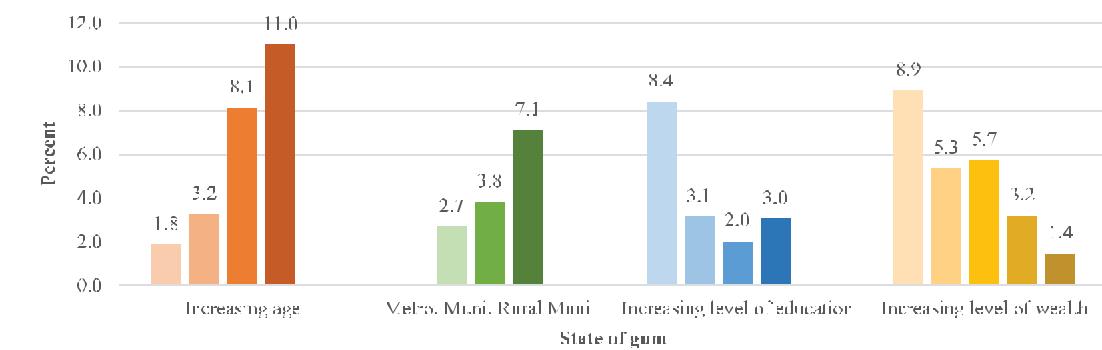
### Patterns by background characteristics (Table 15.2):

- A higher percentage of adults who are older, reside in rural municipalities, who are less educated and less wealthy report the state of their teeth to be poor or very poor (**Figure 15.5** and **Figure 15.6** ).

**Figure 15.5** Differentials in self-reported state of teeth being poor or very poor amongst adults aged 15-69 by age, residence, education and wealth, Nepal STEPS Survey 2019



**Figure 15.6** Differentials in self-reported state of gum being poor or very poor amongst adults aged 15-69 by age, residence, education and wealth, Nepal STEPS Survey 2019

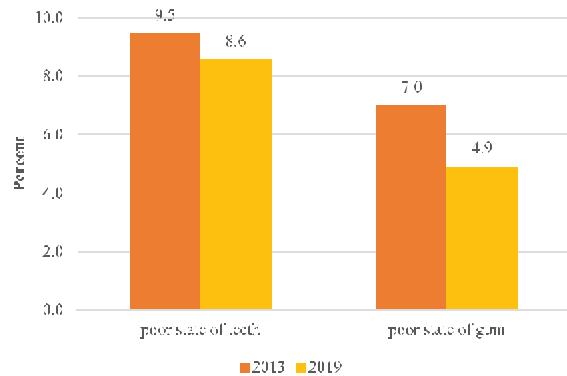


- Karnali Province had the highest percentage of adults who reported their state of teeth and gum to be poor or very poor (13.9% and 7.8% respectively), while the lowest percentage was in Province 2 (state of teeth, 5.6%), and Province 5 (state of gum 3.0%). (**Table 15.2**)

#### Trends between 2013<sup>9</sup> and 2019 survey:

- Fewer adults aged 15-69 reported their state of teeth and gum to be poor or very poor in 2019 compared to 2013.

**Figure 15.7** Trends between 2013 and 2019 in percent adults aged 15-69 who report their state of teeth or gum to be poor or very poor; Nepal STEPS Survey



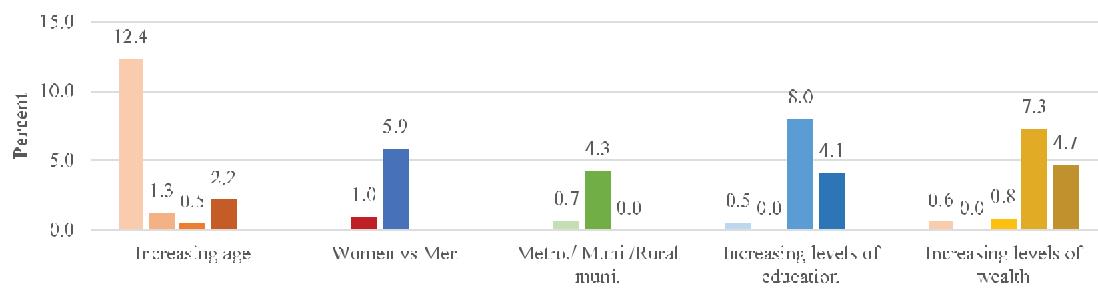
### 15.3 Care seeking for oral health issues with dentist

Only 5.3% of adults reported ever visiting a dentist (**Table 15.3**). Amongst those 52.2% reported their last visit to be within the past year and almost all (97.6%) reported the reason for visit to be for a consultation/treatment (**Table 15.3**). It is clear that the utilization of dental services is primarily for treatment of oral health issues rather than prevention.

#### Patterns by background characteristics (Table 15.3):

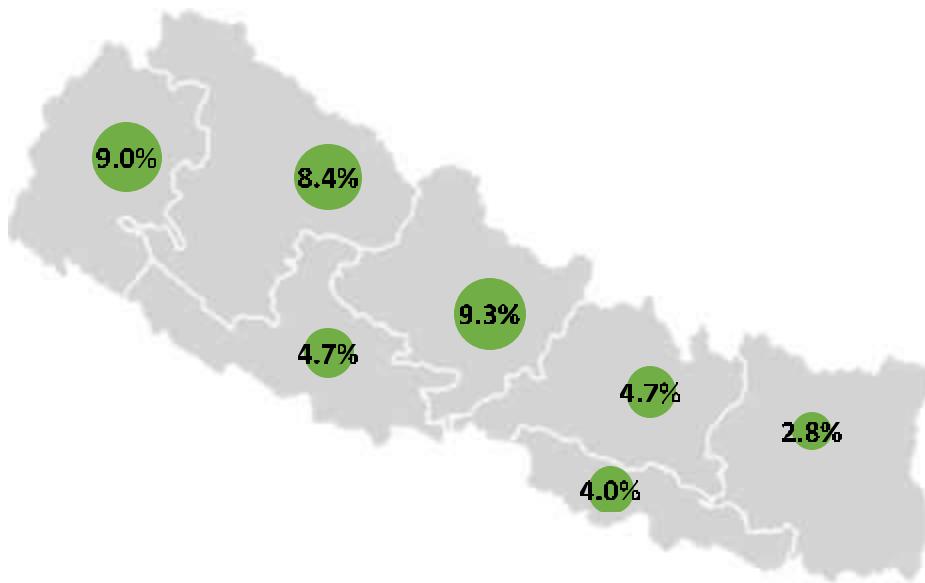
- A higher percentage of women, who were older, with lower levels of education and wealth reported ever visiting a dentist. This may be related to poorer oral hygiene practices and reflect poorer self-reported state of teeth and gum as discussed above.
- However, visiting a dentist for preventative services was much higher amongst adults aged 15-24 who were men, living in municipalities, with higher levels of education and wealth (**Figure 15.8**).

**Figure 15.8** Differentials in percent of adults visiting a dentist for preventative services amongst adults aged 15-69 who have ever visits a dentist by age, sex, residence, education and wealth, Nepal STEPS Survey 2019 (n=451)



- Gandaki Province had the highest percentage of adults (n=89) reporting ever visited a dentist (9.3%), and the lowest percentage (n=40) was in Province 1 (2.8%) (**Figure 15.9**).

**Figure 15.9** Percent adults aged 15-69 who have ever visited a dentist by Province , Nepal STEPS Survey 2019



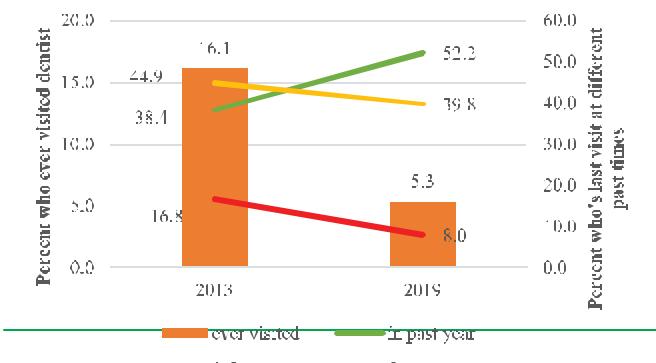
#### Trends between 2013<sup>9</sup> and 2019 survey:

- A large decline in adults aged 15-69 who reported ever visiting a dentist is seen (16.1% vs 5.3%) (**Figure 15.10**). However, compared to 2013 STEPS survey, amongst those who have ever visited a dentist, a higher percentage of adults had their last visit in the past year (**Figure 15.10**).

#### 15.4 Self-reported oral health issues

The most commonly reported oral health issues in the past 12 months are dental caries (23.0%), bleeding from gums (8.2%) and difficulty in chewing (7.1%) (**Table 15.4**).

**Figure 15.10** Trends between 2013 to 2019 in percent adults who have ever visited a dentist and timing of visit amongst those who have ever visited a dentist in adults aged 15-69, Nepal STEPS Survey



#### Patterns by background characteristics (Table 15.4):

- For all reported oral health issues including dental caries, bleeding from the gums and difficulty chewing, women, who are older, who reside in rural municipalities, and have lower levels of education and wealth are most likely to report oral health issues.

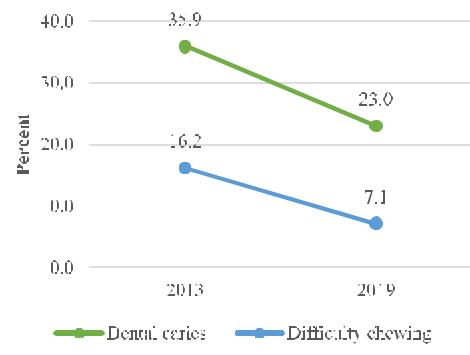
### Trends between 2013<sup>9</sup> and 2019 survey:

Self-reported prevalence of dental caries in the past 12 months declined from 35.9% to 23.0%; difficulty chewing also declined from 16.2% to 7.1% (**Figure 15.11**). Information on gum bleeding was not collected in 2013.

### 15.5 Sources of care for oral health issues

Amongst adults who reported existing oral health issues, only 24.8% stated that they visited a health facility for it (**Table 15.5**). Within the types of health facilities visited, the most common source was private health facilities (50.6%), followed by government facilities (30.4%) and last dental homes/hospitals (8.1%) (**Table 15.5**).

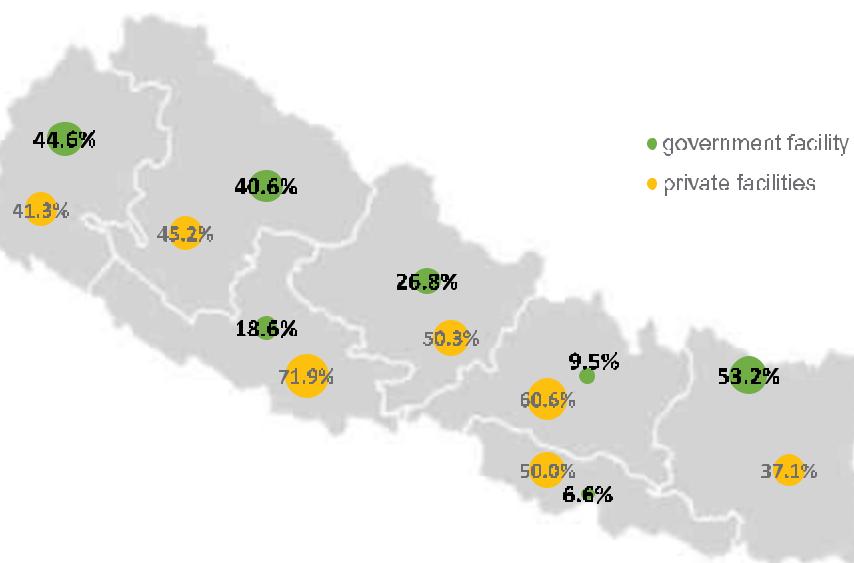
**Figure 15.11** Trends in self-reported prevalence of oral health issues in the past 12 months amongst adults aged 15-69 between 2013 and 2019, Nepal STEPS Survey



#### Patterns by background characteristics (Table 15.5):

- Women and those who reside in municipalities are more likely to visit a health facility for oral health issues compared to their counterparts.
- A much higher proportion of adults aged 55-69 visited private health facilities (61.3%) for existing oral health issues than government facilities (17.4%) relative to other age groups.
- Use of dental home/hospital was highest in metropolitan and sub-metropolitan areas (10.1%).
- Use of government facilities varied greatly across Province with the highest use seen in Province 1 (53.5%) compared to the lowest in Province 2 (6.6%) (**Figure 15.12**). Province 1 also had the lowest use of private health facilities (37.1%), while the highest use of private facilities was seen in Province 5 (71.9%) (**Figure 15.12**)<sup>10</sup>.

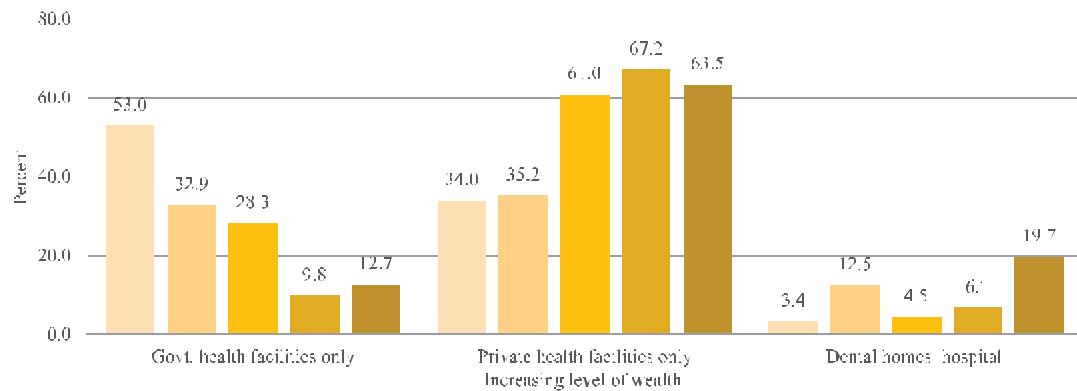
**Figure 15.12** Differentials in use of government health facilities vs private health facilities for care amongst adults aged 15-69 with existing oral health issues by Province, Nepal STEPS Survey 2019



<sup>10</sup> Interpret with caution due to small samples size for Province 1 and 2.

- Interestingly, adults who are less educated were more likely to use private health facilities.
- Use of private health facilities increased with increasing wealth and use of government health facilities increased with lower wealth (**Figure 15.13**).

**Figure 15.13** Differentials in use of government, private health facilities and dental homes/hospitals amongst adults aged 15-69 with existing oral health issues by wealth, Nepal STEPS Survey 2019



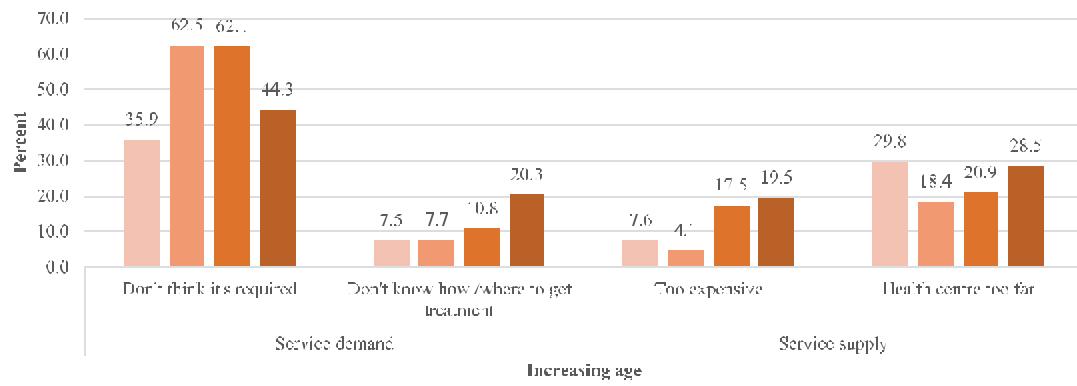
## 15.6 Reasons for not seeking care for oral health issues

On the demand side, the most common reason for not seeking care from the service amongst adults with existing oral health issues was “Not serious enough to require treatment” (54.5%), followed by “don’t know how/where to get treatment” (12.8%); from the service supply side, the most common reasons were health centre being too far (23.3%) and “too expensive” (13.7%) (**Table 15.6**).

### Patterns by background characteristics (Table 15.6):

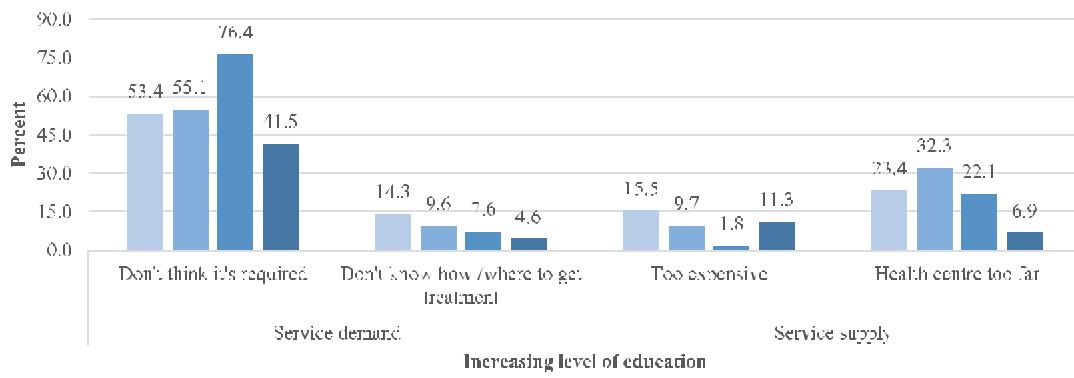
- Older adults are more likely to report reasons like “don’t know how/where to get treatment” (20.3%) and “too expensive” (19.5%) for not seeking care for their existing oral health issues, compared to younger adults (**Figure 15.14**).

**Figure 15.14** Differentials in reasons for not seeking care amongst adults aged 15-69 with existing oral health issues by age, Nepal STEPS Survey

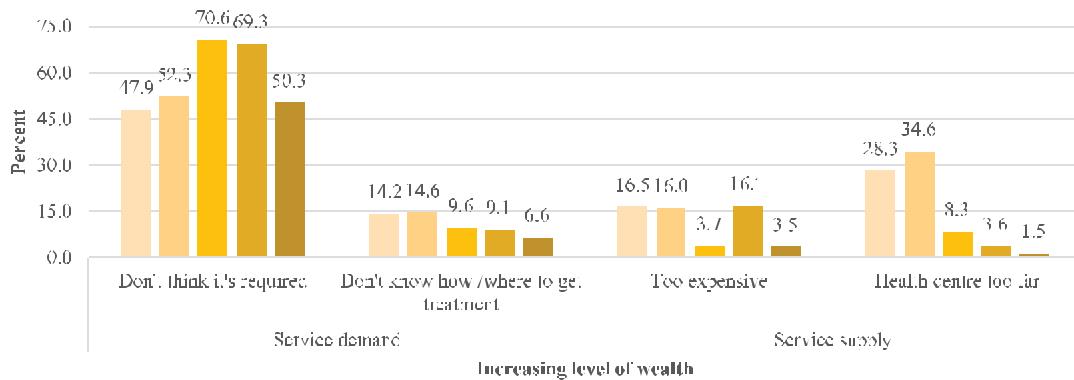


- Adults residing in metropolitan or sub-metropolitan areas were more likely to report “don’t know how/where to get treatment relative to their counterparts, while they were least likely to report “health centre too far” as their reason.
- On the supply side, Province 1 had the highest reporting of health centre being too far as the reason (45.0%) and lowest in Province 5 (8.7%). While on the demand side, adults who reside in Gandaki Province were mostly likely to report “Not serious enough to require treatment” as a reason (82.8%) and the lowest in Province 1 (33.9%).
- Adults with lower levels of education and wealth reported fewer demand side issues and had more supply side issues (**Figure 15.15** and **Figure 15.16**).

**Figure 15.15** Differentials in reasons for not seeking care amongst adults aged 15-69 with existing oral health issues by education, Nepal STEPS Survey 2019



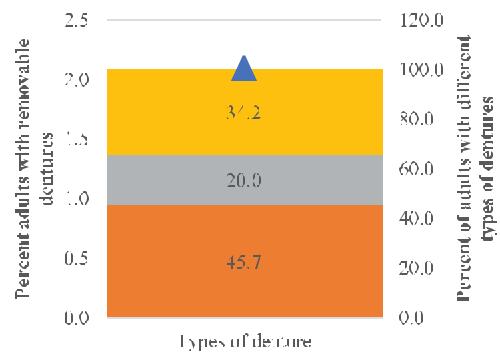
**Figure 15.16** Differentials in reasons for not seeking care amongst adults aged 15-69 with existing oral health issues by wealth, Nepal STEPS Survey 2019



## 15.7 Removable dentures

Amongst adults aged 15-69, 2.1% of adults reported currently having removable dentures (**Figure 15.17**). Amongst those adults, 45.7% reported to have only removable upper dentures, 20.0% reported to have only removable lower dentures and 34.2% reported to have both removable upper and lower dentures (**Figure 15.17**).

**Figure 15.17** Types of dentures among adults aged 15-69 who reported to have removable dentures, Nepal STEPS Survey 2019



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**Table 15.1 Oral hygiene practices: all participants**

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**Table 15.5 Care seeking for oral health issues through different health facilities: all participants with existing oral health issues**

**Table 15.6 Reason for not seeking care for oral health issues: participants with existing oral health issues**

**Table 15.1 Oral hygiene practices: all participants**

Percent distribution of participants age 15-69 years with different oral hygiene practices, by background characteristics, [Nepal STEPS, 2019]

Background characteristic	Cleaning of teeth			Number of participants (N)	Percent of participants using different cleaning materials on usual basis among those who cleaned their teeth					Number of participants (N)
	Daily <sup>1</sup>	Non-daily <sup>2</sup>	Never		Tooth-paste	Tooth-brush	Wooden toothpicks <sup>3</sup>	Charcoal	Others <sup>4</sup>	
<b>Age</b>										
15-24	96.9	3.0	0.2	843	89.2	99.2	7.1	0.2	3.4	838
25-39	92.2	6.7	1.1	2087	84.4	97.8	11.0	0.5	5.7	2072
40-54	84.7	14.0	1.3	1574	87.6	96.1	16.3	2.1	7.4	1541
55-69	77.8	17.2	5.1	1089	79.2	89.0	19.9	3.9	12.6	1009
<b>Sex</b>										
Women	89.9	8.5	1.5	3595	86.4	96.9	13.3	1.4	6.0	3501
Men	90.0	8.7	1.3	1998	85.0	96.5	11.0	1.0	6.7	1959
<b>Residence</b>										
Metropolitan/submetropolitan	86.5	9.9	3.5	705	76.0	98.7	12.0	1.1	18.4	698
Municipality	91.5	7.3	1.2	2755	87.9	95.5	14.8	1.2	6.0	2692
Rural Municipality	88.5	10.2	1.3	2133	84.9	98.0	8.6	1.3	4.0	2070
<b>Province</b>										
Province 1	93.5	5.8	0.7	804	92.8	99.6	13.4	0.3	1.2	791
Province 2	89.9	9.5	0.6	803	66.2	89.0	17.5	0.3	11.2	788
Province 3	86.2	11.6	2.2	759	91.2	98.7	8.4	2.0	8.8	744
Gandaki Province	92.1	7.0	0.9	793	92.6	99.5	13.0	0.7	4.6	787
Province 5	89.2	8.8	2.0	797	84.5	97.8	11.7	1.1	4.1	774
Karnali Province	85.6	11.1	3.3	808	91.8	98.0	10.5	2.9	3.4	765
Sudurpashchim Province	91.6	7.1	1.3	829	94.3	97.5	7.8	2.8	9.3	811
<b>Education</b>										
No education	84.1	13.5	2.4	2792	85.9	92.9	18.1	2.4	9.1	2675
Primary	91.8	7.3	0.9	1051	88.1	98.4	8.4	0.8	4.6	1042
Secondary	94.0	5.3	0.8	1088	89.1	99.3	9.9	0.3	5.3	1085
More than secondary	96.2	3.1	0.7	661	76.6	99.8	5.9	0.3	3.3	657
<b>Wealth quintile</b>										
Lowest	80.5	16.1	3.4	1653	87.4	95.5	15.4	2.5	7.0	1558
Second	90.2	8.7	1.0	1062	89.7	96.1	15.5	1.1	6.9	1044
Middle	92.3	6.4	1.3	949	89.8	95.3	13.9	0.9	7.9	939
Fourth	90.8	7.8	1.4	878	79.3	97.1	10.2	1.1	6.0	868
Highest	95.9	4.1	0.0	1051	82.4	99.3	6.2	0.5	3.8	1051
<b>Age (previous, 2013)</b>										
15-29	95.7	3.4	0.9	1456	88.1	99.3	8.1	0.2	4.7	1456
30-44	89.2	10.4	0.5	2020	84.2	96.4	13.2	1.3	5.6	2020
45-69	81.0	15.7	3.3	1984	83.3	92.5	18.4	2.8	9.9	1984
<b>Total (15-69)</b>	<b>89.9</b>	<b>8.6</b>	<b>1.4</b>	<b>5593</b>	<b>85.7</b>	<b>96.7</b>	<b>12.2</b>	<b>1.2</b>	<b>6.3</b>	<b>5460</b>

<sup>1</sup> Once, or more than once a day; <sup>2</sup> Once/2-3 times a month or Once/2-6 times a week; <sup>3</sup> Neem stick; <sup>4</sup> Plastic toothpicks /Thread (Dental floss) /Chewstick /Miswak /Dattiwani;

**Table 15.2 Self-reported state of teeth/gums: all participants**

Percent distribution of participants age 15-69 yrs who self-reported perceived state of their teeth and gums on a scale of 1-6, by background characteristics, [Nepal STEPS, 2019]

Background characteristic	State of teeth			State of gums			Number of participants (N)
	Excellent / Very good	Good / Average	Poor / Very poor	Excellent / Very good	Good / Average	Poor / Very poor	
<b>Age</b>							
15-24	15.8	80.5	3.7	17.1	81.0	1.8	843
25-39	10.6	84.4	5.0	10.4	86.3	3.2	2087
40-54	6.8	80.5	12.8	7.9	84.0	8.1	1574
55-69	2.6	75.3	22.0	3.7	85.1	11.0	1089
<b>Sex</b>							
Women	8.7	81.9	9.3	9.2	85.1	5.6	3595
Men	11.7	80.6	7.7	12.6	83.2	4.2	1998
<b>Residence</b>							
Metropolitan/ submetropolitan	15.6	79.5	4.9	14.4	82.9	2.7	705
Municipality	8.2	84.9	6.8	9.0	87.1	3.8	2755
Rural Municipality	11.4	76.5	12.0	12.5	80.4	7.1	2133
<b>Province</b>							
Province 1	12.0	77.1	10.8	13.2	79.3	7.5	804
Province 2	11.7	82.7	5.6	12.7	83.5	3.7	803
Province 3	9.6	82.5	7.9	10.7	84.9	4.4	759
Gandaki Province	8.7	82.4	9.0	8.9	86.8	4.2	793
Province 5	11.0	81.8	7.2	10.8	86.2	3.0	797
Karnali Province	5.0	81.1	13.9	6.4	85.9	7.8	808
Sudurpashchim Province	7.0	82.4	10.6	7.6	86.1	6.2	829
<b>Education</b>							
No education	6.6	79.3	14.1	7.1	84.4	8.4	2792
Primary	13.1	81.5	5.4	13.9	83.0	3.1	1051
Secondary	12.8	82.6	4.5	14.8	83.2	2.0	1088
More than secondary	10.7	84.1	5.2	9.8	87.1	3.0	661
<b>Wealth quintile</b>							
Lowest	7.3	79.8	12.9	8.0	83.0	8.9	1653
Second	12.1	78.4	9.5	13.0	81.5	5.3	1062
Middle	12.7	77.4	9.9	13.7	80.5	5.7	949
Fourth	9.6	83.9	6.4	10.4	86.3	3.2	878
Highest	8.8	87.1	4.2	8.7	89.9	1.4	1051
<b>Age (previous, 2013)</b>							
15-29	15.0	80.8	4.2	15.4	82.1	2.5	1466
30-44	7.8	85.2	6.9	8.8	86.8	4.4	2039
45-69	4.2	77.9	17.9	5.0	85.1	9.8	2088
<b>Total (15-69)</b>	<b>10.1</b>	<b>81.3</b>	<b>8.6</b>	<b>10.8</b>	<b>84.2</b>	<b>4.9</b>	<b>5593</b>

**Table 15.3 Care seeking for oral health issues through visiting a dentist: all participants**

Percent distribution of participants age 15-69 who ever visited a dentist, timing of and reasons for last visit, by background characteristics, [Nepal STEPS, 2019]

Background characteristic	Ever visited a dentist	Number of participants (N)	Timing of most recent visit among those ever visited			Reason for most recent visit among those ever visited		Number of participants (N)
			within one year	1-5 years	more than 5 years	consultation / treatment	preventative	
<b>Age</b>								
15-24	2.0	843	67.3	30.3	2.4	87.6	12.4	25
25-39	5.2	2087	54.2	41.4	4.4	98.7	1.3	161
40-54	6.7	1574	42.4	43.7	13.9	99.5	0.5	145
55-69	10.1	1089	53.5	37.0	9.5	97.8	2.2	120
<b>Sex</b>								
Women	7.0	3595	55.9	38.2	5.9	99.0	1.0	333
Men	3.4	1998	43.7	43.4	12.9	94.1	5.9	118
<b>Residence</b>								
Metropolitan/ submetropolitan	3.3	705	36.1	53.0	11.0	99.3	0.7	61
Municipality	5.5	2755	49.9	41.5	8.5	95.7	4.3	212
Rural Municipality	5.5	2133	57.9	35.3	6.8	100.0	0.0	178
<b>Province</b>								
Province 1	2.8	804	69.2	23.4	7.3	94.6	5.4	40
Province 2	4.0	803	28.5	62.9	8.5	100.0	0.0	37
Province 3	4.7	759	68.4	31.5	0.1	96.3	3.7	60
Gandaki Province	9.3	793	72.5	22.8	4.7	100.0	0.0	89
Province 5	4.7	797	36.3	55.0	8.7	100.0	0.0	52
Karnali Province	8.4	808	35.3	46.5	18.2	99.2	0.8	86
Sudoorapashchim Province	9.0	829	57.1	32.1	10.8	93.5	6.5	87
<b>Education</b>								
No education	7.1	2792	44.7	45.1	10.2	99.5	0.5	256
Primary	4.1	1051	52.9	38.4	8.7	100.0	0.0	69
Secondary	4.6	1088	67.3	28.2	4.5	92.0	8.0	83
More than secondary	3.6	661	58.6	38.7	2.8	95.9	4.1	43
<b>Wealth quintile</b>								
Lowest	7.1	1653	59.0	30.3	10.8	99.4	0.6	149
Second	4.7	1062	52.9	41.2	5.9	100.0	0.0	82
Middle	5.2	949	47.0	42.4	10.7	99.2	0.8	74
Fourth	4.4	878	52.5	39.7	7.8	92.7	7.3	59
Highest	5.1	1051	47.4	49.2	3.5	95.3	4.7	87
<b>Age (previous, 2013)</b>								
15-29	2.9	1466	62.0	36.2	1.7	94.9	5.1	64
30-44	6.4	2039	46.0	42.6	11.4	98.6	1.4	183
45-69	8.2	2088	51.6	39.5	8.9	98.3	1.7	204
<b>Total (15-69)</b>	<b>5.3</b>	<b>5593</b>	<b>52.2</b>	<b>39.8</b>	<b>8.0</b>	<b>97.6</b>	<b>2.4</b>	<b>451</b>

**Table 15.4 Self-reported oral health issues/problems: all participants**

Percent distribution of participants age 15-69 who reported experiencing different oral health problems in the past 12 months, by background characteristics, [Nepal STEPS, 2019]

Background characteristic	Oral health issues								Number of participants (N)	
	Difficulty in chewing	Difficulty in speaking	Bleeding from gums	Swelling from gums	Teeth appearance	Patch in mouth	Persistent wound	Took leaves at work due to teeth/mouth	Difficulty in doing routine work	
<b>Age</b>										
15-24	2.2	1.5	3.5	2.2	1.1	1.4	0.2	0.4	0.5	843
25-39	5.2	2.2	8.9	5.6	1.2	1.6	1.1	1.4	1.3	2087
40-54	9.0	2.5	9.4	8.0	1.1	1.1	0.9	1.0	1.6	1574
55-69	19.1	6.2	13.4	10.5	4.6	3.5	2.7	3.7	3.3	1089
<b>Sex</b>										
Women	9.0	3.3	9.5	7.7	2.0	2.1	1.5	2.0	2.0	3595
Men	4.9	1.9	6.6	3.8	1.3	1.3	0.5	0.7	0.8	1998
<b>Residence</b>										
Metropolitan/submetropolitan	3.0	2.6	8.3	2.3	0.8	1.4	0.8	1.3	1.2	705
Municipality	6.4	2.3	6.9	5.0	1.5	1.5	1.0	1.0	1.1	214
Rural Municipality	9.0	3.1	10.0	8.0	2.1	2.0	1.1	1.9	2.0	2133
<b>Province</b>										
Province 1	5.6	0.8	5.5	5.6	2.5	1.7	0.5	0.8	0.8	26.7
Province 2	3.8	1.8	4.8	3.5	0.8	0.8	0.7	0.9	0.3	803
Province 3	4.4	2.1	6.6	5.3	1.2	1.1	0.9	0.6	0.6	759
Gandaki Province	7.5	1.6	6.8	4.6	0.7	1.3	1.0	0.7	0.8	793
Province 5	6.1	1.4	11.0	4.4	0.5	1.3	0.9	0.6	0.7	797
Karnali Province	14.1	6.6	13.9	14.6	3.4	2.7	1.7	4.6	5.2	34.3
Sudurpashchim Province	16.3	8.7	13.1	10.4	4.1	4.5	2.5	4.2	5.5	808
										829

	Total (15-69)	7.1	2.6	8.2	5.9	1.6	1.7	1.0	1.4	1.4	1.4	23.0
<b>Education</b>												
No education	12.1	4.4	10.5	9.2	3.0	2.7	1.8	2.2	2.4	2.2	32.0	2792
Primary	5.1	1.4	7.1	4.3	1.0	1.2	0.8	1.1	1.0	1.2	19.1	1051
Secondary	3.3	1.5	6.8	3.1	0.6	1.4	0.4	0.7	0.7	0.7	16.3	1088
More than secondary	2.7	1.5	5.8	3.8	0.8	0.3	0.4	0.7	0.7	0.7	15.5	661
<b>Wealth quintile</b>												
Lowest	12.6	7.1	14.7	9.9	4.0	3.0	2.7	3.5	3.9	3.7	35.2	1653
Second	9.1	2.2	6.1	7.0	0.9	1.3	0.7	1.4	1.5	1.2	24.7	1062
Middle	5.7	0.9	6.1	6.0	1.0	1.4	0.4	0.8	0.9	1.0	19.8	949
Fourth	5.8	2.2	7.1	3.0	1.5	1.7	0.5	0.4	0.3	0.3	16.5	878
Highest	2.0	0.8	6.7	3.4	0.7	1.1	0.8	0.8	0.5	0.9	18.8	1051
<b>Age (previous, 2013)</b>												
15-29	3.2	1.9	5.3	4.0	1.1	1.5	0.5	0.8	0.8	0.9	14.8	1466
30-44	6.3	2.0	9.5	5.1	1.3	1.5	1.1	1.2	1.5	1.4	23.5	2039
45-69	14.4	4.6	11.6	9.9	2.9	2.3	1.8	2.5	2.5	2.4	36.4	2088

**Table 15.5 Care seeking for oral health issues through different health facilities: all participants with existing oral health issues**

Percent distribution of participants age 15-69 who reported seeking care from different types of health facilities amongst those with reported existing oral health issues, by background characteristics, [Nepal STEPS, 2019]

Background characteristic	Visited health facility for existing oral health issues	Number of participants (N)	Source of care for oral health issues <sup>1</sup>					Number of participants (N)
			Govt. health facilities only	Private health facilities only	Both govt. & private health facilities	Dental homes/ hospital <sup>2</sup>	Others <sup>3</sup>	
<b>Age</b>								
15-24	20.4	91	37.2	40.5	5.3	0.0	2.4	23*
25-39	21.8	374	33.0	45.8	0.4	13.1	7.0	107
40-54	27.0	368	38.7	48.7	4.5	4.1	2.8	112
55-69	29.0	366	17.4	61.3	5.4	9.4	4.9	103
<b>Sex</b>								
Women	31.1	854	29.3	53.1	3.8	8.6	3.0	274
Men	15.0	345	33.8	42.6	2.7	6.5	10.0	71
<b>Residence</b>								
Metropolitan/ sub-metropolitan	18.5	104	45.5	45.5	10.1	17.4	0.2	37
Municipality	30.8	528	55.3	55.3	2.2	5.1	7.6	168
Rural Municipality	19.7	567	44.0	44.0	4.8	11.5	0.8	140
<b>Province</b>								
Province 1	16.8	131	53.5	37.1	3.2	6.2	0.0	28*
Province 2	24.1	95	6.6	50.0	1.8	15.5	26.1	23*
Province 3	24.2	107	9.5	60.6	13.0	8.9	0.1	41
Gandaki Province	22.8	165	26.8	50.3	0.0	17.0	0.0	45
Province 5	19.3	178	18.6	71.9	0.0	7.8	1.7	35
Karnali Province	32.9	263	40.6	45.2	2.0	0.6	4.0	79
Sudurpashchim Province	34.8	260			4.1	6.5	2.3	
			44.6	41.3				94
<b>Education</b>								
No education	25.0	773	25.7	55.5	5.2	6.8	6.2	209
Primary	23.3	173	41.4	48.2	0.0	1.0	6.7	51
Secondary	23.6	162	29.0	44.7	0.0	16.4	0.6	49
More than secondary	27.7	91			5.0	12.2	0.0	
			41.0	38.2				36
<b>Wealth quintile</b>								
Lowest	22.3	524	53.0	34.0	4.3	3.4	2.9	123
Second	20.7	233	32.9	35.2	5.5	12.5	10.9	65
Middle	33.5	176	28.3	61.0	0.0	4.5	5.9	67
Fourth	23.5	147	9.8	67.2	4.5	6.7	3.8	45
Highest	27.5	119	12.7	63.5	4.1	19.7	0.0	45
<b>Age (previous, 2013)</b>								
15-29	19.3	194	37.6	44.3	2.6	7.3	1.2	52
30-44	25.3	385	31.1	47.9	1.0	9.8	8.3	114
45-69	28.0	610	26.6	55.3	5.6	7.4	4.1	179
<b>Total (15-69)</b>	24.8	1199	30.4	50.6	3.5	8.1	4.7	345

<sup>1</sup> People could mention multiple facilities and hence the total across different facilities may add up more than 100%. <sup>2</sup> Differentiation between government or private owned dental homes was not made in this survey, therefore percentage presented include all participants who reported visiting a dental home/hospital.

<sup>3</sup> Other includes ayurvedic/homeopathic providers and private medical shops. \*Interpret with caution due to low sample size.

**Table 15.6 Reason for not seeking care for oral health issues: participants with existing oral health issues**

Percent distribution of participants age 15-69 that gave different reasons for not seeking care for existing oral health issues, by background characteristics, [Nepal STEPS, 2019]

Background characteristic	Service demand					Service supply			
	Don't think it's required	Don't know how /where to get treatment	Didn't have time	Fear of procedure	Family member did not allow	Too expensive	Health centre too far	Poor service	Number of participants (N)
<b>Age</b>									
15-24	35.9	7.5	7.3	25.9	0.0	7.6	29.8	0.0	25*
25-39	62.5	7.7	12.8	3.3	0.0	4.7	18.4	0.9	140
40-54	62.1	10.8	7.7	2.4	0.0	17.5	20.9	4.5	162
55-69	44.3	20.3	8.9	3.0	0.0	19.5	28.5	3.4	178
<b>Sex</b>									
Women	52.0	13.6	10.3	6.1	0.0	12.8	26.4	2.0	139
Men	59.8	11.0	7.9	1.5	0.0	15.7	16.8	4.3	366
<b>Residence</b>									
Metropolitan/ submetropolitan	58.1	27.7	15.7	2.7	0.0	8.5	2.7	0.0	37
Municipality	60.2	16.4	10.4	1.9	0.0	17.0	17.2	2.0	198
Rural Municipality	50.7	9.2	8.4	6.4	0.0	12.1	28.3	3.5	270
<b>Province</b>									
Province 1	33.9	3.7	13.9	1.2	0.0	17.6	45.0	0.4	72
Province 2	25.9	24.4	12.9	2.3	0.0	15.9	22.5	27.8	27*
Province 3	80.1	10.8	4.2	3.1	0.0	12.2	10.2	0.0	34*
Gandaki Province	82.8	8.2	1.1	11.7	0.0	4.4	12.5	1.7	72
Province 5	69.2	17.5	3.9	8.8	0.0	6.9	8.7	0.8	89
Karnali Province	53.4	10.8	12.4	3.6	0.0	17.1	24.0	0.8	122
Sudurpashchim Province	45.5	18.3	15.9	2.6	0.0	20.7	27.5	2.3	89
<b>Education</b>									
No education	53.4	14.3	9.9	2.9	0.0	15.5	23.4	3.2	382
Primary	55.1	9.6	8.9	2.4	0.0	9.7	32.3	1.6	49
Secondary	76.4	7.6	2.2	4.3	0.0	1.8	22.1	1.2	49
More than secondary	41.5	4.6	14.5	32.3	0.0	11.3	6.9	1.5	25*
<b>Wealth quintile</b>									
Lowest	47.9	14.2	12.3	2.9	0.0	16.5	28.3	1.8	281
Second	52.3	14.6	5.0	2.3	0.0	16.0	34.6	0.6	95
Middle	70.6	9.6	9.8	4.4	0.0	3.7	8.3	8.6	60
Fourth	69.3	9.1	9.4	3.0	0.0	16.7	3.6	5.5	38
Highest	50.3	6.6	7.8	33.0	0.0	3.5	1.5	0.0	31*
<b>Age (previous, 2013)</b>									
15-29	54.8	5.1	8.8	13.4	0.0	3.9	26.9	0.0	55
30-44	58.8	10.2	13.3	3.8	0.0	9.6	20.3	1.1	162
45-69	52.2	16.3	7.7	2.5	0.0	18.7	23.9	4.5	288/
<b>Total (15-69)</b>	<b>54.5</b>	<b>12.8</b>	<b>9.5</b>	<b>4.6</b>	<b>0.0</b>	<b>13.7</b>	<b>23.3</b>	<b>2.8</b>	<b>505</b>

\* interpret with caution due to small sample size

## CHAPTER 16

# VIOLENCE AND INJURY

### Key Findings

- **Unintentional Injuries (in the past 12 months)**
  - *Road traffic injuries*: 3.8% adults reported being involved in a road traffic injury as a driver, passenger, pedestrian or cyclist and 1.9% adults reported being involved in a serious road traffic injury that required medical attention as a driver, passenger, pedestrian or cyclist.
  - *Unintentional injuries*: 4.1% adults reported being involved in other serious accidental injuries (fall, burn, poisoning, cut, near-drowning, animal bite) that required medical attention.
- **Practices of road safety measures (in the past 30 days)**
  - *Drink-driving*: 8.9% of adults (4.3% in women, 13.8% in men) reported ever ridden in a motorized vehicle where the driver has had 2 or more alcoholic drinks
  - *Use of seat belts*: only 4.1% of adults (2.6% in women, 5.7% in men) reported ever using a seat belt while in a motor vehicle either as a driver or a passenger.
  - *Use of helmets*: 36.0% of adults (12.6% in women, 53.4% in men) reported ever using a helmet while on a motorcycle or motor-scooter either as a driver or a passenger.
- **Violence**
  - 4.3% of adults (5.1% in women, 3.3% in men) reported being injured in a serious violent incident requiring medical attention in the past 12 months.

Violence and injuries are major contributors towards global mortality and morbidity and accounted for 8.0% of total deaths (~4.48 million deaths) in 2017<sup>1</sup>. Injuries can be categorized into road traffic injuries, unintentional injuries and self-harm and interpersonal injuries (**Figure 16.1**)<sup>1</sup>. The largest proportion of injury deaths were attributed by road traffic injuries in 2017 (27.7% of all injury deaths, ~1.24 million deaths) and is now the 6<sup>th</sup> leading cause of deaths worldwide<sup>1</sup>.

In South-East Asia and Nepal, 9.1% and 9.2%, respectively of total deaths are due to all injuries which is higher than global average<sup>2</sup>. Moreover, injuries due to road traffic injuries and self-harm are the 1<sup>st</sup> and 2<sup>nd</sup> leading cause of deaths amongst 10-24-year-olds in Nepal<sup>2</sup>.

Mortality aside, violence and injuries have far reaching consequences—people surviving injuries sustain temporary or permanent disabilities, mental health issues (depression, anxiety,

**Figure 16.1** Different causes of death due to violence and injury\*

#### Road Traffic Injuries:

- Pedestrian road injuries
- Cyclist road injuries
- Motorcyclist road injuries
- Motor vehicle road injuries
- Other road and transport injuries

#### Unintentional injuries

- Falls
- Drowning
- Fire, heat and hot substances
- Poisonings
- Exposure to mechanical forces
- Animal bites
- Natural disasters
- Other unintentional injuries

#### Self-harm and interpersonal:

- Self-harm
- Interpersonal violence
- Conflict and terrorism

1 Roth GA, Abate D, Abate KH, et al. Global, regional, and national age-sex-specific mortality for 282 causes of death in 195 countries and territories, 1980–2017: a systematic analysis for the Global Burden of Disease Study 2017. *The Lancet*. 2018;392(10159):1736–1788. doi:10.1016/S0140-6736(18)32203-7

2 Institute for Health Metrics and Evaluation (IHME). GBD Compare Data Visualization. Seattle, WA: IHME, University of Washington, 2018. Available from <http://vizhub.healthdata.org/gbd-compare>. (Accessed [Oct 10, 2019])

post-traumatic stress disorder, suicide), as many households may be pushed into poverty due to catastrophic treatment costs and being out of the workforce temporarily or permanently<sup>3,4</sup>.

The Sustainable Development Goals target 3.6 aims to halve road traffic deaths by 2020<sup>5</sup> and the Global action plan for the prevention and control of NCDs has also included violence and injury as an area that has implications for NCDs<sup>6</sup>.

Current implementation of the Nepal Road Safety Action Plan (2013-2020)<sup>7</sup> is under way and has been recognized as a key area of work as part of Nepal's 5-year multisectoral action plan for 2014-2020<sup>8</sup>.

#### **Current relevant policies and programs in Nepal for Violence and injury:**

There are number of legislation procedure adopted to control road traffic injury. These laws and guidelines basically emphasize on<sup>9 10 11</sup>:

- Sustained road-safety awareness campaigns
- Increased efforts to improve the use of seat-belts and helmets
- Reduce drunk-driving and other risky behaviours
- Introduce better speed control
- Heavy penalty to undisciplined road-users including pedestrians

This is the first time Nepal collected data on violence and injuries as part of the STEPS survey and has prioritized the collection of information on self-reported incidence of road traffic injuries in the past 12 months, practices around road traffic safety measures (drink driving, use of helmet and seat belts), self-reported incidence of other unintentional injuries and violence and its cause and context. The information presented in this chapter will help Nepal to assess trends and progress towards the reduction in violence and injuries and evaluate current policies and programs in place.

### **16.1 Road traffic injuries and accidental injuries**

In the past 12 months, 3.8% of adults aged 15-69 years reported being involved in a road traffic injury either a driver (36.9%), passenger (21.6%) or pedestrian (23.8%) or cyclist (17.7%) (**Table 16.1 and Figure 16.2**). 1.9% of adults overall (or 51.3% of those who were involved in road traffic injury) reported incurring serious road traffic injuries requiring medical attention (**Table 16.1**).

3 World Health Organization. Global status report on road safety 2018. Geneva: World Health Organization; 2018. License: CC BY-NC-SA 3.0IGO.

4 Mercy JA, Hillis SD, Butchart A, et al. Interpersonal Violence: Global Impact and Paths to Prevention. In: Mock CN, Nugent R, Kobusingye O, Smith KR, eds. *Injury Prevention and Environmental Health*. 3rd ed. Washington (DC): The International Bank for Reconstruction and Development/The World Bank; 2017. <http://www.ncbi.nlm.nih.gov/books/NBK525208/>. Accessed October 11, 2019.

5 United Nations General Assembly. Transforming our world: the 2030 Agenda for Sustainable Development [Internet] 2015 [Accessed on 2019 Oct 9]. Available from: <https://sustainabledevelopment.un.org/post2015/transformingourworld>

6 World Health Organization. Global action plan for the prevention and control of NCDs 2013-2020. Geneva.

7 Nepal Road Safety Action Plan (2013-2020). Ministry of Physical Planning and Transport Management, Government of Nepal, February 2013.

8 Multisectoral Action Plan for the Prevention and Control of Non Communicable Diseases (2014-2020). Kathmandu: Government of Nepal.

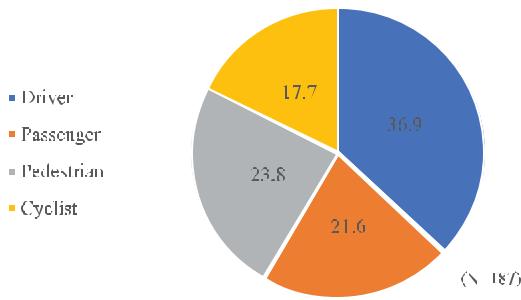
9 Government of Nepal, Ministry of Physical planning and works National transport policy (2058).

10 Ministry of Physical Planning & Transport Management. National Road safety action plan(2013-2020).

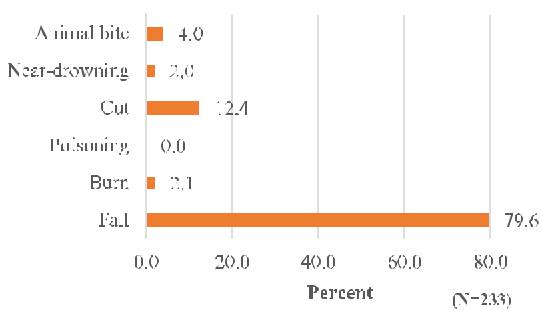
11 Government of Nepal. Motor Vehicles and Transport Management Act , 2049 (1993).

Prevalence of serious accidental injuries excluding road traffic injuries was 4.1% (**Table 16.1**). The most commonly reported cause was fall (**Figure 16.3**) and place of occurrence was home (**Figure 16.4**).

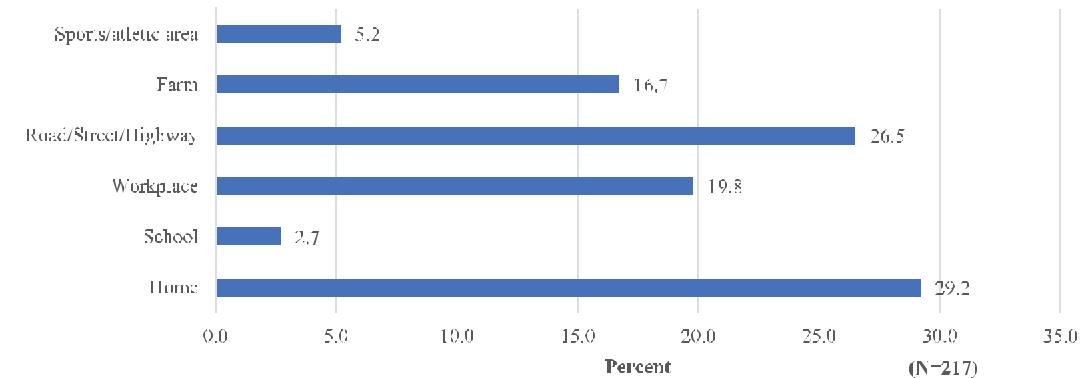
**Figure 16.2** Percent breakdown of the type of involvement amongst adults aged 15-69 who reported being involved in a road traffic injury in the past 12 months, Nepal STEPS Survey 2019



**Figure 16.3** Causes of accidental injuries (excluding road traffic injuries) among adults who were involved in an accident in the past 12 months, Nepal STEPS Survey 2019



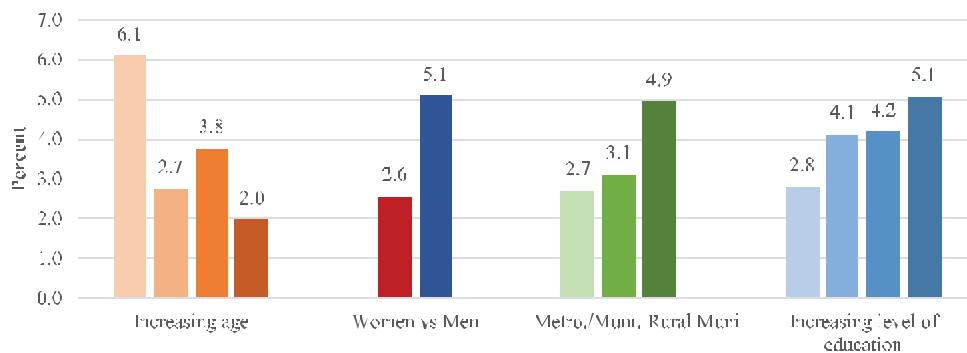
**Figure 16.4** Places where reported accidental injuries occurred amongst adults who were involved in an accident in the past 12 months, Nepal STEPS Survey 2019



#### Patterns by background characteristics (**Table 16.1**):

- Prevalence of reported road traffic injuries was highest amongst younger adults aged 15-24 (6.1%) compared to older age groups (**Figure 16.5**).
- Men, who live in rural municipalities and have higher levels of education, had a higher prevalence than their counterparts (**Figure 16.5**). Similar patterns were observed for road traffic injuries requiring medical attention except across level of education (**Table 16.1**).
- Prevalence was the highest in Sudoor-pashchim Province (7.2%) and Karnali Province (4.5%) and lowest in Province 2 (1.5%) (**Table 16.1**).

**Figure 16.5** Differentials in prevalence of reported road traffic injuries amongst adults aged 15-69, Nepal STEPS Survey 2019



## 16.2 Practices of road safety measures

Information was elicited on road safety practices in the past 30 days.

Amongst adults who have been in a vehicle, only 4.1% reported using a seat belt either as a passenger or a driver. 52.9% of adults reported not having a seat belt in the vehicle (**Table 16.2**).

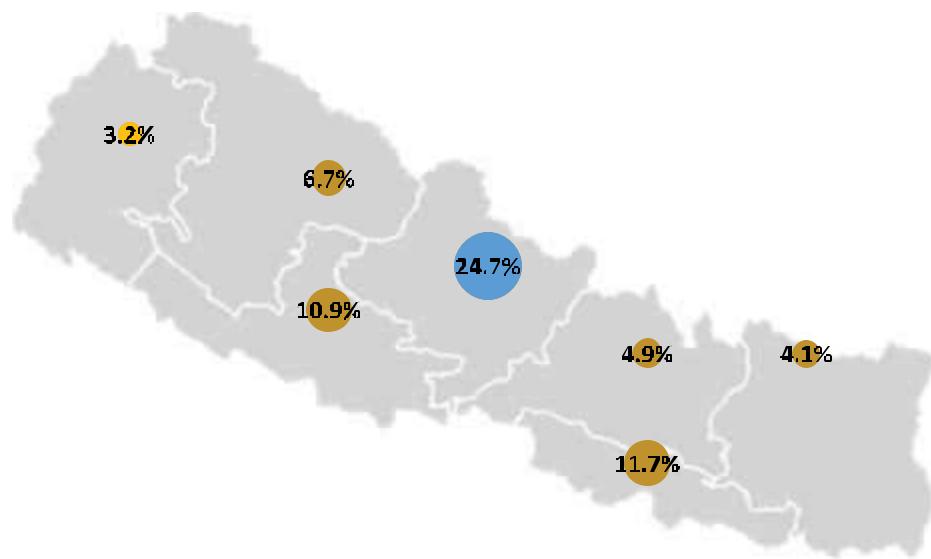
Amongst adults who have been on a motorcycle or motor scooter, 36.0% reported using a helmet either as a passenger or a driver while only 2.0% reported not having a helmet (**Table 16.2**).

8.9% of adults who reported having ridden in a motorized vehicle where the driver has had 2 or more drinks (**Table 16.2**).

### Patterns by background characteristic (**Table 16.2**):

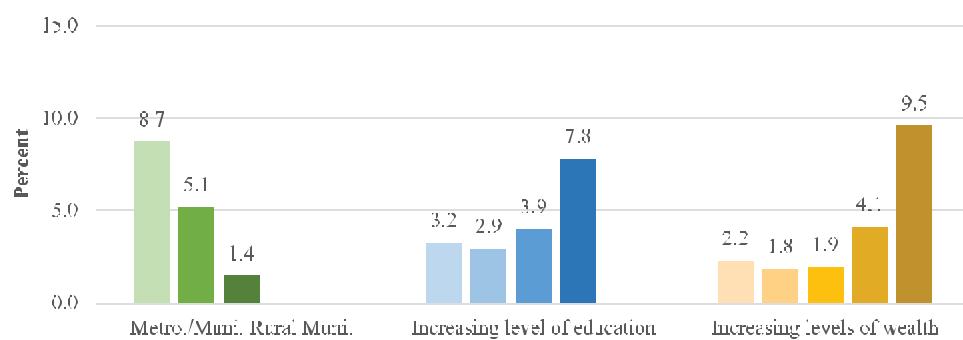
- Rural Municipalities reported the highest prevalence of drink-driving (13.2%) and lowest prevalence of seat belt use (1.4%) (**Table 16.2**), which aligns with the findings above that rural municipalities have the highest prevalence of reported road traffic injuries (**Table 16.1**).
- Gandaki Province had the highest prevalence of drink-driving (24.7%) while the lowest was in Sudurpashchim Province (3.2%) (**Figure 16.6**).

**Figure 16.6** Prevalence of reported drink-driving amongst adults aged 15-69 by Province, Nepal STEPS Survey 2019

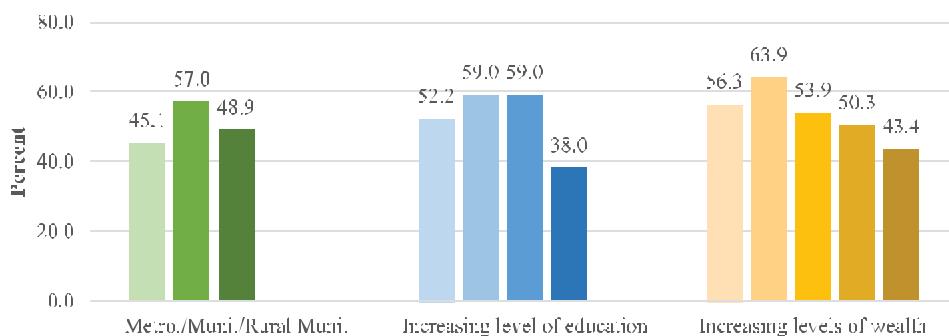


- Adults from the middle and fourth wealth quintile had the highest prevalence of drink driving 15.4% and 13.9% respectively.
- Adults who reside in metropolitan and sub-metropolitan regions, who are more educated and wealthier were most likely to use seat belts and least likely to report not having a seat belt in the vehicle (**Figure 16.7** and **Figure 16.8**).

**Figure 16.7** Differentials in percent adults aged 15-69 who sometimes or always use seat belts by residence, education and wealth, Nepal STEPS Survey 2019

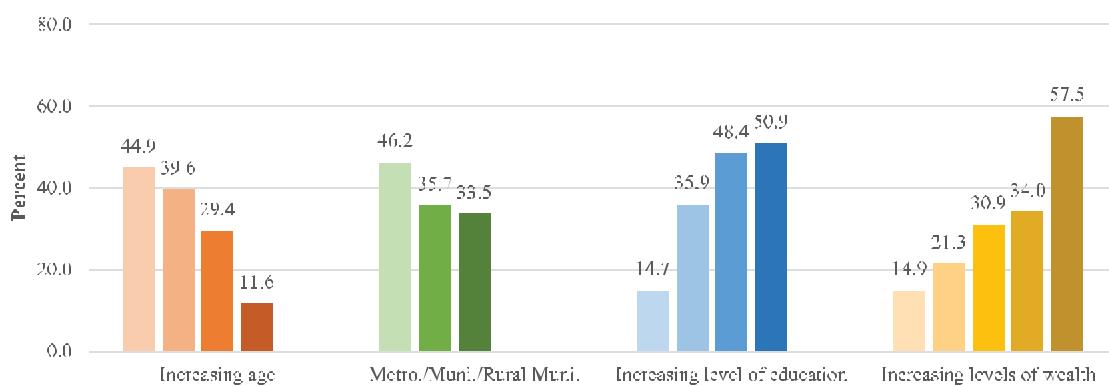


**Figure 16.8** Differentials in percent adults aged 15-69 who reports not having a seat belt in the vehicle by residence, education and wealth, Nepal STEPS Survey 2019



- A much higher percentage of men use helmets than women (53.4% vs 12.6%) (**Table 16.2**).
- Younger adults, who live in metropolitan or sub-metropolitan areas, who are more educated and wealthier are more likely to use helmets than their counterparts (**Figure 16.9**).
- The use of helmets is lowest in Sudoorpashchim Province (19.7%) (**Table 16.2**) where the prevalence of reported road traffic injuries is the highest (7.2%) (**Table 16.1**). The highest use of helmet was in Province 3 (53.1%) (**Table 16.2**).

**Figure 16.9** Differentials in percent of adults aged 15-69 who report using a helmet by age, residence, education and wealth, Nepal STEPS Survey 2019



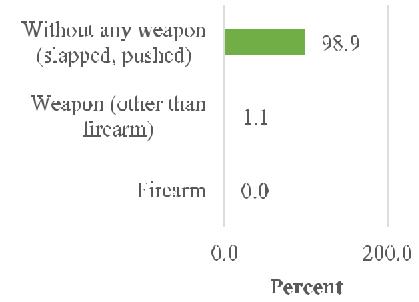
### 16.3 Violence

In the past 12 month, 4.3% of adults reported being injured in a violent incident and required medical attention. Almost no adult reported the involvement of weapons or firearm during the violence incident (**Table 16.3** and **Figure 16.10**).

#### Patterns by background characteristics (**Table 16.3**):

- Women, who are older, with lower levels of education and wealth are more likely to report experiences of serious violent incidents.
- Serious violent incidents were significantly higher in Karnali Province than in Province 2 (7.4% vs 1.8%) (**Table 16.3**)

**Figure 16.10** Use of weapon in violent incidents amongst adults aged 15-69 who were injured in a serious violent incident, Nepal STEPS Survey 2019



## **LIST OF TABLES:**

For more information on violence and injury, see the following tables:

**Table 16.1 Prevalence of self-reported road traffic injuries and accidental injuries: all participants**

**Table 16.2 Practice of road safety measures: all participants**

**Table 16.3 Violence: all participants**

**Table 16.1 Prevalence of self-reported road traffic injuries and accidental injuries: all participants**

Prevalence of self-reported road traffic injuries and accidental injuries in the past 12 months amongst adults aged 15-69, by background characteristics, [Nepal STEPS, 2019]

Background characteristic	Road traffic injuries			Unintentional injuries	
	Prevalence of all road traffic injuries <sup>1</sup>	Prevalence of road traffic injuries <sup>1</sup> requiring medical attention	Number of participants <sup>3</sup>	Prevalence of other unintentional injuries <sup>2</sup> requiring medical attention	Number of participants (N) <sup>4</sup>
<b>Age</b>					
15-24	6.1	2.6	832	5.4	814
25-39	2.7	1.5	2064	3.6	2006
40-54	3.8	2.3	1551	3.7	1517
55-69	2.0	1.2	1069	3.9	1044
<b>Sex</b>					
Women	2.6	1.1	3533	4.3	3444
Men	5.1	2.9	1983	4.0	1937
<b>Residence</b>					
Metropolitan/ submetropolitan	2.7	1.7	695	3.2	665
Municipality	3.1	1.8	2720	4.6	2655
Rural Municipality	4.9	2.2	2101	3.7	2061
<b>Province</b>					
Province 1	1.8	0.5	798	3.0	782
Province 2	1.5	0.6	796	1.6	777
Province 3	2.9	2.1	756	6.8	743
Gandaki Province	4.2	1.9	787	4.3	766
Province 5	5.9	2.9	789	3.7	763
Karnali Province	4.5	3.9	796	7.1	779
Sudurpashchim Province	7.2	3.3	794	5.7	771
<b>Education</b>					
No education	2.8	1.2	2743	3.7	2661
Primary	4.1	3.1	1035	3.7	1020
Secondary	4.2	1.9	1080	4.4	1057
More than secondary	5.1	2.3	657	5.5	642
<b>Wealth quintile</b>					
Lowest	1.6	1.0	1615	4.9	1560
Second	3.2	1.7	1050	5.8	1010
Middle	5.3	2.4	940	3.4	922
Fourth	4.2	2.8	869	3.1	859
Highest	4.4	1.7	1042	3.5	1030
<b>Total (15-69)</b>	3.8	1.9	5516	4.1	5381

<sup>1</sup> Involving either a driver, passenger, pedestrian or cyclist. <sup>2</sup> Unintentional injuries excludes road traffic injuries but include fall, burn, poisoning, cut, near-drowning, animal bite and others. <sup>3</sup> 77 adults who responded "don't know" or "refused" were excluded from the denominator. <sup>4</sup> 212 adults who responded "don't know" or "refused" were excluded from the denominator

**Table 16.2 Practice of road safety measures: all participants**

Practice of road safety including drink driving, use of seat-belt and helmet in the past 30 days amongst adults aged 15-69, by background characteristics, [Nepal STEPS, 2019]		Amongst adults who have been in a vehicle in the past 30 days, percent who:				Amongst adults who have been on a motorcycle or motor scooter in the past 30 days, percent who:				
		Number of participants who:		Number of participants (N) <sup>3</sup>		Number of participants (N) <sup>4</sup>		Number of participants (N) <sup>5</sup>		
		use of seat belt <sup>1</sup>	never use a seat belt	does not have a seat belt	use of helmet <sup>2</sup>	use of helmet <sup>2</sup>	never use a helmet	does not have a helmet	use of helmet <sup>2</sup>	
<b>Background characteristics</b>										
<b>Age</b>										
15-24	10.6	230	4.7	37.6	57.8	504	44.9	53.1	2.0	305
25-39	9.9	596	4.1	45.4	50.5	1348	39.6	58.5	2.0	777
40-54	9.2	448	4.0	38.8	57.2	999	29.4	67.9	2.7	522
55-69	2.1	318	3.3	54.2	42.5	605	11.6	87.2	1.2	319
<b>Sex</b>										
Women	4.3	992	2.6	47.5	49.9	2125	12.6	85.8	1.6	1071
Men	13.8	600	5.7	38.4	55.9	1331	53.4	44.3	2.4	852
<b>Residence</b>										
Metropolitan/ submetropolitan	8.6	173	8.7	46.2	45.1	526	46.2	52.7	1.1	298
Municipality	6.6	808	5.1	37.9	57.0	1707	35.7	61.4	2.9	924
Rural Municipality	13.2	611	1.4	49.7	48.9	1223	33.5	65.5	1.0	701
<b>Province</b>										
Province 1	4.1	218	2.8	27.4	69.8	493	48.8	47.1	4.1	234
Province 2	11.7	294	2.7	45.3	52.0	598	30.0	69.9	0.1	348
Province 3	4.9	186	8.3	39.1	52.6	555	53.1	46.7	0.3	289
Gandaki Province	24.7	243	3.5	36.8	59.8	523	34.4	64.3	1.3	246
Province 5	10.9	175	2.7	56.8	40.5	461	33.5	64.4	2.1	298
Karnali Province	6.7	217	6.2	39.5	54.3	393	21.3	71.4	7.3	224
Sudurpashchim Province	3.2	259	4.3	47.9	47.8	433	19.7	75.2	5.1	284

<b>Education</b>							
No education	7.8	815	3.2	44.6	52.2	1558	14.7
Primary	9.5	295	2.9	38.1	59.0	674	35.9
Secondary	8.2	295	3.9	37.0	59.0	748	48.4
More than secondary	11.8	187	7.8	54.2	38.0	475	50.9
<b>Wealth quintile</b>							
Lowest	5.2	400	2.2	41.5	56.3	835	14.9
Second	3.8	294	1.8	34.2	63.9	583	21.3
Middle	15.4	295	1.9	44.2	53.9	627	30.9
Fourth	13.9	284	4.1	45.6	50.3	634	34.0
Highest	6.1	319	9.5	47.0	43.4	777	57.5
<b>Total (15-69)</b>	8.9	1592	4.1	42.9	52.9	3456	36.0

<sup>1</sup> 4012 adults who responded "don't know" or "refused" were excluded from the denominator <sup>2</sup> Either as a driver or passenger <sup>3</sup> 1689 adults who responded "have not been in a vehicle", "don't know" or "refused" were excluded from the denominator <sup>4</sup> 3670 adults who responded "have not been on a motorcycle or motor-scooter in past 30 days", "don't know" or "refused" were excluded from the denominator.							

**Table 16.3 Violence: all participants**

Percent of adults aged 15-69 who have ever experienced a violent indecent requiring medical attention in the past 12 months and related cause, by background characteristics [Nepal STEPS, 2019]

Background characteristics	Percent adults who have ever experienced a violent incident	95% CI	Number of participants <sup>1</sup>
<b>Age</b>			
15-24	3.1	2.0	761
25-39	4.4	2.8	1927
40-54	4.4	3.0	1444
55-69	6.1	3.5	993
<b>Sex</b>			
Women	5.1	3.6	3305
Men	3.3	2.2	1820
<b>Residence</b>			
Metropolitan/ submetropolitan	3.8	1.6	640
Municipality	4.3	3.0	2504
Rural Municipality	4.3	2.1	1981
<b>Province</b>			
Province 1	4.9	1.5	749
Province 2	1.8	0.7	705
Province 3	5.7	2.9	696
Gandaki Province	3.9	1.9	727
Province 5	3.7	1.9	733
Karnali Province	7.4	4.6	742
Sudurpashchim Province	5.2	3.0	773
<b>Education</b>			
No education	6.1	4.1	2532
Primary	3.3	1.7	977
Secondary	2.8	1.6	981
More than secondary	3.3	1.9	634
<b>Wealth quintile</b>			
Lowest	6.1	3.9	1506
Second	5.7	3.3	950
Middle	4.2	2.8	874
Fourth	3.0	1.7	815
Highest	2.4	1.2	980
<b>Total (15-69)</b>	<b>4.3</b>	<b>3.0</b>	<b>5125</b>

<sup>1</sup>. 468 adults who responded "don't know" or "refused" were excluded from the denominator



# MENTAL STRESS, MUSCULOSKELETAL PAIN AND HEALTH INSURANCE

### Key Findings

- **Mental Stress**
  - 74.2% of adults reported having some form of stress (either from work, family, severe financial stress/ from unemployment, or from experiencing a stressful life event).
- **Experience of Musculoskeletal pain**
  - Overall 17% of adults reported having pain, stiffness or swelling in or around a joint not related to injury that lasted for more than a month.
  - *Possible osteoarthritis*: 8.7% of adults reported having joint pain/stiffness/swelling not related to any injury and lasting for more than a month, with morning stiffness that lasts less than 30 minutes and goes away with exercise/move- suggestive of osteoarthritis.
  - *Possible rheumatoid arthritis*: 1.9% of adults reported joint pain/stiffness/swelling not related to any injury and lasting for more than a month, with morning stiffness that lasts more than 30 minutes and does not go away with exercise/move -suggestive of rheumatoid arthritis.
  - *Back pain and headache*: 18.9% reported experiencing back pain, and 15.2% reported experiencing headaches that prevented them from doing usual household chores or going out for work.
- **Health Insurance**
  - Only 6.9% of adults reported being a member of any health insurance scheme.

This chapter presents information on 3 main issues: mental stress, musculoskeletal conditions and participation in health insurance schemes.

### Mental stress

Stress comes in many forms and affects people of all ages and all walks of life. The experience of stress is highly individualized. However, it affects the mental health in general. Small amounts of stress may be desired, beneficial and even healthy; however excessive amounts of stress, may lead to many problems in the body that could be harmful. Excessive amounts of stress may increase the risk of NCDs such as hypertension, CVD, cancer, anxiety, depression and many more. The prevalence and disease condition of mental disorder is increasing globally that account 13% of total disability adjusted life year (DALYs) lost due to all-diseases and injuries and is likely to increase to 15% with depression accounting for 5.7% of DALYs by 2030<sup>1</sup>. The burden is even high for Nepal with less than efficient mental health services- regarding limited diagnostic, treatment and availability of human resources to address mental health issues. In Nepal, mental health is the least prioritized area of development; however, the Ministry of Health has drafted a new National Mental Health Policy, 2017, aiming to create an environment in which mental health is valued and promoted<sup>2</sup>. Mental health is an emerging health priority though we don't know the exact burden of it as of now. In this survey we tried to dig out the people perception towards the different types of stress they faced in their life among 15-69 years aged population. The findings from this survey may provide a glimpse of stress level among Nepalese population and may guide for better understanding of mental health status among Nepalese population in future.

1 Rijal, A. (2018). "Mental Health situation in Nepal and priorities for interventions." *Health Prospect* 17(1): 1-3.

2 Ministry of Health and Population. Department of Health Service. National Mental Health Policy 2073.

## Musculoskeletal conditions

Musculoskeletal conditions comprise over 150 diseases and syndromes which are usually progressive and associated with pain. Osteoarthritis (OA) is the most common musculoskeletal degenerative condition usually involving big joints on one side such as hip or knees. Rheumatoid arthritis (RA) is a chronic systemic disease that usually affects smaller joints on both sides and tends to strike younger adults (between 20 and 40) compared to osteoarthritis. Both OA and RA impair functionality of the patient and place a burden on individuals, communities, health systems and social systems.

## Health insurance scheme

Every citizen shall have the right to get basic health care and have equal access to health services. These are the fundamental rights guaranteed in the Constitution of Nepal. Nepal aims to fulfill its commitment of achieving Universal health coverage (UHC) by 2030 and social health insurance (SHI) has been considered as a means toward it<sup>3</sup>. Protecting people from catastrophic health care spending, thereby preventing people from falling into poverty trap, the government has rolled out the SHI scheme (*Swasthya Bimaa Karyakram*) in February 2015, to increase the financial protection by promoting pre-payment and risk pooling in the health sector. Before social health insurance scheme, a different health insurance scheme was implemented in Nepal, but none of them succeeded. On the basis of evidence from the previous insurance scheme, social health insurance is implemented with the aim of universal coverage and with the plan for subsidizing premium for poor population who are not able to pay for the insurance package<sup>4</sup>. Till date, Government has roll out the insurance scheme across 49 districts of Nepal<sup>5</sup>. In this survey, we tried to assess the enrollment of adults aged 15-69 years to any health insurance scheme including social health insurance scheme. In this context, the findings will help Nepal to assess the coverage of SHI and the effectiveness of the insurance programs\*.

\* *Findings should be interpreted with caution, since it gives an estimation of only 49 districts.*

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### Current relevant policies and programs in Nepal for Health insurance:

The government of Nepal has rolled out the SHI scheme in February 2015, as a legal framework to increase the financial protection by promoting pre-payment and risk pooling in the health sector. The main objective of this policy is to get basic health care and have equal access to health services ensuring universal health coverage<sup>3</sup>.

---

## 17.1 Mental stress

Participants were asked about different types of stress including: work/business stress; general stress at home; severe financial stress/due to employment; stressful life events in past year which disturbed a lot. Overall, 74.2% of adults aged 15-69 reported at least one form of stress (**Table 17.1**). General stress at home (62.3%) and work/business stress (61.5%) were most frequently reported (**Table 17.1 and Figure 17.1**).

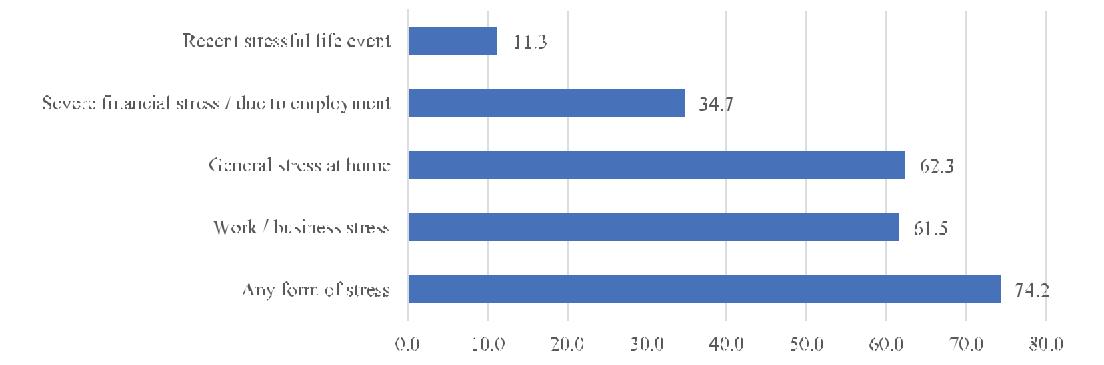
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3 Pokharel, R. and P. R. Siwal (2018). "Social health insurance in Nepal: A health system departure toward the universal health coverage." *Int J Health Plann Manage.*

4 NHRC. Assessment of Social Health Insurance scheme in selected districts of Nepal. Kathmandu, Nepal: Nepal Health Research Council, 2018.

5 Nepal Government Health Insurance Board: <https://hib.gov.np/en>.

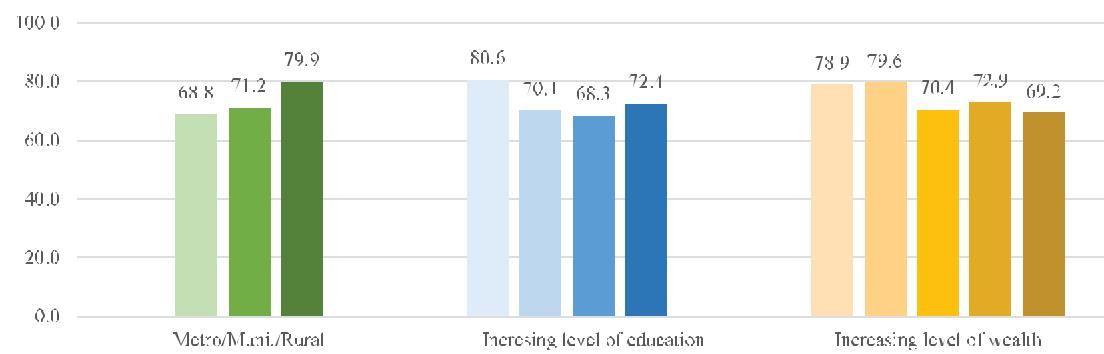
**Figure 17.1** Percent of adults aged 15-69 who reported having different types of stress, Nepal STEPS Survey 2019



#### Patterns by background characteristics (Table 17.1)

- Adults aged 40-54 were most likely to report stress of all types except for stressful life events.
- Residents of rural municipalities, less educated and poorer adults more often reported having stress of any type compared to their counterparts (**Figure 17.2**).

**Figure 17.2** Percent of adults aged 15-69 who reported having stress of any type by residence, education and wealth, Nepal STEPS Survey 2019



## 17.2 Musculoskeletal Conditions

Prevalence of probable osteoarthritis and rheumatoid arthritis were assessed based on self-reported symptoms of joint pain, stiffness and swelling in the past 12 month lasting more than a month. Self-reported symptoms were then categorized as below:

Adults who reported having joint pain/ stiffness/ swelling lasting for more than one-month and not associated with any injury along with morning stiffness or stiffness after a long rest lasting less than 30min that goes away after exercise of the joint are categorized as having probable osteoarthritis; while the adults who reported having morning stiffness or stiffness after a long rest lasting more than 30min and that does not go away after exercise of the joint were categorized having probable rheumatoid arthritis.

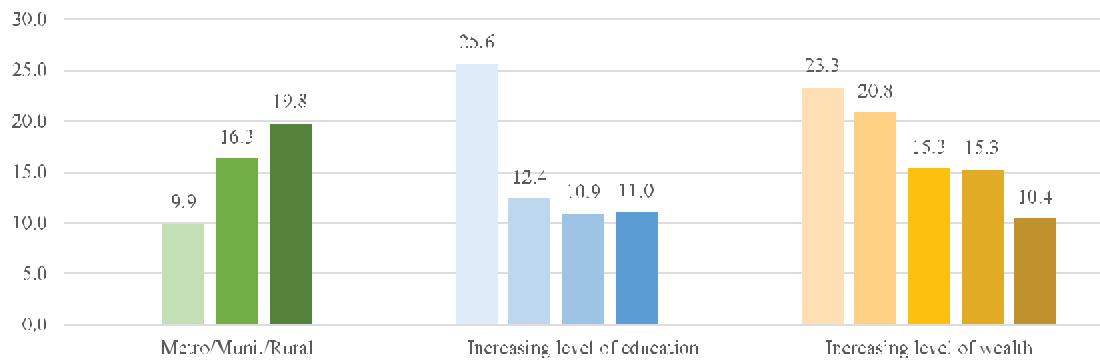
Based on these criteria, 8.7% of adults aged 15-69 reported having symptoms suggestive of osteoarthritis, 1.9% were suspected to be rheumatoid arthritis and 6.5% were possibly other types of joint disorder (**Table 17.2**).

Additionally, 18.9% and 15.2% of adults reported back pain and headaches respectively that prevented them from doing usual household chores or going out for work in the past 30 days (**Table 17.3**).

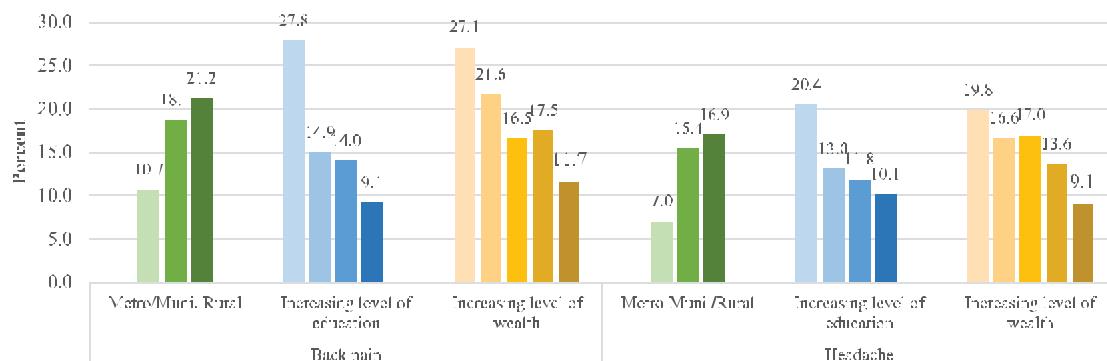
### Patterns by background characteristics (Table 17.2 and Table 17.3)

- Adults who reside in rural municipalities, who were less educated and from poorer wealth quintiles were more likely to report joint pain/stiffness/ swelling than their counterparts (**Figure 17.3**). Similar patterns were observed for back pain and headache (**Figure 17.4**).

**Figure 17.3** Percentage of adults aged 15-69 who reported experiencing joint pain/stiffness/swelling not related to any injury and lasting for more than a month in the past 12 months by residence, education and wealth, Nepal STEPS Survey 2019



**Figure 17.4** Percentage of adults aged 15-69 who reported back pain or headache that prevented them from doing usual activities in the past 30 days by residence, education and wealth, Nepal STEPS Survey 2019



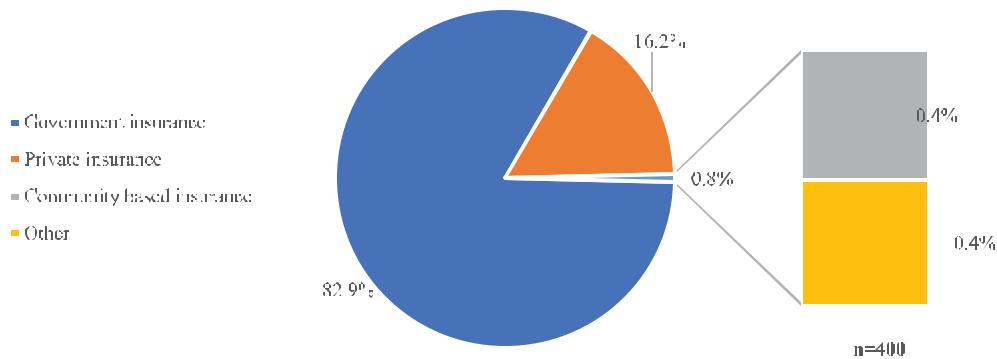
A much higher percentage of adults who reside in rural municipalities report symptoms of OA than residents of metropolitan and sub-metropolitan areas (10.5% vs 1.8%) (**Table 17.2**)

- Karnali and Sudurpashchim Province have the highest percentage of adults who reported experiencing joint pain/stiffness/ swelling in the past 12 months (**Table 17.2**). Similar patterns are seen for back pain and headaches (**Table 17.3**).

### 17.3 Health insurance scheme

Only 6.9% of adults aged 15-69 reported to be a member of some type of health insurance scheme including *Swasthya Bimaa Karyakram* (provided by government of Nepal), private insurance, community-based health insurance or others (**Table 17.4**). Amongst those who reported to be a member of some type of insurance 82.9% reported being members of insurance provided by the government and 16.2% were members of a private insurance scheme (**Figure 17.5**).

**Figure 17.5** Types of health insurances reported by adults aged 15-69 who are a member of a health insurance scheme, Nepal STEPS Survey 2019



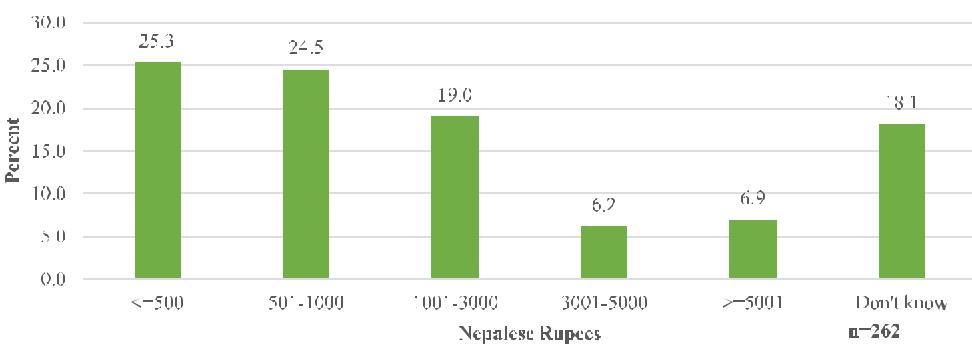
#### Patterns by background characteristics (Table 17.4):

- More adults who reside in metropolitan/submetropolitan areas and those with higher levels of education and wealth reported to be a member of some type of health insurance than their counterparts (**Table 17.4**).
- Province 3 (13.1%) and Karnali Province (11.6%) had the highest percentage of adults with some type of health insurance, while Province 2 (1.3%) had the lowest percentage of adults with health insurance (**Table 17.4**).

#### 17.4 Expenditures on care and treatment of chronic diseases

Amongst those who reported to have a chronic disease(s) (raised BP, raised blood sugar, raised cholesterol), nearly half of the adults reported spending 1000 Nepalese rupees or more every month on their chronic diseases including travel to health facility, fees, medicines, medical test or any other related expenses (**Figure 17.6**).

**Figure 17.6** Monthly expenditure on chronic disease-related care amongst adults aged 15-69 with chronic diseases, Nepal STEPS Survey





## **LIST OF TABLES:**

For more information on mental stress, musculoskeletal conditions and health insurance, see the following tables:

**Table 17.1 Mental stress: all participants**

**Table 17.2 Prevalence of musculoskeletal conditions: all participants**

**Table 17.3 Prevalence of back pain and headache: all participants**

**Table 17.4 Membership in health insurance scheme: all participants**

**Table 17.1 Mental stress: all participants**

Percent distribution of adults age 15-69 who reported different types of mental stress, according to background characteristics [Nepal STEPS, 2019]

Background characteristics	Any form of stress	Work / business stress	General stress at home	Severe financial stress / due to employment	Recent stressful life event	Number of participants
<b>Age</b>						
15-24	62.6	47.6	49.2	30.9	7.4	843
25-39	76.8	65.7	65.3	35.5	11.1	2087
40-54	81.9	70.5	70.2	36.8	14.3	1574
55-69	78.0	63.6	67.7	36.5	15.3	1089
<b>Sex</b>						
Women	74.1	59.6	64.6	34.5	11.6	3595
Men	74.3	63.7	59.8	34.9	11.0	1998
<b>Residence</b>						
Metropolitan/sub metropolitan	68.8	53.7	53.7	23.7	9.8	705
Municipality	71.2	58.5	58.2	32.0	10.7	2755
Rural Municipality	79.9	67.8	70.3	41.2	12.6	2133
<b>Province</b>						
Province 1	68.9	58.5	58.3	35.7	11.3	804
Province 2	77.7	64.9	64.6	21.8	10.6	803
Province 3	81.5	68.8	65.5	37.3	13.4	759
Gandaki Province	79.4	71.8	65.3	35.9	11.2	793
Province 5	67.7	58.9	60.5	39.6	9.8	797
Karnali Province	76.7	59.5	63.5	45.0	13.5	808
Sudurpashchim Province	73.1	49.2	61.0	36.4	11.3	829
<b>Education</b>						
None/less than primary	80.6	66.6	69.6	39.8	13.9	2792
Primary	70.1	58.7	58.6	34.1	11.7	1051
Secondary	68.3	56.2	57.2	30.2	9.3	1088
More than secondary	72.4	60.6	56.5	29.4	7.4	661
<b>Wealth quintile</b>						
Lowest	78.9	65.0	70.9	47.9	16.1	1653
Second	79.6	63.8	68.4	40.1	16.3	1062
Middle	70.4	57.8	59.4	35.2	8.8	949
Fourth	72.9	64.0	58.3	28.8	7.9	878
Highest	69.2	57.1	54.7	21.3	7.4	1051
<b>Total 15-69</b>	74.2	61.5	62.3	34.7	11.3	5593

**Table 17.2 Prevalence of chronic joint pain: all participants**

Percent distribution of adults age 15-69 by whether they have ever experienced joint pain/ stiffness/ swelling not related to an injury in the last 12 months, according to background characteristics [Nepal STEPS, 2019]

Background characteristic	Experienced joint pain/ stiffness / swelling lasting for more than 1 month in the last 12 months					Number of participants
	experienced joint pain/stiffness/ swelling past 12 months	Suggestive of osteoarthritis*	Suggestive of Rheumatoid arthritis**	Other	Total	
<b>Age</b>						
15-24	8.4	5.9	0.8	1.7	100.0	843
25-39	13.4	6.4	1.0	6.0	100.0	2087
40-54	25.1	12.4	2.2	10.5	100.0	1574
55-69	32.3	15.0	6.2	11.1	100.0	1089
<b>Sex</b>						
Women	20.1	9.8	2.2	8.1	100.0	3595
Men	13.6	7.4	1.6	4.6	100.0	1998
<b>Residence</b>						
Metropolitan/sub metropolitan	9.9	1.8	0.7	7.4	100.0	705
Municipality	16.3	8.6	1.9	5.9	100.0	2755
Rural Municipality	19.8	10.5	2.2	7.1	100.0	2133
<b>Province</b>						
Province 1	15.9	7.8	1.6	6.5	100.0	804
Province 2	12.5	5.9	1.9	4.8	100.0	803
Province 3	12.3	6.7	1.1	4.4	100.0	759
Gandaki Province	16.6	9.8	0.9	5.8	100.0	793
Province 5	18.9	9.3	1.5	8.1	100.0	797
Karnali Province	25.9	11.5	3.2	11.2	100.0	808
Sudurpashchim Province	25.6	14.3	4.0	7.3	100.0	829
<b>Education</b>						
None/less than primary	25.6	11.9	3.5	10.2	100.0	2792
Primary	12.4	6.5	0.7	5.1	100.0	1051
Secondary	10.9	7.5	1.1	2.3	100.0	1088
More than secondary	11.0	5.1	0.4	5.5	100.0	661
<b>Wealth quintile</b>						
Lowest	23.3	13.7	2.6	7.0	100.0	1653
Second	20.8	10.2	2.7	7.9	100.0	1062
Middle	15.3	6.7	1.4	7.2	100.0	949
Fourth	15.3	7.6	2.2	5.5	100.0	878
Highest	10.4	5.2	0.5	4.7	100.0	1051
Total 30-69	23.1	10.9	2.9	9.3	100.0	4127
<b>Total 15-69</b>	<b>17.0</b>	<b>8.7</b>	<b>1.9</b>	<b>6.5</b>	<b>100.0</b>	<b>5593</b>

\* pain associated with stiffness in the morning or after a long rest lasting less than 30 min that goes away after exercise or movement of the joint. \*\* pain associated with stiffness in the morning or after a long rest lasting more than 30 min that does not go away after exercise or movement of the joint.

**Table 17.3 Prevalence of back pain and headache: all participants**

Percent distribution of adults aged 15-69 by whether they have experienced back pain and headache that prevented them from doing usual household chores or going to work according to background characteristics [Nepal STEPS, 2019]

Background characteristic	During the past 30 days, percent of adults who were prevented from doing usual household chores or going out for work due to:			
	back pain	Number of participants	headache	Number of participants
<b>Age</b>				
15-24	9.0	843	12.4	837
25-39	16.4	2087	13.4	2082
40-54	25.7	1574	18.7	1567
55-69	35.4	1089	20.8	1088
<b>Sex</b>				
Women	22.8	3595	19.2	3583
Men	14.5	1998	10.7	1991
<b>Residence</b>				
Metropolitan/sub metropolitan	10.7	705	7.0	703
Municipality	18.7	2755	15.4	2741
Rural Municipality	21.2	2133	16.9	2130
<b>Province</b>				
Province 1	15.3	804	12.2	799
Province 2	16.3	803	10.9	801
Province 3	17.4	759	13.8	755
Gandaki Province	18.6	793	13.0	792
Province 5	20.2	797	17.2	794
Karnali Province	23.6	808	22.8	805
Sudurpashchim Province	26.7	829	23.4	828
<b>Education</b>				
None/less than primary	27.8	2792	20.4	2787
Primary	14.9	1051	13.0	1049
Secondary	14.0	1088	11.8	1080
More than secondary	9.1	661	10.1	657
<b>Wealth quintile</b>				
Lowest	27.1	1653	19.8	1648
Second	21.6	1062	16.6	1061
Middle	16.5	949	17.0	943
Fourth	17.5	878	13.6	877
Highest	11.7	1051	9.1	1045
Total 30-69	25.5	4127	17.4	4117
<b>Total 15-69</b>	<b>18.9</b>	<b>5593</b>	<b>15.2</b>	<b>5574</b>

**Table 17.4 Membership in health insurance scheme: all participants**

Percent distribution of adults age 15-69 who reported to be a member of any health insurance scheme, according to background characteristics [Nepal STEPS, 2019]

Background characteristics	Percent of adults who are a member of any health insurance scheme	Number of participants
<b>Age</b>		
15-24	5.9	843
25-39	6.4	2087
40-54	8.4	1574
55-69	8.3	1089
<b>Sex</b>		
Women	6.1	3595
Men	7.8	1998
<b>Residence</b>		
Metropolitan/ submetropolitan	10.8	705
Municipality	7.6	2755
Rural Municipality	4.9	2133
<b>Province</b>		
Province 1	8.3	804
Province 2	1.3	803
Province 3	13.1	759
Gandaki Province	7.5	793
Province 5	5.0	797
Karnali Province	11.6	808
Sudoorpashchim Province	6.2	829
<b>Education</b>		
None/less than primary	5.0	2792
Primary	6.5	1051
Secondary	7.1	1088
More than secondary	11.9	661
<b>Wealth quintile</b>		
Lowest	3.0	1653
Second	3.8	1062
Middle	7.2	949
Fourth	7.7	878
Highest	12.9	1051
<b>Total 15-69</b>	<b>6.9</b>	<b>5593</b>



# **ANNEXES**

## **ANNEX I**

### **LIST OF STEERING COMMITTEE MEMBERS AND TECHNICAL WORKING GROUP**

#### **Steering Committee Members**

1. Prof. Dr. Anjani Kumar Jha
2. Mr. Mahendra Prasad Shrestha
3. Dr. Dipendra Raman Singh
4. Dr. Md. Khurshid Alam Hyder
5. Dr. Bal Man Singh Karki
6. Dr. Anil Baral
7. Dr. Om Murti Anil
8. Dr. Rahul Pathak
9. Dr. Lochan Karki
10. Dr. Meghnath Dhimal, NHRC

#### **Technical Working Group (TWG)**

1. Prof. Dr. Anjani Kumar jha
2. Dr. Sandhya Chapagain Acharya
3. Dr. Meghnath Dhimal, NHRC
4. Dr. Rajendra Kumar B.C.
5. Prof. Dr. Amita Pradhan
6. Dr. Binod Kumar Yadav
7. Mrs. Yesodha Aryal
8. Dr. Abhinav Vaidya
9. Dr. Suresh Mehata
10. Mr. Devendra Kamajit, CBS
11. Dr. Loni Prasai Dixit, WHO
12. Dr. Krishna Kumar Aryal, MEOR
13. Mr. Bihungum Bista
14. Mr. Saroj Bhattacharai

## **STUDY TEAM AND DATA COLLECTION TEAM**

### **List of Field Research Assistants ( Household listing and Interviewers)**

1	Akshya Acharya	33	Jitendra Timilsina	63	Reena Kharbuja
2	Anisha Subedi	34	Jyoti Poudel	64	Ritu Thapa
3	Anjan Sigdel	35	Kamal Dhakal	65	Roshan Bhujel
4	Antim Adhikari	36	Kamana Yadav	66	Sabita Sharma
5	Arun kc	37	Karishma Basnet	67	Sandip Silwal
6	Ajita Ghimire	38	Karishma Gaire	68	Sangam Ghimire
7	Ashmita Nepal	39	Karishma Sapkota	69	Sangita Lakha
8	Aastha Sapkota	40	Keshab Raj Joshi	70	Sapana Yadav
9	Basanta Neupane	41	Keshav Acharya	71	Saraswoti Dhakal
10	Bhim Prasad Neupane	(Laboratory Technician)		72	SakunSubba
11	Bhagwati Prasad Chaudhary	42	KiranAdhikari	73	Shanti Thapa Magar
12	Bidhya Poudel	43	KiranNeupane	74	Shekhar Jang Malla
13	Bindu Sharma	44	Krishna Jha	75	Shradha Basnet
14	Binita Mahato	45	Lok Raj sanjyal	76	Shraddha Nepal
15	Binita Shrestha	46	Mahesh raj Giri	77	Shreeram Gora
16	Bipin Dhittal	47	Mamila Limbu	78	Shubha Chandra Sah
17	Bijay Raj Gautam	48	Man Bahadur Gharti Magar	79	Smriti Manandhar
18	Dakshina Karki	49	Mandira Dahal	80	Sneha Acharya
19	Deepika Kattel	50	Manisha Timalsina	81	Subash Thada
20	Devi Dutta Budha	51	Manoj Devkota	82	Suddha Rana Magar
21	Dhirendra Khadka	52	Melina Ghimire	83	Sudha Rana Magar
22	Dilliram Shrestha	53	Naresh Bdr Khadka	84	Sudhir Kumar Mandal
23	Dipesh Limbu	(Laboratory Technician)		85	Sujata Khatiwoda
24	Dipesh Kumar Yadav	54	Om Shankar Jha	86	Sulochana Ghimire
25	Dipendra Thapaliya	55	Pappu Kumar Yadav	87	Swastika Baddhu
26	Dikshya Parajuli	56	Pashupati Khanal	88	Urmila Pudasaine
27	Durgesh Kumar Yadav	57	Poonam Yadav	89	UrushaKarki
28	Ganesh Bhandari	58	Prabesh Paudel	90	Vaskar Sapkota
29	Garima Shrestha	59	Pradip Prasad Duwadi	91	Vibek Upfrey
30	Gokarna Shrestha	60	Pragya Jha	92	Yashoda Kandel
31	Jayanti Chaudhary	61	Prakash Raj Bhatt		
32	Jeney Maharjan	62	Rajesh Pandey		

## **ANNEX 2 : QUESTIONNAIRE**

### **Noncommunicable Disease Risk Factors STEPS Survey, Nepal 2019**



### **Survey instrument (Core and Expanded)**

**The WHO STEP wise approach to noncommunicable disease risk factor surveillance (STEPS) 2019**



**WHO STEPS Instrument**  
**For Noncommunicable Disease Risk Factor Surveillance, Nepal, 2019**

### Survey Information

Location and Date	Response	Code
Interviewer ID <i>Must be between 1 to 30.</i>	_____	I3
PSU ID <i>PSU code must be between 101 to 137 or 201 to 237 or 301 to 337 or 401 to 437 or 501 to 537 or 601 to 637 or 701 to 737.</i>	_____	I1
Date of completion of the instrument <i>Fill automatically.</i>	____ dd    ____ mm    ____ year	I4
Time of interview (24-hour clock) <i>Fill automatically.</i>	____ : ____ hrs    mins	I7
Family Surname <i>It will fill automatically, please check before editing</i>	_____	I8
First Name <i>It will fill automatically, please check before editing</i>	_____	I9
Contact number of respondents <i>Must be in 10 digits; Put zero before number if it is less than 10 digits.</i>	____ Enter 88, if refused and 99, if not available	I10
Consent has been read and obtained	Yes 1 No 2    If NO, END	I5

## Step 1 Demographic Information

Question	Response	Code
Sex (Record Male / Female as observed) <i>It will fill automatically, please check before editing</i>	Male 1 Female 2	C1
What is your date of birth?  <i>Don't Know 77 77 7777</i>	dd mm year  <i>If Known, Goto C4</i>	C2
How old are you?	Years    dd	C3
In total, how many years have you spent at school and in full-time study (excluding pre-school) [COUNT FROM GRADE 1]?  <i>Should be between 0 - 25 years</i>	Years    dd  <i>If 0 then go to C6</i>	C4
What is the highest level of education you have completed?	No formal schooling 1 Less than primary school 2 Primary school completed 3 Secondary school completed 4 High school completed (+2, intermediate, PCL) 5 Bachelor level completed 6 Post graduate degree 7 Refused 88	C5
What is your ethnic background?  <i>[REFER CASTE CLASSIFICATION CARD – CC1]</i>	Dalit 1 Disadvantaged Janajati 2 Disadvantaged Non-Dalit Tari caste group 3 Religious Minorities 4 Relatively advantaged janajati 5 Upper caste Group 6 Others 7 Refused 88	C6
What is your marital status?	Never married 1 Currently married 2 Separated 3 Divorced 4 Widowed 5 Cohabiting 6 Refused 88	C7
Which of the following best describes your main work 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 go to C9x1 Unemployed (unable to work) 9 go to C9x1 Others 10 Refused 88	C8/ C8Other
Are you currently working as Health Care Worker such as doctor, dental surgeon, public health administrator/ officers, nurse, pharmacist, health assistants, physiotherapists, auxiliary health workers, ANM, Midwife, FCHV?	Yes 1 No 2	C8x1
Are you currently working as a teacher/ instructor/ faculty/ lecturer/ professor in any school/ college/ university/ academic institutes?	Yes 1 No 2	C8x2

In total, how many persons live in this household (including infants)?	—	C9x1
Is any lady in the house currently pregnant?	Yes 1 No 2 Don't know 77 Refuse 88	C10x

Please ask/ observe - whether this household or any person who lives in the household has the following items:

a. Electricity	Yes 1	No 2	C11xa
b. Radio	Yes 1	No 2	C11xb
c. Television	Yes 1	No 2	C11xc
d. Landline	Yes 1	No 2	C11xd
e. Mobile phone	Yes 1	No 2	C11xe
f. Computer	Yes 1	No 2	C11xf
g. Refrigerator	Yes 1	No 2	C11xg
h. Inverter	Yes 1	No 2	C11xh
i. Bed	Yes 1	No 2	C11xi
j. Sofa	Yes 1	No 2	C11xj
k. Table	Yes 1	No 2	C11xk
l. Fan	Yes 1	No 2	C11xl
m. Chair	Yes 1	No 2	C11xm
n. Watch / Clock	Yes 1	No 2	C11xn
o. Bicycle	Yes 1	No 2	C11xo
p. Motor cycle / Scooter	Yes 1	No 2	C11xp
q. Car / Truck / Jeep / Tractor	Yes 1	No 2	C11xq
r. Dhiki /Jato	Yes 1	No 2	C11xr
s. Animal drawn cart	Yes 1	No 2	C11xs
t. Domestic animal like Cow / Buffalo / Goat	Yes 1	No 2	C11xt

What is the main material of the roof of the main house? [RECORD OBSERVATIONS]

Natural roofing			
No roof		1	
Thatched/Palm leaf		2	
Rudimentary Roofing			
Rustic mat		3	
Bamboo		4	
Wood Planks		5	
Cardboard		6	
Finished roofing			
Metal/Galvanized sheet		7	
Wood		8	
Calamine / cement fiber		9	
Ceramic tiles		10	
Cement		11	
Roofing singles		12	
Other (Specify)		13	C12x/ C12xOther

## Step 1 Behavioural Measurements

### Tobacco Use

Now I am going to ask you some questions about tobacco use.

Question	Response	Code
Do you currently smoke any <b>tobacco</b> products, such as cigarettes, bidis, cigars, pipes, hukahs, or tamakhus? <i>(USE SHOWCARDS 1a)</i>	Yes 1 No 2 <i>If No, go to T8</i>	T1
Do you currently smoke tobacco products <b>daily</b> ?	Yes 1 No 2	T2
How old were you when you <b>first started</b> smoking?	Age (years) Don't know 77	T3
Do you remember how long ago it was? <i>(RECORD ONLY 1, NOT ALL 3)</i>	In Years OR in Months	T4a T4b
<i>Don't know 77</i>	OR in Weeks	T4c
	DAILY ↓      WEEKLY ↓	
On average, <b>how many</b> of the following products do you smoke <b>each day/week</b> ?  <i>(FOR CIGARETTES, INTERVIEWER NEED TO VERIFY THIS IS THE NUMBER OF CIGARETTES' NOT PACKS)</i>  <i>(RECORD EITHER DAILY OR WEEKLY, BUT NOT BOTH, IF LESS THAN DAILY, RECORD WEEKLY)</i>  <i>(RECORD FOR EACH TYPE)</i>  <i>(USE SHOWCARDS 1a)</i>	Manufactured cigarettes Hand-rolled cigarettes Pipes full of tobacco Cigars, cheroots, cigarillos Bid Hukka sessions Other Other (please specify):	T5a/T5aw T5b/T5bw T5c/T5cw T5d/T5dw T5e/T5ew T5f/T5fw T5g/T5gw T5other/ T5otherw
During the past 12 months, have you tried to <b>stop smoking</b> ?	Yes 1 No 2	T6
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
In the past, did you <b>ever smoke</b> any tobacco products? <i>(USE SHOWCARDS 1a)</i>	Yes 1 No 2 <i>If No, go to T12</i>	T8
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
How old were you when you <b>stopped</b> smoking?	Age (years) Don't Know 77	T10
How <b>long ago</b> did you stop smoking?  <i>(RECORD ONLY 1, NOT ALL 3)</i>	Years ago OR Months ago OR Weeks ago	T11a T11b T11c

<p>Do you currently use any smokeless tobacco products such as snuff, chewing tobacco, nasal snuffs, Khaini, surti, gutkha? (USE SHOWCARDS 1b)</p> <p>Do you currently use smokeless tobacco products such as snuff, chewing tobacco, nasal snuffs, khaini, surti, gutkha daily?</p> <p>On average, how many times a day/week do you use <i>(RECORD EITHER DAILY OR WEEKLY, BUT NOT BOTH, IF LESS THAN DAILY, RECORD WEEKLY)</i></p> <p><i>(RECORD FOR EACH TYPE)</i></p> <p>(USE SHOWCARDS 1b)</p> <p>Don't Know 7777</p> <p>In the past, did you ever use smokeless tobacco products such as snuff, chewing tobacco, nasal snuff, khaini, surti, gutka?</p> <p>In the past, did you ever use smokeless tobacco products such as snuff, chewing tobacco, nasal snuff, khaini, surti, gutka daily?</p> <p>During the past 12 months, have you tried to stop using smokeless tobacco products?</p> <p>During any visit to a doctor or other health worker in the past 12 months, were you advised to quit smokeless tobacco?</p> <p>During the past 12 months, what did you do to try and stop smoking or smokeless tobacco? [Multiple answer]</p> <p>If T6=yes or Tx1=yes</p> <p>During the past 30 days, did someone smoke in your home in your presence?</p> <p>How often does anyone smoke in your home? Would you say daily, weekly, monthly, or less than monthly?</p> <p>During the past 30 days, did someone smoke in closed areas where you work (in the building, in a work area or a specific office)?</p>	<p>Yes 1 No 2 <i>If No, go to T15</i></p> <p>Yes 1 No 2 <i>If No, go to T14aw</i></p>	T12	
		T13	
	DAILY ↓      WEEKLY ↓		
	Snuff, by mouth		T14a/ T14aw
	Snuff, by nose		T14b/ T14bw
	Chewing tobacco		T14c/ T14cw
	Betel leaves with tobacco (Jarda pan)		T14d/ T14dw
	Betel, quid with or without tobacco (Sada pan)		T14e/ T14ew
	Gutkha		T14f/ T14fw
	Surti		T14g/ T14gw
Khaini		T14h/ T14hw	
Other		T14i/ T14iw	
Other (please specify): <i>If T13=No, go to T16, else go to T17</i>		T14other/ T14otherw	
Yes 1 No 2 <i>If No, go to T17</i>	T15		
Yes 1 No 2	T16		
Yes 1 No 2	Tx1		
Yes 1 No 2 No visit during the past 12 months 3	Tx2		
1. Counseling by any health care workers 2. Nicotine replacement therapy, such as the patch or gum 3. Traditional medicine like ayurvedic, homeopathy, unani, naturopathy etc. 4. A quit line or telephone support line 5. Try to quit without assistance 6. Other (Specify)	Tx3		
Yes 1 if yes, then go to T17x No 2	T17		
Daily 1 Weekly 2 Monthly 3 Less than monthly 4 Don't know 5	T17x		
Yes 1 No 2 Don't work in a closed area 3	T18		

In the past 30 days, did anyone smoke inside following places when you visited those places?	Yes 1 No 2 Didn't visit 77	Tx5a
Restaurants / Bars / Canteens / Hotel		
Public transport such as bus/taxi/tempo including bus stands and ticketing counter	Yes 1 No 2 Didn't use public transport 77	Tx5b
School/College/University/hostels	Yes 1 No 2 Didn't visit 77	Tx5c
Health care facilities (Hospitals/Health Post/Primary Health Care Centers/ clinics)	Yes 1 No 2 Didn't visit 77	Tx5d

### Electronic Cigarettes

The next questions are about using electronic cigarettes. Electronic cigarettes include any product that uses batteries or other methods to produce a vapor which contains nicotine. They have various other names such as e-cigarette, vape-pen, e-shisha, e-pipes.

Question	Response	Code
Before today, have you <u>ever</u> heard of electronic cigarettes?	Yes 1 No 2 [If 'No' go to TP1a] Refused 88 [go to TP1a]	EC1
Which one of the following is an electronic cigarette? [USE SHOWCARDS 1c]	Pipes full of tobacco 1 E-cigarette 2 Shisha 3 Hukka 4	EC2
Do you currently use electronic cigarettes?	Yes, Daily 1 [go to TP1a] Less than daily 2 [go to TP1a] Not at all 3 Refused 88	EC3
Have you ever, <u>even once</u> , used an electronic cigarette?	Yes 1 No 2 Refused 88	EC4

### Tobacco Policy

You have been asked questions on tobacco consumption before. The next questions ask about tobacco control policies. They include questions on your exposure to the media and advertisement, on cigarette promotions, health warnings and cigarette purchase.

Question	Response	Code
During the past 30 days, have you <u>noticed</u> information about the dangers of smoking cigarettes, bidis or other tobacco products that encourages quitting through the following media? (RECORD FOR EACH)	Yes 1 No 2 Don't know 77	TP1a
Newspapers or magazines		
Television	Yes 1 No 2 Don't know 77	TP1b
Radio	Yes 1 No 2 Don't know 77	TP1c
Internet/Websites	Yes 1 No 2 Don't use internet 77	TP1d

In the last 30 days, have you seen any advertisements or signs promoting the cigarettes/bidis or any other smokeless tobacco products such as chewing tobacco / gutkha / surti / khaini on following medias? <i>(RECORD FOR EACH)</i>	Yes 1 No 2 Don't know 77	TPx1
Newspapers or magazines	Yes 1 No 2 Don't know 77	TPx2
Television	Yes 1 No 2 Don't know 77	TPx3
Radio	Yes 1 No 2 Don't know 77	TPx4
Internet / Websites	Yes 1 No 2 Don't know 77	TPx5
Billboards/posters/wall painting	Yes 1 No 2 Don't know 77	TP2
During the past 30 days, have you noticed any <b>advertisements or signs</b> promoting cigarettes/bidis or any other tobacco products in stores where cigarettes are sold?	Yes 1 No 2 Don't know 77	TP3a
During the past 30 days, have you noticed any of the following types of cigarette promotions? <i>(RECORD FOR EACH)</i>	Yes 1 No 2 Don't know 77	TP3b
Free samples of cigarettes	Yes 1 No 2 Don't know 77	TP3c
Cigarettes at sale prices	Yes 1 No 2 Don't know 77	TP3d
Coupons for cigarettes	Yes 1 No 2 Don't know 77	TP3e
Free gifts or special discount offers on other products when buying cigarettes	Yes 1 No 2 Don't know 77	TP3f
Clothing or other items with a cigarette brand name or logo	Yes 1 No 2 Don't know 77	TP4
Cigarette promotions in the mail	Yes 1 No 2 Don't know 77	
During the past 30 days, did you notice any <b>health warnings on cigarette/bidi/smokeless tobacco product packages?</b>	Yes 1 No 2 go to TP6 Did not see any tobacco packages 3 go to TP6 Don't know 77 go to TP6	
The next questions TP5 – TP7 are to be asked for current smokers or current users of smokeless tobacco products		
During the past 30 days, have warning labels on cigarette/bidis/smokeless tobacco product packages led you to <b>think about quitting?</b>	Yes 1 No 2 Don't know 77	TP5
The last time you bought manufactured cigarettes for yourself, <b>how many cigarettes</b> did you buy in total?	Number of cigarettes <input type="text" value="11111"/> Don't know or Don't smoke or purchase manuf. Cigarettes enter 7777 <i>If selected, end section</i>	TP6
In total, <b>how much money</b> did you pay for this purchase?	Amount <input type="text" value="11111"/> Don't know 7777 Refused 8888	TP7
Last time you bought cigarette for yourself, did you buy loose cigarettes, packets or something else how did you buy it?	Loose Cigarettes 1 Packet 2 Others specify .....	TPx6/ TPx6others

## Alcohol Consumption

The next questions ask about the consumption of alcohol.

Question	Response	Code
Have you ever consumed an alcoholic drink such as beer, wine, spirits fermented cider or jaad, chyang, rakshi, aila or tungba? (USE SHOWCARDS 2a)	Yes 1 No 2 If No, go to A16	A1
Have you consumed an alcoholic drink within the past 12 months?	Yes 1 If Yes, go to A4 No 2	A2
What are the reasons you stopped alcohol during past 12 months? (MULTIPLE RESPONSE)	Health reason 1 go to AP1 Family Pressure 2 go to AP1 Can't afford/No money to buy 3 go to AP1 Just wanted to stop 4 go to AP1 Spiritual/religious reasons 5 go to AP1 Advice of your doctor or other health worker 6 go to AP1 Other (Specify) 7 go to AP1	Ax1/ Ax1others
During the past 12 months, how frequently have you had at least one standard alcoholic drink?  (READ RESPONSES) (USE SHOWCARDS 2b)	Daily 1 5-6 days per week 2 3-4 days per week 3 1-2 days per week 4 1-3 days per month 5 Less than once a month 6	A4
Have you consumed any alcohol within the past 30 days?	Yes 1 No 2 If No, go to A13	A5
What is the type of alcohol do you usually or most often consume? (SELECT ONLY ONE)	Beer 1 Wine 2 Spirit (Whiskey / Vodka / Gin) 3 Jaad 4 Rakshi 5 Aila 6 Other 8	Ax2/ Ax2Other
During the past 30 days, on how many occasions did you have at least one standard alcoholic drink? (USE SHOWCARDS 2b)	Number Don't know 77	A6
During the past 30 days, when you drank alcohol, how many standard drinks on average did you have during one drinking occasion? (USE SHOWCARDS 2b)	Number Don't know 77	A7
During the past 30 days, what was the largest number of standard drinks you had on a single occasion, counting all types of alcoholic drinks together?	Largest number Don't Know 77	A8
During the past 30 days, how many times did you have six or more Standard drinks in a single drinking occasion?	Number of times Don't Know 77	A9
During each of the past 7 days, how many standard drinks did you have each day?  (USE SHOWCARDS 2b)  Don't Know 77	Monday Tuesday Wednesday Thursday Friday	A10a A10b A10c A10d A10e

	Saturday	<input type="checkbox"/>	A10f
	Sunday	<input type="checkbox"/>	A10g
<p>I have just asked you about your consumption of alcohol during the past 7 days. The questions we're about alcohol in general, while the next questions refer to your consumption of homebrewed alcohol, alcohol brought over the border/from another country, any alcohol not intended for drinking or other untaxed alcohol. Please only think about these types of alcohol when answering the next questions.</p>			
During the <b>past 7 days</b> , did you consume any <b>homebrewed</b> alcohol like chyang, rakshi, jaad, aila, tun gba, any alcohol brought over the border/from another country, any alcohol not intended for drinking or other untaxed alcohol?  (USE SHOWCARDS 2c)	Yes	1	A11
	No	2 If No, go to A13	
On average, <b>how many standard drinks</b> of the following did you consume <b>during the past 7 days</b> ?  (USE SHOWCARDS 2c)  Don't Know 77	Homebrewed spirits like aila, raksi	<input type="checkbox"/>	A12a
	Homebrewed beer or wine, like aad, chyang, tungbaa	<input type="checkbox"/>	A12b
	Alcohol brought over the border/from another country	<input type="checkbox"/>	A12c
	Alcohol not intended for drinking, like alcohol-based medicines, like cough syrup, perfumes, after shaves	<input type="checkbox"/>	A12d
	Others untaxed alcohol in the country Specify	<input type="checkbox"/>	A12e
<b>Alcohol Consumption if, A2=1</b>			
During the <b>past 12 months</b> , how often have you found that you were not able to stop drinking once you had started?	Daily or almost daily	1	A13
	Weekly	2	
	Monthly	3	
	Less than monthly	4	
	Never	5	
During the <b>past 12 months</b> , how often have you failed to do what was normally expected from you because of drinking?	Daily or almost daily	1	A14
	Weekly	2	
	Monthly	3	
	Less than monthly	4	
	Never	5	
During the <b>past 12 months</b> , how often have you needed a first drink in the morning to get yourself going after a heavy drinking session?	Daily or almost daily	1	A15
	Weekly	2	
	Monthly	3	
	Less than monthly	4	
	Never	5	
During the <b>past 12 months</b> , have you had family problems or problems with your partner due to <b>someone else's</b> drinking?	Yes, more than monthly	1	A16
	Yes, monthly	2	
	Yes, several times but less than monthly	3	
	Yes, once or twice	4	
	No	5	
<b>Alcohol Policy and programs</b>			
<p>You have been asked questions on alcohol consumption before. The next questions ask about alcohol control policies and programs. They include questions on your exposure to the media and advertisement, on alcohol promotions, enforcement of bans or comprehensive restrictions on alcohol advertising, drunk driving countermeasures, restricting physical availability, health warnings and alcohol purchases.</p>			
How easy or difficult it is for you to <b>obtain alcohol</b> for drinking? (if A1=yes)	Very easy	1	AP1
	Easy	2	
	Difficult	3	
	Very difficult	4	
	Don't know/don't drink alcohol	77	
Has it become less or more <b>affordable</b> to obtain alcohol now compared to two years before? (if A1=yes)	More affordable than before	1	AP2
	Same as before	2	
	Less affordable than before	3	
	Don't know/don't drink alcohol	77	
During last 30 days, have you <b>driven a vehicle</b> after intake or	Yes	1	
			AP3

under the influence of alcohol? (if A1=yes)	No 2 I don't drive 3 Yes 1 No 2 I don't drive 77 Refused 88	
During last 12 months, have you been stopped/ checked by traffic police for alcohol while driving?	Yes 1 No 2 Don't know 77	AP4
During the last 30 days, have you noticed any <b>advertisements or signs promoting beer, wine, any other spirits etc. on television, newspapers/magazine, radio, Billboards, Point of sale or, local magazines, local cinema/films?</b>	Yes 1 No 2 Don't know 77	AP5
When you go to sports events, fairs, concerts, community events, or social gatherings, how often do you see <b>advertisements</b> , free beer/alcohol or discounted sale of alcohol?	Not attended any such gathering Never 2 Rarely 3 Sometimes 4 Most of the time 5 Always 6	AP6
During the past 30 days, did you see or hear any messages on television, radio, billboards, posters, newspapers, magazines, or movies, internet, social media that <b>discourages you to drink alcohol</b> or informs you about health dangers of drinking alcohol?	Yes 1 No 2	AP7
During the past 30 days, did anyone <b>refuse to sell</b> you beer, arrack, wine & other spirits etc. because of your age?	Yes 1 No 2 I did not try to buy 3	AP8

### Diet

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

In a typical week, on how many days do you <b>eat fruit</b> ? (USE SHOWCARDS 3a)	Number of days Don't Know 77	D1
How many <b>servings</b> of fruit do you eat on <b>one</b> of those days? (USE SHOWCARDS 3b)	Number of servings Don't Know 77	D2
In a typical week, on how many days do you <b>eat vegetables</b> ? (USE SHOWCARDS 3c)	Number of days Don't Know 77	D3
How many <b>servings</b> of vegetables do you eat on one of those days? (USE SHOWCARDS 3d)	Number of servings Don't know 77	D4
What do you think is the desirable or recommended number of fruit and vegetable <b>servings</b> one should eat every day to be healthy?	Number of servings Don't know 77	Dx1

### 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 instant noodles (chau chau), salted potato chips, salty biscuits, canned fish, dry meat, titaura, preserved pickle, bhujia, papad etc. and on controlling your salt intake. Please answer the questions even if you consider yourself to eat a diet low in salt.

How often do you <b>add salt</b> to your food right before you eat it or as you are eating it (adding extra salt from the table)?  (SELECT ONLY ONE)  (USE SHOWCARDS 4a)	Always 1 Often 2 Sometimes 3 Rarely 4 Never 5 Don't know 77	D5a
How often do you <b>add salt sauce such as soya sauce or other sauces</b> to your food right before you eat it or as you are eating?  (SELECT ONLY ONE)  (USE SHOWCARDS 4b)	Always 1 Often 2 Sometimes 3 Rarely 4 Never 5 Don't know 77	D5b
How often do you eat <b>processed food high in salt</b> ?	Always 1	D7

Processed food high in salt means foods that have been altered from their natural state, such as packaged salty snacks (such as chau chau, salty biscuits, lays, kur kure, nimkeen, chips, titura, bhujiya), pappad canned salty food including achar and preservatives, salty food prepared at a fast food restaurant, cheese, processed meat, dried fish, salty fish etc. (USE SHOWCARDS 4c)	Often 2 Sometimes 3 Rarely 4 Never 5  Don't know 77	
How much salt 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	D8a
How much salty sauce such as soya sauce 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	D8b
How important is it to you to lower salt in your diet?	Very important 1 Some what important 2 Not at all important 3 Don't know 77	D9
What is the maximum amount of salt do you think a person should take in a day from all sources? [In Teaspoonful (TSF)]	Teaspoonful  Don't know 77	Dx2
What do you think that too much salt in your diet can do to your health? [Multiple response]	Nothing, more salt is good for health 1 Increase blood pressure 2 Kidney disease 3 Asthma 4 Cancer 5 Tuberculosis 6 Other specify 7 Don't Know 77	Dx3/ Dx3other
Currently are you doing anything on regular basis to control salt intake?	Yes 1  No 2 go to Dx5  Don't know 77 go to Dx5	Dx4
Do you do any of the following on a regular basis to control your salt intake? (RECORD FOR EACH)		
Avoid /minimize consumption of processed foods such as achaar or papad	Yes 1 No 2	D11a
Look at the salt or sodium content on food labels	Yes 1 No 2	D11b
Buy low salt/sodium alternatives	Yes 1 No 2	D11c
Use spices other than salt when cooking	Yes 1 No 2	D11d
Avoid eating foods prepared outside of home.	Yes 1 No 2	D11e
Eat meals without adding extra salt at the table	Yes 1 No 2	D11f
Cook meals such as rice or bread without adding salt	Yes 1 No 2	D11g
Others	Yes 1 No 2	D11h

Other (please specify)	_____	D11other																				
<p>The next questions ask about the oil or fat that is most often used for meal preparation in your household, and about meals that you eat outside a home.</p>																						
<p>What types of oil or fat is most often used for meals preparation in your household</p>	<table style="width: 100%; border-collapse: collapse;"> <tr><td>Mustard oil</td><td>1</td></tr> <tr><td>Refined vegetable oil</td><td>2</td></tr> <tr><td>Lard or suet</td><td>3</td></tr> <tr><td>Butter ghee</td><td>4</td></tr> <tr><td>Noodles oil</td><td>5</td></tr> <tr><td>Vanaspati ghee</td><td>6</td></tr> <tr><td>Others (specify)</td><td>7</td></tr> <tr><td>Nothing in particular</td><td>8</td></tr> <tr><td>Not used</td><td>9</td></tr> <tr><td>Don't know</td><td>77</td></tr> </table>	Mustard oil	1	Refined vegetable oil	2	Lard or suet	3	Butter ghee	4	Noodles oil	5	Vanaspati ghee	6	Others (specify)	7	Nothing in particular	8	Not used	9	Don't know	77	Dx5/ Dx6other
Mustard oil	1																					
Refined vegetable oil	2																					
Lard or suet	3																					
Butter ghee	4																					
Noodles oil	5																					
Vanaspati ghee	6																					
Others (specify)	7																					
Nothing in particular	8																					
Not used	9																					
Don't know	77																					
<p>On an average, how many meals (breakfast, lunch or dinner) per week do you eat that were not prepared at home?</p>	<p>Number Don't know</p>	1 77																				
		Dx6																				

### Physical Activity

Next, I am going to ask you about the time you spend doing different types of physical activity in a typical week. Please answer these questions even if you do not consider yourself to be a physically active person. Think first about the time you spend doing work. Think of work as the things that you have to do such as paid or unpaid work, study/training, household chores, harvesting food/crops, fishing or hunting for food, seeking employment. [Insert other examples if needed]. 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.

#### Work

<p>Does your work involve <b>vigorous-intensity</b> activity that causes large increases in breathing or heart rate like carrying or lifting heavy loads, digging, ploughing cycling rikshaw or construction work for at least 10 minutes continuously? (USE SHOWCARDS 5a)</p>	<p>Yes 1 No 2 If No, go to P 4</p>	P1
<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 Enter 77, if not known</p>	P2
<p>How much time do you spend doing vigorous-intensity activities at work on a typical day?</p>	<p>Hours: minutes hrs : mins Enter 77, if not known</p>	P3 (a-b)
<p>Does your work involve <b>moderate-intensity</b> activity that causes small increases in breathing or heart rate such as brisk walking, carrying light loads, manual washing clothes, mopping of floor, gardening at home for at least 10 minutes continuously? (USE SHOWCARDS 5b)</p>	<p>Yes 1 No 2 If No, go to P 7</p>	P4

<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 Enter 77, if not known</p>	P5
<p>How much time do you spend doing moderate-intensity activities at work on a typical day?</p>	<p>Hours: minutes hrs : mins Enter 77, if not known</p>	P6 (a-b)

#### Travel to and from places

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

<p>Do you walk or use a bicycle (pedal cycle) for at least 10 minutes continuously to get to and from places?</p>	<p>Yes 1 No 2 If No, go to P 10</p>	P7
<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 Enter 77, if not known</p>	P8
<p>How much time do you spend walking or bicycling for travel on a typical day?</p>	<p>Hours: minutes hrs : mins Enter 77, if not known</p>	P9 (a-b)

Recreational activities		
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).		
Do you do any <b>vigorous-intensity</b> 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 SHOWCARDS 5c)	Yes 1  No 2 If No, go to P 13	P10
In a typical week, on how many days do you do vigorous-intensity sports, fitness or recreational (leisure) activities?	Number of days  Enter 77, if not known	P11
How much time do you spend doing vigorous-intensity sports, fitness or recreational activities on a typical day?	Hours: minutes  Enter 77, if not known  hrs : mins	P12 (a-b)
Do you do any <b>moderate-intensity</b> 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? (USE SHOWCARDS 5d)	Yes 1  No 2 If No, go to P16	P13
In a typical week, on how many days do you do moderate-intensity sports, fitness or recreational (leisure) activities?	Number of days  Enter 77, if not known	P14
How much time do you spend doing moderate-intensity sports, fitness or recreational (leisure) activities on a typical day?	Hours: minutes  Enter 77, if not known  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 (USE SHOWCARDS 5e)		
How much time do you usually spend sitting or reclining on a typical day?	Hours: minutes  Enter 77, if not known  hrs : mins	P16 (a-b)
History of Raised Blood Pressure		
Have you ever had your blood pressure measured by a doctor or other health worker?	Yes 1  No 2 If No, go to H6	H1
Have you ever been told by a doctor or other health worker that you have raised blood pressure or hypertension?	Yes 1  No 2 If No, go to H6	H2a
Were you first told in the past 12 months?	Yes 1  No 2	H2b
Have you ever been told to take a medicine by a doctor or health workers for raised blood pressure? [Appear only if H2a=yes]	Yes 1  No 2	Hx1
Have you ever taken drugs /medications for raised blood pressure prescribed by a doctor/health worker? [Appear only if H2a=yes]	Yes 1  No 2 If No, go to Hx2]	Hx1a
In the past two weeks, have you taken any drugs (medication) for raised blood pressure prescribed by a doctor or other health worker? [Appear only if H2a=yes and Hx1a=yes]	Yes 1  No 2	H3
Which type of drugs are you taking for treatment of raised blood pressure? [Multiple response] (Use BP drug list card) (Observe the drugs for those who respond for H3=yes)	Angiotensin converting enzyme inhibitors (ACEIs) 1 Calcium channel blockers (CCBs) 2 Angiotensin-receptor blockers 3 Beta-blockers 4 Diuretics 5 Others (specify generic name) 6	Hx1b
Where do you usually go for treatment or advice for your raised blood pressure? [Multiple Response]	Govt. Tertiary level hospital 1 Govt. Regional and sub-regional hospital 2 Govt. District hospital 3 Govt. Primary Health Care centre 4 Govt. Health Post 5	Hx2 Hx2other

[Appear only If H2a=yes]	<p>NGO run/Community hospital 6</p> <p>Private hospital 7</p> <p>Private Clinic 8</p> <p>Ayurvedic, homeopathic or naturopathic hospital/clinic 9</p> <p>Medical shops/Pharmacies 10</p> <p>Other (specify) 11</p> <p>Don't know 77</p>	
Where do you usually get your drugs for raised blood pressure? [Multiple Response]	<p>Govt. Tertiary level hospital 1</p> <p>Govt. Regional and sub-regional hospital 2</p> <p>Govt. District hospital 3</p> <p>Govt. Primary Health Care centre 4</p> <p>Govt. Health Post 5</p> <p>NGO run/Community hospital 6</p> <p>Private hospital 7</p> <p>Private Clinic 8</p> <p>Ayurvedic, homeopathic or naturopathic hospital/clinic 9</p> <p>Medical shops/Pharmacies 10</p> <p>Other (specify) 11</p> <p>Don't know 77</p>	Hx3/ Hx3Other
[Appear only If Hx1a=yes or H3=yes]	<p>Don't think drug is necessary 1</p> <p>Got side effects 2</p> <p>Afraid of side effects 3</p> <p>Too expensive 4</p> <p>Blood pressure got normal 5</p> <p>Medicine not available 6</p> <p>Medicine not advised by doctor 7</p> <p>Other (specify) 8</p>	Hx4/ Hx4other
Have you ever seen a traditional healer like Dhami / Jhakri/ Purohit / Lama / Gubaju / Matas for raised blood pressure or hypertension?	<p>Yes 1</p> <p>No 2 go to H6</p>	H4
Are you currently taking any herbal or traditional remedy for your raised blood pressure?	<p>Yes 1</p> <p>No 2</p>	H5
<b>History of Diabetes</b>		
Have you ever had your blood sugar measured by a doctor or other health worker?	<p>Yes 1</p> <p>No 2 If No, go to H12</p>	H6
Have you ever been told by a doctor or other health worker that you have raised blood sugar or diabetes?	<p>Yes 1</p> <p>No 2 If No, go to H12</p>	H7a
Were you first told in the past 12 months?	<p>Yes 1</p> <p>No 2</p>	H7b
Have you ever been told to take a medicine by a doctor or health workers for raised blood sugar or diabetes? [Appear only if H7a=yes]	<p>Yes 1</p> <p>No 2</p>	Hx5
Have you ever taken drugs/medications for diabetes prescribed by a doctor/health worker? [Appear only if H7a=yes]	<p>Yes 1</p> <p>No 2 (If No, go to Hx6)</p>	Hx5a
In the past two weeks, have you taken any drugs (medication) for diabetes prescribed by a doctor or other health worker? [Appear only if H7a=yes and Hx5a=yes]	<p>Yes 1</p> <p>No 2 go to Hx6</p>	H8
Are you currently taking insulin for diabetes prescribed by a doctor or other health worker? [Appear only if H7a=yes]	<p>Yes 1</p> <p>No 2</p>	H9
Where do you usually go for treatment or advice for diabetes? [Multiple Response]	<p>Govt. Tertiary level hospital 1</p> <p>Govt. Regional and sub-regional hospital 2</p> <p>Govt. District hospital 3</p> <p>Govt. Primary Health Care centre 4</p>	Hx6/ Hx6other

[Appear only If H7a=yes]	Govt. Health Post 5 NGO run/Community hospital 6 Private hospital 7 Private Clinic 8 Ayurvedic, homeopathic or naturopathic hospital/clinic 9 Medical shops/Pharmacies 10 Others (specify) 11 Don't know 77	
Where do you usually get your drugs for diabetes? [Multiple Response] [Appear only If Hx5a = yes or H8 = yes or H9 = yes]	Govt. Tertiary level hospital 1 Govt. Regional and sub-regional hospital 2 Govt. District hospital 3 Govt. Primary Health Care centre 4 Govt. Health Post 5 NGO run/Community hospital 6 Private hospital 7 Private Clinic 8 Ayurvedic, homeopathic or naturopathic hospital/clinic 9 Medical shops/Pharmacies 10 Others (specify) 11 Don't know 77	Hx7/ Hx7other
What is the most important reason for which you are not currently taking medications for raised blood sugar or diabetes? [Appear only if, H7 a = yes and (Hx5a=no or H8 )]	Don't think drug is necessary 1 Got side effects 2 Afraid of side effects 3 Too expensive 4 Diabetes got normal 5 Medicine not available 6 Medicine not advised 7 Other (specify) 8	Hx8/ Hx8other
Have you ever seen a traditional healer like Dhami/ Jhakri/ Purohit/ Lama/ Qubaju/ Matas for diabetes or raised blood sugar?	Yes 1 No 2 go to H12	H10
Are you currently taking any herbal or traditional remedy for your diabetes?	Yes 1 No 2	H11
<b>History of Raised Total Cholesterol</b>		
Have you ever had your cholesterol (fat levels in your blood) measured by a doctor or other health worker?	Yes 1 No 2 If No, go to H17	H12
Have you ever been told by a doctor or other health worker that you have raised cholesterol?	Yes 1 No 2 If No, go to H17	H13a
Were you first told in the past 12 months?	Yes 1 No 2	H13b
Have you ever been told to take a medicine by a doctor or health workers for raised cholesterol?	Yes 1 No 2	Hx9
Have you ever taken drugs/medications for raised blood cholesterol prescribed by a doctor/health worker?	Yes 1 No 2 If No, go to Hx11	Hx10
In the past two weeks, have you taken any oral treatment (medication) for raised total cholesterol prescribed by a doctor or other health worker?	Yes 1 No 2	H14
Where do you usually go for treatment or advice for your raised total cholesterol? [Multiple Response]	Govt. Tertiary level hospital 1 Govt. Regional and sub-regional hospital 2 Govt. District hospital 3	Hx11/ Hx11other

[Appear only If H13a=yes]	Govt. Primary Health Care centre 4 Govt. Health Post 5 NGO run/Community hospital 6 Private hospital 7 Private Clinic 8 Ayurvedic, homeopathic or naturopathic hospital/clinic 9 Medical shops/Pharmacies 10 Others (Specify) 11 Don't know 77	
Where do you usually <b>get your drugs</b> for raised total cholesterol?	Govt. Tertiary level hospital 1 Govt. Regional and sub-regional hospital 2 Govt. District hospital 3 Govt. Primary Health Care centre 4 Govt. Health Post 5 NGO run/Community hospital 6 Private hospital 7 Private Clinic 8 Ayurvedic, homeopathic or naturopathic hospital/clinic 9 Medical shops/Pharmacies 10 Others (Specify) 11 Don't know 77	Hx12/ Hx12other
[Multiple Response]		
[Appear only If Hx10 = yes or H14 = yes]		
What is the most important reason for which you are <u>not currently taking medications for raised blood cholesterol?</u>	Don't think drug is necessary 1 Got side effects 2 Afraid of side effects 3 Too expensive 4 Cholesterol got normal 5 Medicine not available 6 Medicine not advised 7 Other (specify) 8	Hx13/ Hx13other
Appear only if, [H13a = yes and H14 = no]		
Have you ever seen a traditional healer like Dhami/ Jhakri/ Purohit/ Lama/ Qubaju/ Matas for raised cholesterol?	Yes 1 No 2 go to H17	H15
Are you currently taking any herbal or traditional remedy for your raised cholesterol?	Yes 1 No 2	H16
<b>History of Cardiovascular Diseases</b>		
Have you ever had a <b>heart attack or chest pain</b> from heart disease (angina) or a stroke (cerebrovascular accident or incident)?	Yes 1 No 2	H17
Are you <b>currently taking aspirin</b> regularly to prevent or treat heart disease?	Yes 1 No 2	H18
Are you currently taking <b>statins</b> (Lovastatin/Simvastatin/Atorvastatin or any other statin) regularly to prevent or treat heart disease?	Yes 1 No 2	H19
<b>Lifestyle Advice</b>		
During the past 12 months, have you visited a doctor or other health worker?	Yes 1 No 2 <i>If No and C1=1, go to O2 If No and C1=2, go to CX1</i>	H20

During any of your visits to a doctor or other health worker in the past 12 months, were you advised to do any of the following? (RECORD FOR EACH)		
Quit using tobacco or don't start	Yes 1 No 2	H20a
Reduce salt in your diet	Yes 1 No 2	H20b
Eat at least five servings of fruit and/or vegetables each day	Yes 1 No 2	H20c
Reduce fat in your diet	Yes 1 No 2	H20d
Start or do more physical activity	Yes 1 No 2	H20e
Maintain a healthy body weight or lose weight	Yes 1 No 2	H20f
Reduce sugary beverages in your diet	Yes 1 If C1=1 go to O2 and C1=2 go to Cx1 No 2 If C1=1 go to O2 and C1=2 go to Cx1	H20g
<b>Cervical Cancer Screening (for women only)</b>		
The next question asks about cervical cancer prevention. Screening tests for cervical cancer prevention can be done in different ways, including Visual Inspection with Acetic Acid/vinegar (VIA), pap smear and Human Papillomavirus (HPV) test. VIA is an inspection of the surface of the uterine cervix after acetic acid (or vinegar) has been applied to it. For both pap smear and HPV test, a doctor or nurse uses a swab to wipe from inside your vagina, take a sample and send it to a laboratory. It is even possible that you were given the swab yourself and asked to swab the inside of your vagina. The laboratory checks for abnormal cell changes if a pap smear is done, and for the HP virus if an HPV test is done.		
Have you ever had a test for cervical cancer, using any of these methods described above?	Yes 1 go to CX2 No 2 Don't know 77	CX1
At what age were you <b>first tested</b> for cervical cancer?	Age ████ Don't know 77 Refused 88	CX2
When was your <b>last (most recent) test</b> for cervical cancer?	Less than 1 year ago 1 1-2 years ago 2 3-5 years ago 3 More than 5 years ago 4 Don't know 77 Refused 88	CX3
What is the <b>main reason</b> you had your <b>last</b> test for cervical	Part of a routine exam 1 Following up on abnormal or inconclusive result 2 Recommended by healthcare provider 3 Recommended by other source 4 Experiencing pain or other symptoms 5 Other (Specify) 6 Don't know 77 Refused 88	CX4/ CX4other
Where did you receive your last test for cervical cancer?	Govt. Tertiary level hospital 1 Govt. Regional and sub-regional 2 Govt. District hospital 3 Govt. Primary Health Care centre 4 Govt. Health Post 5	CX5/ CX5other

	NGO run/Community hospital 6 Private hospital 7 Private Clinic 8 Other (specify) 9 Don't know 77	
What was the result of your <b>last (most recent)</b> test for cervical	Did not receive result 1 <i>If CX6=1, go to O2</i> Normal / Negative 2 <i>If CX6=2, go to O2</i> Abnormal /Positive 3 Suspect cancer 4 Inconclusive 5 Don't know 77 Refused 88	CX6
Did you have any follow-up visits because of your test results?	Yes 1 No 2 Don't know 3 Refused 4	CX7
Did you receive any treatment to your cervix because of your test results?	Yes 1 No 2 Don't know 3	CX8
<b>Oral Health</b>		
The next questions I will ask about your oral health status and related behaviours.		
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
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
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)		
An upper jaw denture	Yes 1 No 2	O5a
A lower jaw denture	Yes 1 No 2	O5b
During the past 12 months, did your teeth, gums or mouth cause any <b>pain, swelling, bleeding or discomfort?</b>	Yes 1 No 2	O6
How long has it been since you last saw a <b>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
What was the <b>main reason for your last visit to the dentist?</b>	Consultation / advice 1 Pain or trouble with teeth, gums or mouth 2 Treatment / Follow-up treatment 3 Routine check-up treatment 4 Other (Specify) 5 <i>If Other, go to O9other</i>	O8/ O8other
How often do you clean your teeth?	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	O9

	Once a day	6	
	Twice or more a day	7	
Do you use toothpaste to clean your teeth?	Yes	1	
	No	2	If No, go to O12a O10
Do you use toothpaste containing fluoride?	Yes	1	
	No	2	
	Don't know	77	O11
Do you use any of the following to clean your teeth on usual basis? (RECORD FOR EACH)			
Toothbrush	Yes	1	O12a
	No	2	
Wooden toothpicks (Neem stick)	Yes	1	
	No	2	O12b
Plastic toothpicks	Yes	1	
	No	2	O12c
Thread (Dental floss)	Yes	1	
	No	2	O12d
Charcoal	Yes	1	
	No	2	O12e
Chewstick / Miswak/ Dattawan	Yes	1	
	No	2	O12f
Other	Yes	1	If Yes, go to O12other O12g
	No	2	
Other (please specify)	_____		O12other
Have you experienced any of the following problems during the past 12 months because of the state of your teeth, gums or mouth? (RECORD FOR EACH)			
Difficulty in chewing foods	Yes	1	O13a
	No	2	
Difficulty with speech/trouble pronouncing words	Yes	1	
	No	2	O13b
Bleeding from gums	Yes	1	
	No	2	If no, go to O13e O13c
When does your gums normally bleed?	On brushing	1	
	On eating hard food	2	
	Spontaneously	3	O13d
Swelling from gums	Yes	1	
	No	2	O13e
Embarrassed about appearance of teeth	Yes	1	
	No	2	O13f
Have a red and white patch in mouth	Yes	1	
	No	2	O13g
Have a persistent wound and /or swelling in mouth for more than 3 weeks	Yes	1	
	No	2	O13h
Days not at work because of teeth or mouth	Yes	1	
	No	2	O13i
Difficulty doing usual activities	Yes	1	
	No	2	O13j
Having difficulty in opening mouth	Yes	1	
	No	2	O13k
Are you currently suffering from dental caries?	Yes	1	
	No	2	
	Don't know	3	Ox1
Did you visit health facilities (hospital/PHCC/HP) because of dental caries? (Should appear if yes to any questions O13a to O13k)	Yes	1	
	No	2	If no, go to Ox4 Ox2
Where do you usually go for oral health problems? (If, Ox2=yes)	Govt. Tertiary level hospital	1	
	Govt. Regional and sub-regional	2	
	Govt. District hospital	3	
	Govt. Primary Health Care Centre	4	
	Govt. Health Post	5	
	NGO run/Community hospital	6	
	Dental homes/hospital	7	Ox3/ Ox3other

	Private hospital	8	
	Private Clinic	9	
	Ayurveda, homeopathic or	10	
	Medical shops/Pharmacies	11	
	Other (Specify)	.....	
	Don't know	77	
	Not serious enough to required treatment	1	
	Did not know how/where to get treatment	2	
	Too expensive	3	
	Didn't have time	4	
Why you did NOT take treatment or advice? <i>(If, Ox1=yes and Ox2=no)</i>	Health Centre too far away	5	Ox4/ Ox4other
	Poor service quality	6	
	Fear of procedure	7	
	Family member did not allow it	8	
	Other specify		
	Refused	88	

## Violence and Injury

### Injury

The next questions ask about different experiences and behaviors that are related to road traffic injuries.

	All of the time	1	
	Sometimes	2	
	Never	3	
In the past 30 days, how often did you use a seat belt when you were the driver or passenger of a motor vehicle?	Have not been in a vehicle in past 30 days	4	V1
	No seat belt in the car I usually drive	5	
	Don't Know	77	
	Refused	88	
	All of the time	1	
	Sometimes	2	
	Never	3	
In the past 30 days, how often did you wear a helmet when you drove or rode as a passenger on a motorcycle or motor-scooter?	Have not been on a motorcycle or motor-scooter in past 30 days	4	V2
	Do not have a helmet	5	
	Don't Know	77	
	Refused	88	
	Yes (as driver)	1	
	Yes (as passenger)	2	
	Yes (as pedestrian)	3	
	Yes (as a cyclist)	4	
In the past 12 months, have you been involved in a road traffic crash as a driver, passenger, pedestrian, or cyclist?	No	5 If No, go to V5	V3
	Don't know	77 If don't know, go to V5	
	Refused	88 If Refused, go to V5	
	Yes	1	
	No	2	
Did you have any injuries in this road traffic crash which required medical attention?	Don't know	77	V4
	Refused	88	
The next questions ask about the most serious accidental injury you have had in the past 12 months.			
	Yes	1	
	No	2 If No, go to V8	
In the past 12 months, were you injured accidentally, other than the road traffic crashes which required medical attention?	Don't know	77 If don't know, go to V8	V5
	Refused	88 If Refused, go to V8	
	Fall	1	
	Burn	2	
Please indicate which of the following the cause of this injury was.	Poisoning	3	V6
	Cut	4	
	Near-drowning	5	

	Animal bite 6 Other (specify) 7 Don't know 77 Refused 88	
	Other (please specify) <input type="text"/>	V6other
Where were you when you had this injury?	Home 1 School 2 Workplace 3 Road/Street/Highway 4 Farm 5 Sports/athletic area 6 Other (specify) 7 Don't know 77 Refused 88	V7
	Other (please specify) <input type="text"/>	V7other

### Unintentional Injury

The next questions ask about behaviours related to your safety and whether or not you drink alcohol while driving or being a passenger.

In the past 30 days, how many times have you ridden in a motorized vehicle where the driver has had 2 or more alcoholic drinks?	Number of times  Don't Know 77 Refused 88	<input type="text"/> V10
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### Violence

The following questions are about different experiences and behaviors that are related to violence.

In the past 12 months, how many times were you in a violent incident in which you were injured and required medical attention?	Never 1 <i>If never, go to MHx1</i> Rarely (1- 2 times) 2 Sometimes (3 - 5 times) 3 Often (6 or more times) 4 Don't know 77 <i>If don't know, go to MHx1</i> Refused 88 <i>If Refused, go to MHx1</i>	V11
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The next questions ask about the most serious violent incidence you have had in the past 12 months.

Please indicate which of the following caused your most serious injury in the last 12 months.	Being shot with a firearm 1 A weapon (other than a firearm) was used by the person who injured me 2 Being injured without any weapon (slapped, pushed) 3 Don't know 77 Refused 88	V12
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### Mental Health

Following questions relate to your stress level in different setting as per your subjective experience

Do you have any of the following stress?

Work/business Stress	No 1 Some 2 High 3	MHx1
General stress at home	No 1 Some 2 High 3	MHx2
Severe financial stress/Due to unemployment	Yes 1 No 2	MHx3
Stressful life events in past year which disturbed you a lot	Yes 1 No 2	MHx4

### Joint and Back Pain

In the past 12 months, did you ever experience followings (For question BK1 and BK2)

Pain, aching, stiffness or swelling in or around the joint (like that arms, hands, legs or feet) which were not related to an injury and lasted for more than a month?	Yes 1 No 2	BK1
Stiffness in the joint (such as hands, legs) in the morning after getting up from bed, or after a long rest of the joint without movement?	Yes 1 No 2 (If No go to BK5)	BK2
How long does this stiffness last? <i>READ CHOICES AND MARK AS APPROPRIATE</i>	About 30 minutes or less 1 More than 30 minutes 2	BK3
Does this stiffness go away after exercise or movement in the joint?	Yes 1 No 2	BK4
During the past 30 days, did you experience back pain (including disc problems) that prevented you from doing usual household chores or going for work?	Yes 1 No 2	BK5
During the past 30 days, did you experience severe headache that prevented you from doing usual household chores or going out for work?	Yes 1 No 2	BK6

### Miscellaneous

Are you member of any health insurance scheme?	Yes 1 No 2 go to Mx3	Mx1
What type of insurance scheme do you have?	Swasthya Bimaa Karyakram (provided by Government of Nepal) 1 Private Insurance 2 Community based health insurance 3 Others (Specify) 4	Mx2/ Mx2other
On an average how much do you usually spend in a one month for care (including travel to health facility, fees, medicines, medical test or any other related expenses) of your chronic disease (hypertension, diabetes, raised cholesterol etc.)? (for those who have been told hypertensive or diabetic or having raised cholesterol)	Rs. ———— Enter '77' if not known, or '88' if refused	Mx3

## Step 2 Physical Measurements

### Blood Pressure

Interviewer ID	_____	M1
Reading 1	Systolic (mmHg) _____	M4a
	Diastolic (mmHg) _____	M4b
	Beats per minute _____	M16a
Reading 2	Systolic (mmHg) _____	M5a
	Diastolic (mmHg) _____	M5b
	Beats per minute _____	M16b
Reading 3	Systolic (mmHg) _____	M6a
	Diastolic (mmHg) _____	M6b
	Beats per minute _____	M16c
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 No 2	M7

### Height, Weight, Waist and Hip Circumference

For women: Are you pregnant?	Yes 1 If Yes, go to End No 2	M8
Height	in Centimetres (cm) _____ . ____	M11
Weight <i>If too large for scale 666.6</i>	in Kilograms (kg) _____ . ____	M12
Waist circumference	in Centimeters (cm) _____ . ____	M14
Hip circumference	in Centimeters (cm) _____ . ____	M15

### Step 3 Biochemical Measurements

#### CORE: Blood Glucose

Question	Response	Code
Enter participant's ID (generated in Step 1 and QR code)	_____	PID-3
During the past 12 hours have you had anything to eat or drink, other than water?	Yes 1 No 2	B1
Technician ID	_____	B2
Device ID	_____	B3
Time of day blood specimen taken (24hour clock)	Hours: minutes _____:_____ hrs mins	B4
Fasting blood glucose (if B1=no)	mg/dl _____.	B5
Random blood glucose (if B1=yes)	mg/dl _____.	B5x
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
<b>CORE: Blood Lipids</b>		
Total cholesterol	mg/dl _____.	B8
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
Had you been fasting prior to the urine collection?	Yes 1 No 2	B10
Time of day urine sample taken (24hour clock)	Hours: minutes _____:_____ hrs mins	B13

Data will be key-in in the laboratory

#### Urinary sodium and creatinine

Enter participant's ID (generated in Step 1) and QR code	_____	PID-4
Lab ID	_____	B11
Urinary sodium	mmol/l	B14
Urinary creatinine	mmol/l	B15

## ANNEX 3 : SHOWCARDS

# Nepal STEPs – 2019 Show Cards

## CC1- Caste Classification Card

Dalit	Dalit	Disadvantaged janajati	Disadvantaged janajati	Disadvantaged non-Dalit Terai caste groups	Religious minorities	Relatively advantaged janajatis	Upper Caste groups
Hill	Terai	Hill	Terai				
Badi	Bantar	Baramu	Dhangad/Jhangad	Badhe	Churoute	Gurung	Baniya
Damai	Chamar	Bhote	Dhanuk	Bahae	Muslims	Thakali	Bengali
Gaine	Chiadimar	Bote	Dhimarl	Bhediya		Newar	Brahman (hill)
Sarkii	Dhobi	Byansi	Gangai	Bing/Banda			Brahman (Terai)
Kami	Dom	Chepang	Kisan	Dhunia			Chhetri
Dusah	Chhantal	Koche		Hajam/Thakur			Jaine
Halkhor	Danuwar	Meche		Haluwai			Kayastha
Khatway	Darai	Munda		Kahar			Marwadi
Mushar	Dura	Pattarkatta/Kusbadiay		Kalwar			Nuraang
Paswan	Gartri/Bhujel	Rajbansi		Kanu			Rajput
Tatma	Hayu	Santhal/Satar		Kewat			Sanyasi
	Hyolomo	Tajpuria		Koiri			Thakuri
	Jirel	Tharu		Kumar			
	Kusunda			Kumhar			
	Kuumal			Kurmi			
	Lepcha			Lodhar			
	Limbu			Lohar			
	Magar			Mali			
	Majhi			Mallah			
	Pahari			Nuniya			
	Rai			Rajba			
	Raji			Sonar			
	Raute			Sudhi			
	Sherpa			Teli			
	Sunar			Yadav			
	Tamang						
	Thami						
	Walung						
	Yakkah						

# Tobacco

## 1a – Smoked tobacco products



Manufactured cigarettes



Bidi



Cigar



Pipe



Handrolled cigarettes



Hookah/Sisha

# Tobacco

## 1b – Smokeless tobacco products



Betel nut, Quid



Chewing tobacco



Betel leaves with tobacco (Jarda pan)



Gutkha, Surti, Khaini



Snuff available in wet and dry form



Snuff, by mouth, Snuff, by nose

## Tobacco

1c – Electronic cigarette

1



2



3

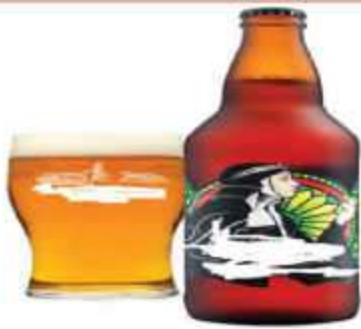


4



# Alcohol

## 2a – Alcohol products



Beer



Wine



Jaad



Chyang



Raksi



Aila



Tungba



Branded alcohol

## 2b – standard drink

			
30ml	60 ml	120 ml	
			
150 ml	180 ml	210 ml	
			
1000 ml	270 ml	600ml	500 ml

## 2c – Homebrewed alcohol



Jaad



Chyang



Raksi



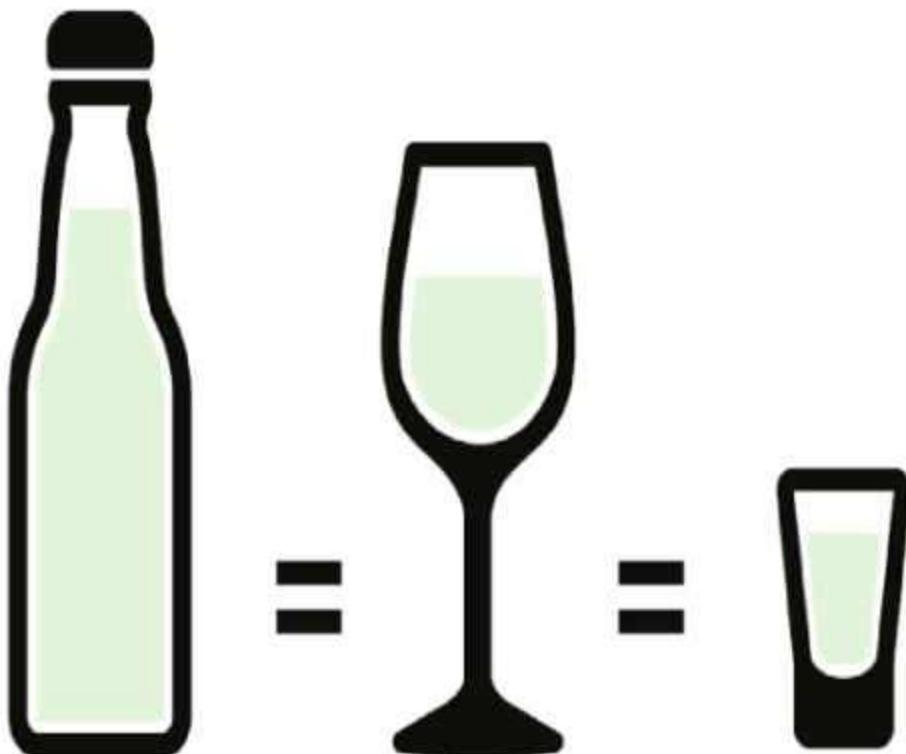
Aila

Tungba

## Calculation of standard drink

Types of alcohol	Concentration of alcohol	1 standard drink
Beer, jaad and tungba	5%	250 ml
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



1 standard bottle  
of regular beer  
(250 ml)

1 medium size  
glass of wine  
(105 ml)

1 single measure  
of spirits  
(30ml)

## Diet (a typical fruit and vegetables and serving sizes)

### 3a – Fruits

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

### 3b – Fruit serving size

Serving size: One standard serving = 80 grams

Fruit	1 Serving size
Apple, banana, orange	1 medium size piece
Chopped, cooked or canned fruit	$\frac{1}{2}$ cup
Fruit juice	$\frac{1}{2}$ cup juice from fruit, not artificially flavoured



### 3c – Vegetables

			
<b>Tomato</b>	<b>Pumpkin</b>	<b>Onion</b>	<b>Lady Finger</b>
			
<b>Cabbage</b>	<b>Brinjal</b>	<b>Cauliflower</b>	<b>Bitter Gourd</b>
			
<b>Spinach</b>	<b>Green Peas</b>	<b>Green Beans</b>	<b>Sponge Gourd</b>
			
<b>Carrot</b>	<b>Capsicum</b>	<b>Pointed Gourd</b>	<b>Reddish</b>
			
<b>Bottle Gourd</b>	<b>String beans</b>	<b>Chayote</b>	

### 3d – Vegetable serving size

Vegetables	1 Serving size
Raw green leafy vegetables	1 cup
Other vegetables cooked/chopped	$\frac{1}{2}$ cup
Vegetable juice	$\frac{1}{2}$ cup



## Dietary Salt

### 4a – Table Salt



### 4b – Salty sauce or soya sauces



## 4c – Processed food high in salt

Examples - Chau chau, salty biscuits, lays, kur kure, nimkeen, chips, titura, bhujliya), pappad canned salty food including aachar and preservatives, salty food prepared at a fast food restaurant, cheese, processed meat, dried fish, salty fish etc.i

# Physical Activity

## 5a – Vigorous Physical Activity at Work

Make you breathe much harder than normal



Ploughing Field and Digging Ditch

Construction Work



Carrying or lifting heavy loads



Cycle Rickshaw Driving

## 5b - Moderate Physical Activity at Work

Make you breathe somewhat harder than normal



Washing Clothes



Gardening



Lifting Light Loads



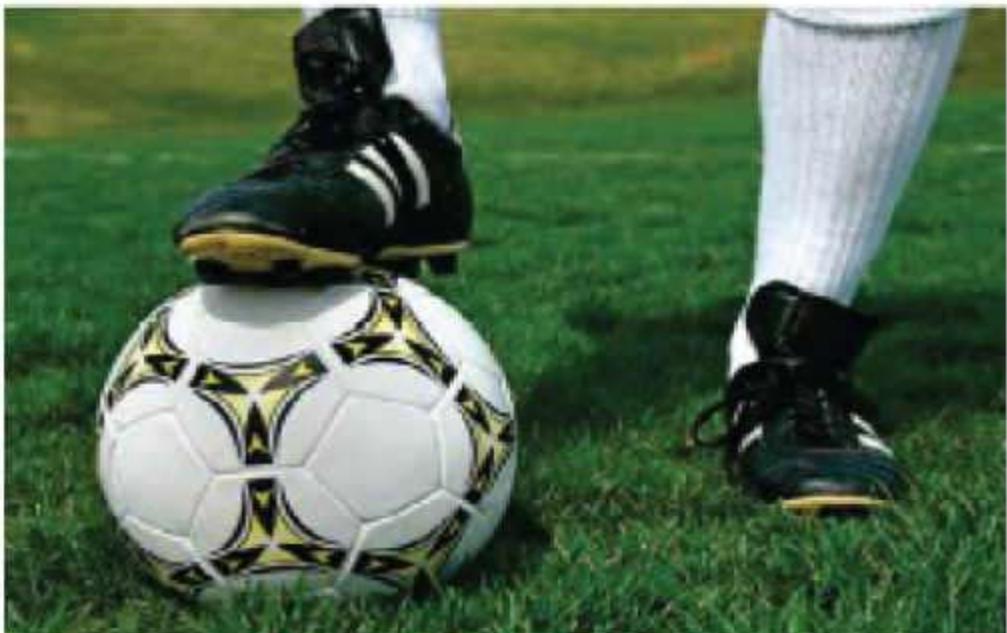
Mopping Floor



Brisk Walking

## 5c - Vigorous Physical Activity during Leisure Time

Make you breathe much harder than normal



Playing Football



Running

## 5d – Moderate Physical Activity during Leisure Time



Volleyball

Cycling



Swimming

Yoga



Badminton

Brisk Walking

## 5e – Sedentary behaviour

Examples: Sitting at a desk, sitting with friends, travelling in car or bus, reading, playing cards or watching television



## BMI Classification Chart

Weight (kg)

Height (cm)	Underweight (<18.5)		Normal weight (18.5-24.9)		Overweight (25-29.9)		Obese (30-39.9)		Morbidly Obese ( $\geq 40$ )	
	30	32	34	36	38	40	41	42	43	45
140	15	17	18	19	20	22	23	24	26	27
142	15	16	17	19	20	21	22	24	25	26
144	14	16	17	18	19	20	22	23	24	25
146	14	15	16	18	19	20	21	22	23	25
148	14	15	16	17	18	19	21	22	23	24
150	13	14	16	17	18	19	20	21	22	23
152	13	14	15	16	17	18	19	21	22	23
154	13	14	15	16	17	18	19	20	21	22
156	12	13	14	15	16	17	18	20	21	22
158	12	13	14	15	16	17	18	19	20	21
160	12	13	14	15	16	17	18	19	20	21
162	11	12	13	14	15	16	17	18	19	20
164	11	12	13	14	15	16	17	18	19	20
166	11	12	13	14	15	16	17	18	19	20
168	11	12	12	13	14	15	16	17	18	19
170	10	11	12	13	14	15	16	17	18	19
172	10	11	12	13	14	15	16	17	18	19
174	10	11	12	12	13	14	15	16	17	18
176	10	11	12	12	13	14	15	15	16	17
178	9	10	11	12	13	14	15	16	17	18
180	9	10	11	12	13	14	15	15	16	17
182	9	10	11	11	12	13	14	14	15	16
184	9	10	10	11	12	13	13	14	15	16
186	9	10	11	12	12	13	14	14	15	16
188	8	9	10	11	12	13	13	14	15	16
190	8	9	10	10	11	12	13	14	15	16
192	8	9	9	10	11	12	13	14	15	16
194	8	9	9	10	11	11	12	13	14	15
196	8	8	9	10	10	11	12	13	14	15
198	8	8	8	9	10	10	11	12	13	14
200	8	8	8	9	9	10	11	12	13	14
202	7	8	9	9	10	10	11	12	13	14
204	7	8	8	9	10	11	12	13	13	14

## ANNEX 4 : PROVINCIAL FACTSHEETS



नेपालमा नसर्ने रोग सम्बन्धी जोखिम तत्वको सर्वेक्षण (STEPS सर्वेक्षण) फेब्रुअरी देखि मे २०१९ सम्म गरिएको थियो । यस सर्वेक्षणमा जनसांख्यिक र बानीव्यहोरा सम्बन्धी (सुर्तिजन्य पदार्थ, मदिरा, आहार, शारीरिक क्रियाकलाप) विवरणहरु संकलन गरिएको थियो । मोटोपन र उच्च रक्तचापको व्यापकता पत्ता लगाउन उचाइ, तौल र रक्तचाप जस्ता शारीरिक मापन गरिएको थियो । त्यसै गरी रगतमा चिनी र कोलेस्ट्रोलको मात्रा पत्ता लाउन बायोकेमिकल (biochemical) मापनहरु संकलन गरिएको थियो ।

यो सर्वेक्षण १५-६९ वर्ष उमेरका समुहका वयस्कहरु को जनसंख्यामा आधारित छ । उक्त उमेर समुहको प्रतिनिधित्व गर्न multistage sample design को प्रयोग गरिएको थियो । यस सर्वेक्षणमा ५५९३ जना वयस्कहरु सहभागी भएका थिए र समग्रमा, सहभागिता ८६.४% थियो । २०२४ मा STEPS सर्वेक्षण पुनः गर्ने योजना रहेको छ ।

१५-६९ वर्ष उमेरका सहभागीहरूको परिणामहरू	Both Sexes दुबैमा
<b>सुर्तिजन्य पदार्थ सेवन (Tobacco Use)</b>	
हाल सुर्तिजन्य पदार्थ (धुम्रपान वा धुँवारहित) सेवन गर्नेको प्रतिशत	२२.८
हाल धुम्रपान सेवन गर्नेको प्रतिशत	१०.३
हाल दैनिक धुम्रपान सेवन गर्नेको प्रतिशत	७.१
हाल चुरोट (उत्पादन गरिएको चुरोट वा हातले बेरेको चुरोट) सेवन गर्नेको प्रतिशत	९.९
हाल धुँवारहित सुर्तिजन्य पदार्थ सेवन गर्नेको प्रतिशत	१६.६
हाल दैनिक धुँवारहित सुर्तिजन्य पदार्थ सेवन गर्नेको प्रतिशत	१३.९
दैनिक धुम्रपान गर्ने मध्य, पहिलो पटक धुम्रपान गर्न शुरु गर्दाको औसत उमेर	१७.८
<b>मध्यपान सेवन (Alcohol Consumption)</b>	
जीवनमा कहिल्यै मध्यपान सेवन नगर्नेको प्रतिशत	६९.६
बिगतमा मध्यपान सेवन गर्ने गरेको तर १२ महिना भित्र नगर्नेको प्रतिशत	५.२
हाल मध्यपान सेवन गर्नेको प्रतिशत (बितेको १२ महिना भित्रमा मध्यपान सेवन गरेको)	२५.२
हाल मध्यपान सेवन गर्नेको प्रतिशत (बितेको ३० दिन भित्रमा मध्यपान सेवन गरेको)	२३.१
बितेको ३० दिन भित्रमा अत्यधिक मध्यपान सेवन (६ वा ६ भन्दा बढी स्टान्डर्ड ड्रिंक्स) गर्नेको प्रतिशत (कुल जनसंख्या)	५.७
हाल मध्यपान सेवन (बितेको ३० दिनमा) गर्ने मध्य, बितेको ७ दिन भित्रमा छिमेकी देश/अन्य देशबाट किनेको वा पिउनलाई अयोग्य वा कर नतिरेको मादक पदार्थ पिउनेको प्रतिशत	६४.४
<b>आहार (Diet)</b>	
औसतमा १ दिनमा खाने गरेको फलफुल र/वा तरकारीको सर्भिङ्डको औसत संख्या (१ सर्भिङ्ड = ८० ग्राम)	२.०
औसतमा १ दिनमा ५ सर्भिङ्ड भन्दा थोरै फलफुल र/वा तरकारी खानेको प्रतिशत	९६.४
<b>नुन (Salt)</b>	
खाना खानु अघि वा खाइरहँदा खानामा नुन वा नुनीलो सस् सधैँ वा प्राय थपेर खानेको प्रतिशत	११.२
नुन बढि मात्रामा हालिएको तयारी खानेकुरा (जंक फुड) सधैँ वा प्रायजसो खानेको प्रतिशत	२१.१

	Both Sexes दुबैमा
<b>१५-६९ वर्ष उमेरका सहभागीहरूको परिपामहरू</b>	
खानामा नुनको मात्रा नियन्त्रण गर्न सधैँ जसो केहि उपाय अपनाउनेको प्रतिशत (जस्तै तयारी खानेकुरा कम मात्रामा खाने वा खादै नखाने, घर बाहिरको खाना नखाने आदि)	४०.४
औसत नुन सेवन प्रतिदिन (ग्राममा)(स्पष्ट युरिन परिक्षणमा आधारित)*	९.२
<b>शारीरिक क्रियाकलाप (Physical Activity)</b>	
अपर्याप्त शारीरिक गतिविधि गर्नेको प्रतिशत (प्रति हप्ता १५० मिनेट भन्दा कम समय मध्यम परिश्रम पर्ने वा सो सरहको गतिविधि भनेर परिभाषित गरिएको) **	३०.६
प्रति दिन शारीरिक गतिविधिमा खर्च हुने औसत समयको मध्यक (मध्यम परिश्रम मिनेटमा) (इन्टर क्वार्टाइल रेन्जमा प्रस्तुत गरिएका)	२४०.०
<b>पाठेघरको मुख्यको क्यान्सरको स्क्रीनिङ (३० -४९ वर्ष उमेरको महिला) (Cervical Cancer Screening (women 30-49 years of age))</b>	
पाठेघरको मुख्यको क्यान्सरको (सर्विकल क्यान्सर) को परिक्षण गराउनेको प्रतिशत	३०.६
बितेको ५ वर्ष भित्रमा पाठेघरको मुख्यको क्यान्सरको (सर्विकल क्यान्सर) को परिक्षण गराउनेको प्रतिशत	३.१
<b>मुख स्वास्थ्य (Oral Health)</b>	
दिनमा एक पटक वा बढी दाँत सफा गर्नेको प्रतिशत	९३.५
दाँत, मुख वा गिजाको समस्या( दुख्ने, सुन्नने, रगत आउने वा असजिलो हुने) हुने को प्रतिशत	१०९
बिगत १२ महिना भित्र दन्त चिकित्सक संग स्वास्थ्य जाँच गर्नेको प्रतिशत	१.९
<b>दुर्घटना, हिँसा तथा चोटपटक (Violence and injuries)</b>	
बिगत १२ महिनामा, सडक दुर्घटनामा पर्नेको प्रतिशत	१.८
बिगत ३० दिनमा, कुनै पनि सवारी साधन चलाउँदा वा सवारी साधनमा यात्रा गर्दा सधैँ वा कहिलेकाहिं सिट बेल्टको प्रयोग गर्नेको प्रतिशत	२.८
बिगत ३० दिनमा, मोटरसाइकल वा स्कुटरमा यात्रा गर्दा सधैँ वा कहिलेकाहिं हेल्मेट प्रयोग गर्नेको प्रतिशत	४८.८
<b>मानसिक स्वास्थ्य (Mental Health)</b>	
केहि वा धेरै मात्रामा काम तथा व्यवसाय सम्बन्धि तनाव हुनेको प्रतिशत	५८.५
केहि वा धेरै मात्रामा घरमा हुने सामान्य तनावको प्रतिशत	५८.३
बिगतका वर्षहरूमा तनावपुर्ण घटनाहरू को कारण धेरै तनाव हुनेको प्रतिशत	११.३
<b>बिगत बाहु दसिनामा जोर्नी तथा ढाडको दुखाइ (Joint and back pain in last 12 months)</b>	
बिगत बाहु दसिनामा, दुर्घटनाबाहेक अरु कारणले एक महिना भन्दा बढी समय सम्म जोर्नीमा वा जोर्नीको वरिपरी दुखाइ,अद्वारोपन वा सुजन हुनेको प्रतिशत	१५.९
बिगत ३० दिनमा, ढाडमा दुखाई भएको कारणले गर्दा घरायसी काम गर्न अथवा काममा जान समस्या पर्नेको प्रतिशत	१५.३
बिगत ३० दिनमा, गम्भीर रूपमा टाउको दुख्ने समस्या भएको कारणले गर्दा घरायसी काम गर्न अथवा काममा जान समस्या पर्नेको प्रतिशत	१२.२

१५-६९ वर्ष उमेरका सहभागीहरूको परिपामहरू		Both Sexes दुबैमा
<b>बढी मास इन्डेक्स र मोटोपन (BMI and Obesity)</b>		
औसत Body mass index - BMI (kg/m <sup>2</sup> )		२२.९
अधिक वजन र मोटोपन हुनेको प्रतिशत (BMI ≥ २५ kg/m <sup>2</sup> )		२२.९
मोटोपन हुनेको प्रतिशत (BMI ≥ ३० kg/m <sup>2</sup> )		३.८
<b>उच्च रक्तचाप, रगतमा चिनीको मात्रा र कोलेस्टरोल (Hypertension, Diabetes and raised cholesterol levels)</b>		
रक्तचाप बढी हुनेको प्रतिशत (SBP ≥ १४० र/वा DBP ≥ ९० mmHg वा हाल उच्च रक्तचापको लागि औषधी खाइरहेको)		२६.६
रगतमा चिनीको मात्रा बढी हुनेको प्रतिशत (फास्टिङ ब्लड ग्लूकोज ≥ १२६ mg/dl) वा हाल रगतमा बढी मात्रामा चिनी भएको कारण औषधी खाइरहेको) ***		४.४
जम्मा कोलेस्टरोल (रगतमा चिल्लोपना) को मात्रा बढी हुनेको प्रतिशत ( $\geq 5.0 \text{ mmol/L}$ वा $\geq 190 \text{ mg/dl}$ वा हाल कोलेस्टरोलको लागि औषधी खाइरहेको)		१४.८
<b>मुटु रोगको जोखिम (Cardiovascular disease (CVD) risk)</b>		
४०-६९ वर्ष उमेर समुहको लागि १० वर्ष भित्र मुटु रोगको जोखिम ३०% वा ३०% भन्दा बढी हुनेको प्रतिशत वा हाल मुटु रोग भएकाको प्रतिशत ****		२.९
<b>स्वास्थ्य प्रणाली (Health system)</b>		
स्वास्थ्यकर्मीबाट रक्तचाप नानेको प्रतिशत (४०-६९ वर्ष भित्रको)		६८.३
स्वास्थ्यकर्मीबाट रगतमा चिनीको मात्रा नानेको प्रतिशत (४०-६९ वर्ष भित्रको)		२५.४
रक्तचाप मापन गर्दा उच्च रक्तचाप पाइएको र/वा औषधी खाइरहेको पाइएको को प्रतिशत		१०.५
रगत परिक्षण गर्दा रगतमा चिनीको मात्रा बढी पाइएको र/वा औषधी खाइरहेको पाइएको को प्रतिशत		२८.८
स्वास्थ्य बीमा कार्यक्रममा सदस्यता भएकाको प्रतिशत		२.९
उच्च रक्तचापको लागि सामान्यतया सरकारी संस्था/सेवा प्रदायकको मा जानेको प्रतिशत		५८.९
मुख स्वास्थ्य सम्बन्धि समस्याको लागि सामान्यतया सरकारी संस्था/सेवा प्रदायकको मा जानेको प्रतिशत		५६.७

\* दक्षिण युरोपको इन्टर-साल्ट समिक्षण मा आधारित:

$$\text{Male: } \left( 20.061 - 0.45 \times 0.45 \text{ Nsppot} \left( \frac{\text{mmol}}{\text{l}} \right) \right) - 3.05 \times \text{Crspot} \left( \frac{\text{mmol}}{\text{l}} \right) + 4.16 \times \text{BMI} \left( \frac{\text{kg}}{\text{m}^2} \right) + 0.22 \times \text{Age (year)}$$

$$\text{Female: } \left( 21.98 + 0.33 \times 0.45 \text{ Nsppot} \left( \frac{\text{mmol}}{\text{l}} \right) \right) - 2.42 \times \text{Crspot} \left( \frac{\text{mmol}}{\text{l}} \right) - 7.42 \times \text{BMI} \left( \frac{\text{kg}}{\text{m}^2} \right) + 2.32 \times \text{Age (year)} - 0.03 \times \text{Age}^2 (\text{year})$$

\*\*अपर्याप्त शारीरिक गतिविधिको पूर्ण परिभाषा को लागि, GPAQ विश्लेषण गाईड हेर्नुहोस्

(<http://www.who.int/chp/steps/GPAQ/en/index.html>) or to the WHO Global recommendations on physical activity for health ([http://www.who.int/dietphysicalactivity/factsheet\\_recommendations/en/index.html](http://www.who.int/dietphysicalactivity/factsheet_recommendations/en/index.html))

\*\*\* [https://www.clinicaltrialsinregister.com/web/items/pdf/PTS-1765\\_Glucose\\_Cholesterol\\_Test\\_Insert~1068file1.pdf](https://www.clinicaltrialsinregister.com/web/items/pdf/PTS-1765_Glucose_Cholesterol_Test_Insert~1068file1.pdf)

\*\*\*\* १० वर्ष मुटु रोग जोखिम  $\geq 30\%$  लाई उमेर, लिङ्ग, रक्तचाप, धूमपान स्थिति (हाल धूमपान गर्नेहरू वा परिक्षण भन्दा १ वर्ष भन्दा कम समय अघि धूमपान छोडूनेहरू), जम्मा कोलेस्ट्रोल र मधुमेह (पहिले निदान गरिएको वा फास्टिङ प्लाज्मा ग्लूकोजको मात्रा  $> 7.0 \text{ mmol/l}$  ( $126 \text{ mg/dl}$ )) को आधारमा परिभाषित गरिएको छ।



# नेपाल STEPS सर्वेक्षण, २०१९

## संक्षिप्त नतिजा

### प्रदेश २



नेपालमा नसर्ने रोग सम्बन्धि जोखिम तत्वको सर्वेक्षण (STEPS सर्वेक्षण) फेब्रुअरी देखि मे २०१९ सम्म गरिएको थियो । यस सर्वेक्षणमा जनसांख्यिक र बानीव्याहोरा सम्बन्धी (सुर्तिजन्य पदार्थ, मदिरा, आहार, शारीरिक कियाकलाप) विवरणहरु संकलन गरिएको थियो । मोटोपन र उच्च रक्तचापको व्यापकता पत्ता लगाउन उचाइ, तौल र रक्तचाप जस्ता शारीरिक मापन गरिएको थियो । त्यसे गरी रगतमा चिनी र कोलेस्ट्रोलको मात्रा पत्ता लाउन बायोकेमिकल (biochemical) मापनहरु संकलन गरिएको थियो ।

यो सर्वेक्षण १५-६९ वर्ष उमेरका सम्भागीहरूको परिणामहरू sample design को प्रयोग गरिएको थियो । यस सर्वेक्षणमा ५५९३ जना वयस्कहरु सहभागी भएका थिए र समग्रमा, सहभागिता ८६.४% थियो । २०२४ मा STEPS सर्वेक्षण पुनः गर्ने योजना रहेको छ ।

	Both Sexes दुबैमा
<b>१५-६९ वर्ष उमेरका सहभागीहरूको परिणामहरू</b>	
<b>सुर्तिजन्य पदार्थ सेवन (Tobacco Use)</b>	
हाल सुर्तिजन्य पदार्थ (धुम्रपान वा धुँवारहित) सेवन गर्नेको प्रतिशत	२९.७
हाल धुम्रपान सेवन गर्नेको प्रतिशत	१३.८
हाल दैनिक धुम्रपान सेवन गर्नेको प्रतिशत	१२.६
हाल चुरोट (उत्पादन गरिएको चुरोट वा हातले बेरेको चुरोट) सेवन गर्नेको प्रतिशत	१२.२
हाल धुँवारहित सुर्तिजन्य पदार्थ सेवन गर्नेको प्रतिशत	२३.३
हाल दैनिक धुँवारहित सुर्तिजन्य पदार्थ सेवन गर्नेको प्रतिशत	१९.९
दैनिक धुम्रपान गर्ने मध्य, पहिलो पटक धुम्रपान गर्न शुरु गर्दाको औसत उमेर	१७.९
<b>मद्यपान सेवन (Alcohol Consumption)</b>	
जीवनमा कहिल्यै मद्यपान सेवन नगर्नेको प्रतिशत	८६.२
बिगतमा मद्यपान सेवन गर्ने गरेको तर १२ महिना भित्र नगर्नेको प्रतिशत	२.३
हाल मद्यपान सेवन गर्नेको प्रतिशत (बितेको १२ महिना भित्रमा मद्यपान सेवन गरेको)	११.५
हाल मद्यपान सेवन गर्नेको प्रतिशत (बितेको ३० दिन भित्रमा मद्यपान सेवन गरेको)	१०.३
बितेको ३० दिन भित्रमा अत्याधिक मद्यपान सेवन (६ वा ६ भन्दा बढी स्टान्डर्ड ड्रिंक्स) गर्नेको प्रतिशत (कुल जनसंख्या)	३.७
हाल मद्यपान सेवन (बितेको ३० दिनमा) गर्ने मध्य, बितेको ७ दिन भित्रमा छिमेकी देश/अन्य देशबाट किनेको वा पिउनलाई अयोग्य वा कर नतिरेको मादक पदार्थ पिउनेको प्रतिशत	७६.४
<b>आहार (Diet)</b>	
औसतमा १ दिनमा खाने गरेको फलफुल र/वा तरकारीको सर्भिङ्डको औसत संख्या (१ सर्भिङ्ड = ८० ग्राम)	२.३
औसतमा १ दिनमा ५ सर्भिङ्ड भन्दा थोरै फलफुल र/वा तरकारी खानेको प्रतिशत	९६.४
<b>नुन (Salt)</b>	
खाना खानु अघि वा खाइरहँदा खानामा नुन वा नुनीलो सस् सधैं वा प्राय थपेर खानेको प्रतिशत	५.२
नुन बढि मात्रामा हालिएको तयारी खानेकुरा (जंक फुड) सधैं वा प्रायजसो खानेको प्रतिशत	१४.३

	Both Sexes दुबैमा
<b>१५-६९ वर्ष उमेरका सहभागीहरूको परिणामहरू</b>	
खानामा नुनको मात्रा नियन्त्रण गर्न सधैँ जसो केहि उपाय अपनाउनेको प्रतिशत (जस्तै तयारी खानेकुरा कम मात्रामा खाने वा खाइँ नखाने, घर बाहिरको खाना नखाने आदि)	०.१
औसत नुन सेवन प्रतिदिन (ग्राममा)(स्पष्ट युरिन परिक्षणमा आधारित)*	८.९
<b>शारीरिक क्रियाकलाप (Physical Activity)</b>	
अपर्याप्त शारीरिक गतिविधि गर्नेको प्रतिशत (प्रति हप्ता १५० मिनेट भन्दा कम समय मध्यम परिश्रम पर्ने वा सो सरहको गतिविधि भनेर परिभाषित गरिएको) **	८.५
प्रति दिन शारीरिक गतिविधिमा खर्च हुने औसत समयको मध्यक (मध्यम परिश्रम मिनेटमा) (इन्टर क्वार्टाइल रेन्जमा प्रस्तुत गरिएका)	१७१.४
<b>पाठेघरको मुखको क्यान्सरको स्क्रीनिङ (३० -४९ वर्ष उमेरको महिला) (Cervical Cancer Screening (women 30-49 years of age))</b>	
पाठेघरको मुखको क्यान्सरको (सर्विकल क्यान्सर) को परिक्षण गराउनेको प्रतिशत	६.३
वितेको ५ वर्ष भित्रमा पाठेघरको मुखको क्यान्सरको (सर्विकल क्यान्सर) को परिक्षण गराउनेको प्रतिशत	४.१
<b>मुख स्वास्थ्य (Oral Health)</b>	
दिनमा एक पटक वा बढी दाँत सफा गर्नेको प्रतिशत	८९.९
दाँत, मुख वा गिजाको समस्या( दुख्ने, सुन्निने, रगत आउने वा असजिलो हुने) हुने को प्रतिशत	११.४
बिगत १२ महिना भित्र दन्त चिकित्सक संग स्वास्थ्य जाँच गर्नेको प्रतिशत	१.१
<b>दुर्घटना, हिँसा तथा चोटपटक (Violence and injuries)</b>	
बिगत १२ महिनामा, सडक दुर्घटनामा पर्नेको प्रतिशत	१.५
बिगत ३० दिनमा, कुनै पनि सवारी साधन चलाउँदा वा सवारी साधनमा यात्रा गर्दा सधैँ वा कहिलेकाहिं सिट बेल्टको प्रयोग गर्नेको प्रतिशत	२.७
बिगत ३० दिनमा, मोटरसाइकल वा स्कुटरमा यात्रा गर्दा सधैँ वा कहिलेकाहिं हेल्मेट प्रयोग गर्नेको प्रतिशत	३०.०
<b>मानसिक स्वास्थ्य (Mental Health)</b>	
केहि वा धेरै मात्रामा काम तथा व्यवसाय सम्बन्धि तनाव हुनेको प्रतिशत	६४.९
केहि वा धेरै मात्रामा घरमा हुने सामान्य तनावको प्रतिशत	६४.६
बिगतका वर्षहरूमा तनावपुर्ण घटनाहरू को कारण धेरै तनाव हुनेको प्रतिशत	१०.६
<b>बिगत बाह महिनामा जोर्नी तथा ढाडको दुखाइ (Joint and back pain in last 12 months)</b>	
बिगत बाह महिनामा, दुर्घटनाबाहेक अरु कारणले एक महिना भन्दा बढी समय सम्म जोर्नीमा वा जोर्नीको वरिपरी दुखाइ,अह्वेरोपन वा सुजन हुनेको प्रतिशत	१२.५
बिगत ३० दिनमा, ढाडमा दुखाइ भएको कारणले गर्दा घरायसी काम गर्न अथवा काममा जान समस्या पर्नेको प्रतिशत	१६.३
बिगत ३० दिनमा, गम्भीर रूपमा टाउको दुख्ने समस्या भएको कारणले गर्दा घरायसी काम गर्न अथवा काममा जान समस्या पर्नेको प्रतिशत	१०.९

१५-६९ वर्ष उमेरका सहभागीहरूको परिपामहरू		Both Sexes दुबैमा
<b>बढी मास इन्डेक्स र मोटोपन (BMI and Obesity)</b>		
औसत Body mass index - BMI ( $\text{kg}/\text{m}^2$ )		२२.३
अधिक वजन र मोटोपन हुनेको प्रतिशत ( $\text{BMI} \geq २५ \text{ kg}/\text{m}^2$ )		१९.९
मोटोपन हुनेको प्रतिशत ( $\text{BMI} \geq ३० \text{ kg}/\text{m}^2$ )		२.७
<b>उच्च रक्तचाप, रगतमा चिनीको मात्रा र कोलेस्टरोल (Hypertension, Diabetes and raised cholesterol levels)</b>		
रक्तचाप बढी हुनेको प्रतिशत ( $\text{SBP} \geq १४० \text{ mmHg}$ वा $\text{DBP} \geq ९० \text{ mmHg}$ वा हाल उच्च रक्तचापको लागि औषधी खाइरहेको)		१८.७
रगतमा चिनीको मात्रा बढी हुनेको प्रतिशत (फास्टिङ ब्लड ग्लूकोज $\geq १२६ \text{ mg/dL}$ वा हाल रगतमा बढी मात्रामा चिनी भएको कारण औषधी खाइरहेको) ***		११.३
जम्मा कोलेस्टरोल (रगतमा चिल्लोपना) को मात्रा बढी हुनेको प्रतिशत ( $\geq ५.० \text{ mmol/L}$ वा $\geq १९० \text{ mg/dL}$ वा हाल कोलेस्टरोलको लागि औषधी खाइरहेको)		११.५
<b>मुटु रोगको जोखिम (Cardiovascular disease (CVD) risk)</b>		
४०-६९ वर्ष उमेर समुहको लागी १० वर्ष भित्र मुटु रोगको जोखिम ३०% वा ३०% भन्दा बढी हुनेको प्रतिशत वा हाल मुटु रोग भएकाको प्रतिशत ****		२.६
<b>स्वास्थ्य प्रणाली (Health system)</b>		
स्वास्थ्यकर्मीबाट रक्तचाप नापेको प्रतिशत (४०-६९ वर्ष भित्रको)		५८.४
स्वास्थ्यकर्मीबाट रगतमा चिनीको मात्रा नापेको प्रतिशत (४०-६९ वर्ष भित्रको)		१९.२
रक्तचाप मापन गर्दा उच्च रक्तचाप पाइएको र/वा औषधी खाइरहेको पाइएको को प्रतिशत		१२.६
रगत परिक्षण गर्दा रगतमा चिनीको मात्रा बढी पाइएको र/वा औषधी खाइरहेको पाइएको को प्रतिशत		१६.२
स्वास्थ्य बीमा कार्यक्रममा सदस्यता भएकाको प्रतिशत		२.६
उच्च रक्तचापको लागि सामान्यतया सरकारी संस्था/सेवा प्रदायकको मा जानेको प्रतिशत		१९.६
मुख स्वास्थ्य सम्बन्धि समस्याको लागि सामान्यतया सरकारी संस्था/सेवा प्रदायकको मा जानेको प्रतिशत		१०.५

\* दक्षिण युरोपको इन्टर-साल्ट समिकारण मा आधारित:

$$\text{Male: } \left( 20.816 - 0.05 \times 0.05 \text{ Naesppt} \left( \frac{\text{mmol}}{\text{l}} \right) \right) - 3.09 \times \text{Gsppt} \left( \frac{\text{mmol}}{\text{l}} \right) - 1.16 \times \text{BMI} \left( \frac{\text{kg}}{\text{m}^2} \right) - 0.22 \times \text{Age (year)}$$

$$\text{Female: } \left( 21.98 - 0.03 \times 0.05 \text{ Naesppt} \left( \frac{\text{mmol}}{\text{l}} \right) \right) - 2.44 \times \text{Gsppt} \left( \frac{\text{mmol}}{\text{l}} \right) + 2.42 \times \text{BMI} \left( \frac{\text{kg}}{\text{m}^2} \right) + 2.34 \times \text{Age (year)} - 0.03 \times \text{Age}^2 (\text{year})$$

\*\*अपर्याप्त शारीरिक गतिविधिको पूर्ण परिभाषा को लागी, GPAQ विश्लेषण गाईड हेर्नुहोस्

(<http://www.who.int/chp/steps/GPAQ/en/index.html>) or to the WHO Global recommendations on physical activity for health ([http://www.who.int/dietphysicalactivity/factsheet\\_recommendations/en/index.html](http://www.who.int/dietphysicalactivity/factsheet_recommendations/en/index.html))

\*\*\* [https://www.cliawaived.com/web/items/pdf/PTS-1765\\_Glucose\\_Cholesterol\\_Test\\_Insert~1068file1.pdf](https://www.cliawaived.com/web/items/pdf/PTS-1765_Glucose_Cholesterol_Test_Insert~1068file1.pdf)

\*\*\*\*१० वर्ष मुटु रोग जोखिम  $\geq ३०\%$  लाई उमेर, लिङ्ग, रक्तचाप, धूम्रपान स्थिति (हाल धूम्रपान गर्नेहरू वा परिक्षण भन्दा १ वर्ष भन्दा कम समय अघि धूम्रपान छोड्नेहरू), जम्मा कोलेस्टरोल र मधुमेह (पहिले निदान गरिएको वा फास्टिङ प्लाज्मा ग्लूकोजको मात्रा  $> ७.० \text{ mmol/L}$  ( $1२६ \text{ mg/dL}$ )) को आधारमा परिभाषित गरिएको छ।



# नेपाल STEPS सर्वेक्षण, २०१९

## संक्षिप्त नतिजा

### प्रदेश ३



नेपालमा नसर्ने रोग सम्बन्धि जोखि म तत्वको सर्वेक्षण (STEPS सर्वेक्षण) फेब्रुअरी देखि मे २०१९ सम्म गरिएको थियो । यस सर्वेक्षणमा जनसांख्यिक र बानीव्यहोरा सम्बन्धी (सुर्तिजन्य पदार्थ, मदिरा, आहार, शारीरिक क्रियाकलाप) विवरणहरु संकलन गरिएको थियो । मोटोपन र उच्च रक्तचापको व्यापकता पत्ता लगाउन उचाइ, तौल र रक्तचाप जस्ता शारीरिक मापन गरिएको थियो । त्यसै गरी रगतमा चिनी र कोलेस्ट्रोलको मात्रा पत्ता लाउन बायोकेमिकल (biochemical) मापनहरु संकलन गरिएको थियो ।

यो सर्वेक्षण ५५-६९ वर्ष उमेर सम्मुखका वयस्कहरुको जनसंख्यामा आधारित छ । उक्त उमेर समुद्रको प्रतिनिधित्व गर्ने multistage sample design को प्रयोग गरिएको थियो । यस सर्वेक्षणमा ५५९३ जना वयस्कहरु सहभागी भएका थिए र समग्रमा, सहभागिता ८६.४% थियो । २०२४ मा STEPS सर्वेक्षण पुनः गर्ने योजना रहेको छ ।

१५-६९ वर्ष उमेरका सहभागिहरुको परिणामहरू		Both Sexes दुबैमा
<b>सुर्तिजन्य पदार्थ सेवन (Tobacco Use)</b>		
हाल सुर्तिजन्य पदार्थ (धुम्रपान वा धुँवारहित) सेवन गर्नेको प्रतिशत	२२.२	
हाल धुम्रपान सेवन गर्नेको प्रतिशत	१८.२	
हाल दैनिक धुम्रपान सेवन गर्नेको प्रतिशत	१६.०	
हाल चुरोट (उत्पादन गरिएको चुरोट/हातले बेरेको चुरोट) सेवन गर्नेको प्रतिशत	१७.१	
हाल धुँवारहित सुर्तिजन्य पदार्थ सेवन गर्नेको प्रतिशत	८.१	
हाल दैनिक धुँवारहित सुर्तिजन्य पदार्थ सेवन गर्नेको प्रतिशत	७.०	
दैनिक धुम्रपान गर्ने मध्य, पहिलो पटक धुम्रपान गर्न शुरु गर्दाको औसत उमेर	१८.१	
<b>मद्यपान सेवन (Alcohol Consumption)</b>		
जीवनमा कहिलै मद्यपान सेवन नगर्नेको प्रतिशत	६३.७	
बिगतमा मद्यपान सेवन गर्ने गरेको तर १२ महिना भित्र नगर्नेको प्रतिशत	३.१	
हाल मद्यपान सेवन गर्नेको प्रतिशत (बितेको १२ महिना भित्रमा मद्यपान सेवन गरेको)	३३.२	
हाल मद्यपान सेवन गर्नेको प्रतिशत (बितेको ३० दिन भित्रमा मद्यपान सेवन गरेको)	२७.५	
बितेको ३० दिन भित्रमा अत्यधिक मद्यपान सेवन (६ वा ६ भन्दा बढी स्टान्डर्ड ड्रिंक्स) गर्नेको प्रतिशत (कुल जनसंख्या)	८.७	
हाल मद्यपान सेवन (बितेको ३० दिनमा) गर्ने मध्य, बितेको ७ दिन भित्रमा छिमेकी देश/अन्य देशबाट किनेको वा पिउनलाई अयोग्य वा कर नतिरेको मादक पदार्थ पिउनेको प्रतिशत	७४.९	
<b>आहार (Diet)</b>		
औसतमा १ दिनमा खाने गरेको फलफूल र/वा तरकारीको सर्भिङ्डको औसत संख्या (१ सर्भिङ्ड = ८० ग्राम)	२.०	
औसतमा १ दिनमा ५ सर्भिङ्ड भन्दा थोरै फलफूल र/वा तरकारी खानेको प्रतिशत	९७.२	
<b>नुन (Salt)</b>		
खाना खानु अघि वा खाइरहँदा खानामा नुन वा नुनीलो सस् सधैं वा प्राय थपेर खानेको प्रतिशत	७.९	
नुन बढि मात्रामा हालिएको तयारी खानेकुरा (जंक फुड) सधैं वा प्रायजसो खानेको प्रतिशत	२२.०	

	Both Sexes दुबैमा
१५-६९ वर्ष उमेरका सहभागीहरूको परिपामहरू	१.६
खानामा नुनको मात्रा नियन्त्रण गर्न सधैँ जसो केहि उपाय अपनाउनेको प्रतिशत (जस्तै तयारी खानेकुरा कम मात्रामा खाने वा खादै नखाने, घर बाहिरको खाना नखाने आदि)	१.३
<b>शारीरिक क्रियाकलाप (Physical Activity)</b>	
अपर्याप्त शारीरिक गतिविधि गर्नेको प्रतिशत (प्रति हप्ता १५० मिनेट भन्दा कम समय मध्यम परिश्रम पर्ने वा सो सरहको गतिविधि भनेर परिभाषित गरिएको) **	१०.३
प्रति दिन शारीरिक गतिविधिमा खर्च हुने औसत समयको मध्यक (मध्यम परिश्रम मिनेटमा) (इन्टर क्वार्टाइल रेन्जमा प्रस्तुत गरिएका)	१८०.०
<b>पाठेघरको मुख्यको क्यान्सरको स्क्रीनिङ (३० -४९ वर्ष उमेरको महिला) (Cervical Cancer Screening (women 30-49 years of age))</b>	
पाठेघरको मुख्यको क्यान्सरको (सर्विकल क्यान्सर) को परिक्षण गराउने को प्रतिशत	८.६
बितेको ५ वर्ष भित्रमा पाठेघरको मुख्यको क्यान्सरको (सर्विकल क्यान्सर) को परिक्षण गराउनेको प्रतिशत	४.३
<b>मुख स्वास्थ्य (Oral Health)</b>	
दिनमा एक पटक वा बढी दाँत सफा गर्नेको प्रतिशत	८६.२
दाँत, मुख वा गिजाको समस्या (दुख्ने, सुन्नने, रगत आउने वा असजिलो हुने) हुने को प्रतिशत	१२.२
बिगत १२ महिना भित्र दन्त चिकित्सक संग स्वास्थ्य जाँच गर्नेको प्रतिशत	३.२
<b>दुर्घटना, हिँसा तथा चोटपटक (Violence and injuries)</b>	
बिगत १२ महिनामा, सडक दुर्घटनामा पर्नेको प्रतिशत	२.९
बिगत ३० दिनमा, कुनै पनि सवारी साधन चलाउँदा वा सवारी साधनमा यात्रा गर्दा सधैँ वा कहिलेकाहिं सिट बेल्टको प्रयोग गर्नेको प्रतिशत	८.३
बिगत ३० दिनमा, मोटरसाइकल वा स्कुटरमा यात्रा गर्दा सधैँ वा कहिलेकाहिं हेल्मेट प्रयोग गर्नेको प्रतिशत	५३.१
<b>मानसिक स्वास्थ्य (Mental Health)</b>	
केहि वा धेरै मात्रामा काम तथा व्यवसाय सम्बन्धि तनाव हुनेको प्रतिशत	६८.८
केहि वा धेरै मात्रामा घरमा हुने सामान्य तनावको प्रतिशत	६५.५
बिगतका वर्षहरूमा तनावपुर्ण घटनाहरू को कारण धेरै तनाव हुनेको प्रतिशत	१३.४
<b>बिगत बाहु महिनामा जोर्नी तथा ढाडको दुखाइ (Joint and back pain in last 12 months)</b>	
बिगत बाहु महिनामा, दुर्घटनाबाहेक अरु कारणले एक महिना भन्दा बढी समय सम्म जोर्नीमा वा जोर्नीको वरिपरी दुखाइ, अद्वैरोपन वा सुजन हुनेको प्रतिशत	१२.३
बिगत ३० दिनमा, ढाडमा दुखाई भएको कारणले गर्दा घरायसी काम गर्न अथवा काममा जान समस्या पर्नेको प्रतिशत	१७.४
बिगत ३० दिनमा, गम्भीर रूपमा टाउको दुख्ने समस्या भएको कारणले गर्दा घरायसी काम गर्न अथवा काममा जान समस्या पर्नेको प्रतिशत	१३.८

१५-६९ वर्ष उमेरका सहभागीहरूको परिपामहरू		Both Sexes दुबैमा
<b>बढी मास इन्डेक्स र मोटोपन (BMI and Obesity)</b>		
औसत Body mass index - BMI ( $\text{kg}/\text{m}^2$ )		२४.३
अधिक वजन र मोटोपन हुनेको प्रतिशत ( $\text{BMI} \geq २५ \text{ kg}/\text{m}^2$ )		४२.६
मोटोपन हुनेको प्रतिशत ( $\text{BMI} \geq ३० \text{ kg}/\text{m}^2$ )		८.४
<b>उच्च रक्तचाप, रगतमा चिनीको मात्रा र कोलेस्टरोल (Hypertension, Diabetes and raised cholesterol levels)</b>		
रक्तचाप बढी हुनेको प्रतिशत ( $\text{SBP} \geq १४० \text{ mmHg}$ वा $\text{DBP} \geq ९० \text{ mmHg}$ वा हाल उच्च रक्तचापको लागि औषधी खाइरहेको)		२५.२
रगतमा चिनीको मात्रा बढी हुनेको प्रतिशत (फास्टिङ ब्लड ग्लूकोज $\geq १२६ \text{ mg/dl}$ )वा हाल रगतमा बढी मात्रामा चिनी भएको कारण औषधी खाइरहेको) ***		४.१
जम्मा कोलेस्टरोल (रगतमा चिल्लोपना) को मात्रा बढी हुनेको प्रतिशत ( $\geq ५.० \text{ mmol/L}$ वा $\geq १९० \text{ mg/dl}$ वा हाल कोलेस्टरोलको लागि औषधी खाइरहेको)		८.२
<b>मुटु रोगको जोखिम (Cardiovascular disease (CVD) risk)</b>		
४०-६९ वर्ष उमेर समुहको लागि १० वर्ष भित्र मुटु रोगको जोखिम ३०% वा ३०% भन्दा बढी हुनेको प्रतिशत वा हाल मुटु रोग भएकाको प्रतिशत ****		२.४
<b>स्वास्थ्य प्रणाली (Health system)</b>		
स्वास्थ्यकर्मीबाट रक्तचाप नानेको प्रतिशत (४०-६९ वर्ष भित्रको)		६८.०
स्वास्थ्यकर्मीबाट रगतमा चिनीको मात्रा नानेको प्रतिशत (४०-६९ वर्ष भित्रको)		२४.८
रक्तचाप मापन गर्दा उच्च रक्तचाप पाइएको र/वा औषधी खाइरहेको पाइएको को प्रतिशत		१३.५
रगत परिक्षण गर्दा रगतमा चिनीको मात्रा बढी पाइएको र/वा औषधी खाइरहेको पाइएको को प्रतिशत		३०.३
स्वास्थ्य बीमा कार्यक्रममा सदस्यता भएकाको प्रतिशत		२.४
उच्च रक्तचापको लागि सामान्यतया सरकारी संस्था/सेवा प्रदायकको मा जानेको प्रतिशत		२७.८
मुख स्वास्थ्य सम्बन्धि समस्याको लागि सामान्यतया सरकारी संस्था/सेवा प्रदायकको मा जानेको प्रतिशत		२२.५

\* दक्षिण युरोपको इन्टर-साल्ट समिक्षण मा आधारित:

$$\text{Male: } \left( 20.061 - 0.45 \times 0.45 \text{ Nsppot} \left( \frac{\text{mmol}}{\text{l}} \right) \right) - 3.05 \times \text{Crspot} \left( \frac{\text{mmol}}{\text{l}} \right) + 4.16 \times \text{BMI} \left( \frac{\text{kg}}{\text{m}^2} \right) + 0.22 \times \text{Age (year)}$$

$$\text{Female: } \left( 21.98 + 0.33 \times 0.45 \text{ Nsppot} \left( \frac{\text{mmol}}{\text{l}} \right) \right) - 2.42 \times \text{Crspot} \left( \frac{\text{mmol}}{\text{l}} \right) - 7.42 \times \text{BMI} \left( \frac{\text{kg}}{\text{m}^2} \right) + 2.32 \times \text{Age (year)} - 0.03 \times \text{Age}^2 (\text{year})$$

\*\*अपर्याप्त शारीरिक गतिविधिको पूर्ण परिभाषा को लागि, GPAQ विश्लेषण गाईड हेर्नुहोस्

(<http://www.who.int/chp/steps/GPAQ/en/index.html>) or to the WHO Global recommendations on physical activity for health ([http://www.who.int/dietphysicalactivity/factsheet\\_recommendations/en/index.html](http://www.who.int/dietphysicalactivity/factsheet_recommendations/en/index.html))

\*\*\* [https://www.clinicaltrialsinregister.com/web/items/pdf/PTS-1765\\_Glucose\\_Cholesterol\\_Test\\_Insert~1068file1.pdf](https://www.clinicaltrialsinregister.com/web/items/pdf/PTS-1765_Glucose_Cholesterol_Test_Insert~1068file1.pdf)

\*\*\*\* १० वर्ष मुटु रोग जोखिम  $\geq ३०\%$  लाई उमेर, लिङ्ग, रक्तचाप, धूमपान स्थिति (हाल धूमपान गर्नेहरू वा परिक्षण भन्दा १ वर्ष भन्दा कम समय अघि धूमपान छोडूनेहरू), जम्मा कोलेस्टरोल र मधुमेह (पहिले निदान गरिएको वा फास्टिङ प्लाज्मा ग्लूकोजको मात्रा  $> ७.० \text{ mmol/l}$  ( $1२६ \text{ mg/dl}$ )) को आधारमा परिभाषित गरिएको छ।



# नेपाल STEPS सर्वेक्षण, २०१९

## संक्षिप्त नतिजा

### गण्डकी प्रदेश



नेपालमा नसर्ने रोग सम्बन्धि जोखिम तत्वको सर्वेक्षण (STEPS सर्वेक्षण) फेब्रुअरी देखि मे २०१९ सम्म गरिएको थियो । यस सर्वेक्षणमा जनसांख्यिक र बानीब्यहोरा सम्बन्धी (सुर्तजन्य पदार्थ, मदिरा, आहार, शारीरिक क्रियाकलाप) विवरणहरु संकलन गरिएको थियो । मोटोपन र उच्च रक्तचापको व्यापकता पत्ता लगा उन उचाइ, तौल र रक्तचाप जस्ता शारीरिक मापन गरिएको थियो । त्यसै गरी रगतमा चिनी र कोलेस्ट्रोलको मात्रा पत्ता लाउन बायोकेमिकल (biochemical) मापनहरु संकलन गरिएको थियो ।

यो सर्वेक्षण ४५-६९ वर्ष उमेरका समुहका वयस्कहरुको जनसंख्यामा आधारित छ । उक्त उमेर समुहको प्रतिनिधित्व गर्न multistage sample design को प्रयोग गरिएको थियो । यस सर्वेक्षणमा ५५.३ जना वयस्कहरु सहभागी भएका थिए र समग्रमा, सहभागिता ८६.४% थियो । २०२४ मा STEPS सर्वेक्षण पुनः गर्ने योजना रहेको छ ।

	Both Sexes दुबैमा
<b>१५-६९ वर्ष उमेरका सहभागीहरूको परिणामहरू</b>	
<b>सुर्तजन्य पदार्थ सेवन (Tobacco Use)</b>	
हाल सुर्तजन्य पदार्थ (धुम्रपान वा धुँवारहित) सेवन गर्नेको प्रतिशत	२५.९
हाल धुम्रपान सेवन गर्नेको प्रतिशत	१८.६
हाल दैनिक धुम्रपान सेवन गर्नेको प्रतिशत	१६.२
हाल चुरोट (उत्पादन गरिएको चुरोट/हातले बेरेको चुरोट) सेवन गर्नेको प्रतिशत	१७.२
हाल धुँवारहित सुर्तजन्य पदार्थ सेवन गर्नेको प्रतिशत	११.१
हाल दैनिक धुँवारहित सुर्तजन्य पदार्थ सेवन गर्नेको प्रतिशत	९.९
दैनिक धुम्रपान गर्ने मध्य, पहिलो पटक धुम्रपान गर्न शुरु गर्दाको औसत उमेर	१७.६
<b>मद्यपान सेवन (Alcohol Consumption)</b>	
जीवनमा कहिल्यै मद्यपान सेवन नगर्नेको प्रतिशत	६६.६
बिगतमा मद्यपान सेवन गर्ने गरेको तर १२ महिना भित्र नगर्नेको प्रतिशत	४.२
हाल मद्यपान सेवन गर्नेको प्रतिशत (बितेको १२ महिना भित्रमा मद्यपान सेवन गरेको)	२९.२
हाल मद्यपान सेवन गर्नेको प्रतिशत (बितेको ३० दिन भित्रमा मद्यपान सेवन गरेको)	२४.१
बितेको ३० दिन भित्रमा अत्याधिक मद्यपान सेवन (६ वा ६ भन्दा बढी स्टान्डर्ड ड्रिंक्स) गर्नेको प्रतिशत (कुल जनसंख्या)	८.५
हाल मद्यपान सेवन (बितेको ३० दिनमा) गर्ने मध्य, बितेको ७ दिन भित्रमा छिमेकी देश/अन्य देशबाट किनेको वा पिउनलाई अयोग्य वा कर नतिरेको मादक पदार्थ पिउनेको प्रतिशत	६२.६
<b>आहार (Diet)</b>	
औसतमा १ दिनमा खाने गरेको फलफुल र/वा तरकारीको सर्भिङ्डको औसत संख्या (१ सर्भिङ्ड = ८० ग्राम)	९.९
औसतमा १ दिनमा ५ सर्भिङ्ड भन्दा थोरै फलफुल र/वा तरकारी खानेको प्रतिशत	९९.०
<b>नुन (Salt)</b>	
खाना खानु अघि वा खाइरहँदा खानामा नुन वा नुनीलो सस् सधैँ वा प्राय थपेर खानेको प्रतिशत	८.८
नुन बढि मात्रामा हालिएको तयारी खानेकुरा (जंक फुड) सधैँ वा प्रायजसो खानेको प्रतिशत	१५.१

	Both Sexes दुबैमा
<b>१५-६९ वर्ष उमेरका सहभागीहरूको परिणामहरू</b>	
खानामा नुनको मात्रा नियन्त्रण गर्न सधैँ जसो केहि उपाय अपनाउनेको प्रतिशत (जस्तै तयारी खानेकुरा कम मात्रामा खाने वा खाइँ नखाने, घर बाहिरको खाना नखाने आदि)	३.८
औसत नुन सेवन प्रतिदिन (ग्राममा)(स्पष्ट युरिन परिक्षणमा आधारित)*	९.२
<b>शारीरिक क्रियाकलाप (Physical Activity)</b>	
अपर्याप्त शारीरिक गतिविधि गर्नेको प्रतिशत (प्रति हप्ता १५० मिनेट भन्दा कम समय मध्यम परिश्रम पर्ने वा सो सरहको गतिविधि भनेर परिभाषित गरिएको) **	१०.१
प्रति दिन शारीरिक गतिविधिमा खर्च हुने औसत समयको मध्यक (मध्यम परिश्रम मिनेटमा) (इन्टर क्वार्टाइल रेन्जमा प्रस्तुत गरिएका)	२४०.०
<b>पाठेघरको मुखको क्यान्सरको स्क्रीनिङ (३० -४९ वर्ष उमेरको महिला) (Cervical Cancer Screening (women 30-49 years of age))</b>	
पाठेघरको मुखको क्यान्सरको (सर्विकल क्यान्सर) को परिक्षण गराउनेको प्रतिशत	१२.६
वितेको ५ वर्ष भित्रमा पाठेघरको मुखको क्यान्सरको (सर्विकल क्यान्सर) को परिक्षण गराउनेको प्रतिशत	८.३
<b>मुख स्वास्थ्य (Oral Health)</b>	
दिनमा एक पटक वा बढी दाँत सफा गर्नेको प्रतिशत	९२.१
दाँत, मुख वा गिजाको समस्या( दुख्ने, सुन्निने, रगत आउने वा असजिलो हुने) हुने को प्रतिशत	१५.९
बिगत १२ महिना भित्र दन्त चिकित्सक संग स्वास्थ्य जाँच गर्नेको प्रतिशत	६.८
<b>दुर्घटना, हिँसा तथा चोटपटक (Violence and injuries)</b>	
बिगत १२ महिनामा, सडक दुर्घटनामा पर्नेको प्रतिशत	४.२
बिगत ३० दिनमा, कुनै पनि सवारी साधन चलाउँदा वा सवारी साधनमा यात्रा गर्दा सधैँ वा कहिलेकाहिं सिट बेल्टको प्रयोग गर्नेको प्रतिशत	३.५
बिगत ३० दिनमा, मोटरसाइकल वा स्कुटरमा यात्रा गर्दा सधैँ वा कहिलेकाहिं हेल्मेट प्रयोग गर्नेको प्रतिशत	३४.४
<b>मानसिक स्वास्थ्य (Mental Health)</b>	
केहि वा धेरै मात्रामा काम तथा व्यवसाय सम्बन्धि तनाव हुनेको प्रतिशत	७१.८
केहि वा धेरै मात्रामा घरमा हुने सामान्य तनावको प्रतिशत	६५.३
बिगतका वर्षहरूमा तनावपुर्ण घटनाहरू को कारण धेरै तनाव हुनेको प्रतिशत	११.२
<b>बिगत बाह महिनामा जोर्नी तथा ढाडको दुखाइ (Joint and back pain in last 12 months)</b>	
बिगत बाह महिनामा, दुर्घटनाबाहेक अरु कारणले एक महिना भन्दा बढी समय सम्म जोर्नीमा वा जोर्नीको वरिपरी दुखाइ,अह्वेरोपन वा सुजन हुनेको प्रतिशत	१६.६
बिगत ३० दिनमा, ढाडमा दुखाइ भएको कारणले गर्दा घरायसी काम गर्न अथवा काममा जान समस्या पर्नेको प्रतिशत	१८.६
बिगत ३० दिनमा, गम्भीर रूपमा टाउको दुख्ने समस्या भएको कारणले गर्दा घरायसी काम गर्न अथवा काममा जान समस्या पर्नेको प्रतिशत	१२.९

१५-६९ वर्ष उमेरका सहभागीहरूको परिपामहरू		Both Sexes दुबैमा
<b>बढी मास इन्डेक्स र मोटोपन (BMI and Obesity)</b>		
औसत Body mass index - BMI ( $\text{kg}/\text{m}^2$ )		२४.०
अधिक वजन र मोटोपन हुनेको प्रतिशत ( $\text{BMI} \geq २५ \text{ kg}/\text{m}^2$ )		३४.६
मोटोपन हुनेको प्रतिशत ( $\text{BMI} \geq ३० \text{ kg}/\text{m}^2$ )		८.०
<b>उच्च रक्तचाप, रगतमा चिनीको मात्रा र कोलेस्टरोल (Hypertension, Diabetes and raised cholesterol levels)</b>		
रक्तचाप बढी हुनेको प्रतिशत ( $\text{SBP} \geq १४० \text{ mmHg}$ वा $\text{DBP} \geq ९० \text{ mmHg}$ वा हाल उच्च रक्तचापको लागि औषधी खाइरहेको)		२९.९
रगतमा चिनीको मात्रा बढी हुनेको प्रतिशत (फास्टिङ ब्लड ग्लूकोज $\geq १२६ \text{ mg/dL}$ वा हाल रगतमा बढी मात्रामा चिनी भएको कारण औषधी खाइरहेको) ***		३.२
जम्मा कोलेस्टरोल (रगतमा चिल्लोपना) को मात्रा बढी हुनेको प्रतिशत ( $\geq ५.० \text{ mmol/L}$ वा $\geq १९० \text{ mg/dL}$ वा हाल कोलेस्टरोलको लागि औषधी खाइरहेको)		१२.९
<b>मुटु रोगको जोखिम (Cardiovascular disease (CVD) risk)</b>		
४०-६९ वर्ष उमेर समुहको लागी १० वर्ष भित्र मुटु रोगको जोखिम ३०% वा ३०% भन्दा बढी हुनेको प्रतिशत वा हाल मुटु रोग भएकाको प्रतिशत ****		३.९
<b>स्वास्थ्य प्रणाली (Health system)</b>		
स्वास्थ्यकर्मीबाट रक्तचाप नापेको प्रतिशत (४०-६९ वर्ष भित्रको)		७४.९
स्वास्थ्यकर्मीबाट रगतमा चिनीको मात्रा नापेको प्रतिशत (४०-६९ वर्ष भित्रको)		२३.१
रक्तचाप मापन गर्दा उच्च रक्तचाप पाइएको र/वा औषधी खाइरहेको पाइएको को प्रतिशत		१२.७
रगत परिक्षण गर्दा रगतमा चिनीको मात्रा बढी पाइएको र/वा औषधी खाइरहेको पाइएको को प्रतिशत		३१.३
स्वास्थ्य बीमा कार्यक्रममा सदस्यता भएकाको प्रतिशत		३.९
उच्च रक्तचापको लागि सामान्यतया सरकारी संस्था/सेवा प्रदायकको मा जानेको प्रतिशत		५२.६
मुख स्वास्थ्य सम्बन्धि समस्याको लागि सामान्यतया सरकारी संस्था/सेवा प्रदायकको मा जानेको प्रतिशत		२६.८

\* दक्षिण युरोपको इन्टर-साल्ट समिकारण मा आधारित:

$$\text{Male: } \left( 20.816 - 0.05 \times 0.05 \text{ Na}spot \left( \frac{\text{mmol}}{\text{l}} \right) \right) - 3.09 \times \text{Gspot} \left( \frac{\text{mmol}}{\text{l}} \right) - 2.16 \times \text{BMI} \left( \frac{\text{kg}}{\text{m}^2} \right) - 0.22 \times \text{Age (year)}$$

$$\text{Female: } \left( 21.98 - 0.05 \times 0.05 \text{ Na}spot \left( \frac{\text{mmol}}{\text{l}} \right) \right) - 2.44 \times \text{Gspot} \left( \frac{\text{mmol}}{\text{l}} \right) + 2.42 \times \text{BMI} \left( \frac{\text{kg}}{\text{m}^2} \right) + 2.34 \times \text{Age (year)} - 0.03 \times \text{Age}^2 (\text{year})$$

\*\*अपर्याप्त शारीरिक गतिविधिको पूर्ण परिभाषा को लागी, GPAQ विश्लेषण गाईड हेर्नुहोस्

(<http://www.who.int/chp/steps/GPAQ/en/index.html>) or to the WHO Global recommendations on physical activity for health ([http://www.who.int/dietphysicalactivity/factsheet\\_recommendations/en/index.html](http://www.who.int/dietphysicalactivity/factsheet_recommendations/en/index.html))

\*\*\* [https://www.cliawaived.com/web/items/pdf/PTS-1765\\_Glucose\\_Cholesterol\\_Test\\_Insert~1068file1.pdf](https://www.cliawaived.com/web/items/pdf/PTS-1765_Glucose_Cholesterol_Test_Insert~1068file1.pdf)

\*\*\*\*१० वर्ष मुटु रोग जोखिम  $\geq ३०\%$  लाई उमेर, लिङ्ग, रक्तचाप, धूम्रपान स्थिति (हाल धूम्रपान गर्नेहरू वा परिक्षण भन्दा १ वर्ष भन्दा कम समय अघि धूम्रपान छोड्नेहरू), जम्मा कोलेस्टरोल र मधुमेह (पहिले निदान गरिएको वा फास्टिङ प्लाज्मा ग्लूकोजको मात्रा  $> ७.० \text{ mmol/L}$  ( $1२६ \text{ mg/dL}$ )) को आधारमा परिभाषित गरिएको छ।



# नेपाल STEPS सर्वेक्षण, २०१९

## संक्षिप्त नतिजा

### प्रदेश ५



नेपालमा नसर्ने रोग सम्बन्धिय जोखिम तत्वको सर्वेक्षण (STEPS सर्वेक्षण) फेब्रुअरी देखि मे २०१९ सम्म गरिएको थियो । यस सर्वेक्षणमा जनसांख्यिक र बानीव्यहोरा सम्बन्धी (सुर्तिजन्य पदार्थ, मदिरा, आहार, शारीरिक क्रियाकलाप) विवरणहरु संकलन गरिएको थियो । मोटोपेन र उच्च रक्तचापको व्यापकता पत्ता लगाउन उचाइ, तौल र रक्तचाप जस्ता शारीरिक मापन गरिएको थियो । त्यसै गरी रगतमा चिनी र कोलेस्ट्रोलको मात्रा पत्ता लाउन बायोकेमिकल (biochemical) मापनहरु संकलन गरिएको थियो ।

यो सर्वेक्षण १५-६९ वर्ष उमेरका सहभागीहरूको परिपामहरू द्वारा गरिएको थियो । उक्त उमेर समुहको प्रतिनिधित्व गर्ने multistage sample design को प्रयोग गरिएको थियो । यस सर्वेक्षणमा ५५९३ जना वयस्कहरु सहभागी भएका थिए र समग्रमा, सहभागिता ८६.४% थियो । २०२४ मा STEPS सर्वेक्षण पुनः गर्ने योजना रहेको छ ।

	Both Sexes दुबैमा
<b>१५-६९ वर्ष उमेरका सहभागीहरूको परिपामहरू</b>	
<b>सुर्तिजन्य पदार्थ सेवन (Tobacco Use)</b>	
हाल सुर्तिजन्य पदार्थ (धुम्रपान वा धुँवारहित) सेवन गर्नेको प्रतिशत	३६.६
हाल धुम्रपान सेवन गर्नेको प्रतिशत	१७.३
हाल दैनिक धुम्रपान सेवन गर्नेको प्रतिशत	१२.९
हाल चुरोट (उत्पादन गरिएको चुरोट/हातले बेरेको चुरोट) सेवन गर्नेको प्रतिशत	१४.७
हाल धुँवारहित सुर्तिजन्य पदार्थ सेवन गर्नेको प्रतिशत	२६.९
हाल दैनिक धुँवारहित सुर्तिजन्य पदार्थ सेवन गर्नेको प्रतिशत	२१.७
दैनिक धुम्रपान गर्ने मध्य, पहिलो पटक धुम्रपान गर्न शुरु गर्दाको औसत उमेर	१८.४
<b>मच्यपान सेवन (Alcohol Consumption)</b>	
जीवनमा कहिल्यै मच्यपान सेवन नगर्नेको प्रतिशत	७४.५
बिगतमा मच्यपान सेवन गर्ने गरेको तर १२ महिना भित्र नगर्नेको प्रतिशत	४.८
हाल मच्यपान सेवन गर्नेको प्रतिशत (बितेको १२ महिना भित्रमा मच्यपान सेवन गरेको)	२०.७
हाल मच्यपान सेवन गर्नेको प्रतिशत (बितेको ३० दिन भित्रमा मच्यपान सेवन गरेको)	१९.१
बितेको ३० दिन भित्रमा अत्याधिक मच्यपान सेवन (६ वा ६ भन्दा बढी स्टान्डर्ड ड्रिंक्स) गर्नेको प्रतिशत (कुल जनसंख्या)	७.८
हाल मच्यपान सेवन (बितेको ३० दिनमा) गर्ने मध्य, बितेको ७ दिन भित्रमा छिमेकी देश/अन्य देशबाट किनेको वा पिउनलाई अयोग्य वा कर नतिरेको मादक पदार्थ पिउनेको प्रतिशत	७०.८
<b>आहार (Diet)</b>	
औसतमा १ दिनमा खाने गरेको फलफुल र/वा तरकारीको सर्भिङ्डको औसत संख्या (१ सर्भिङ्ड = ८० ग्राम)	२.०
औसतमा १ दिनमा ५ सर्भिङ्ड भन्दा थोरै फलफुल र/वा तरकारी खानेको प्रतिशत	९४.४
<b>नुन (Salt)</b>	
खाना खानु अघि वा खाइरहँदा खानामा नुन वा नुनीलो सस् सधैं वा प्राय थपेर खानेको प्रतिशत	९.१
नुन बढि मात्रामा हालिएको तयारी खानेकुरा (जंक फुड) सधैं वा प्रायजसो खानेको प्रतिशत	२५.६

	Both Sexes दुबैमा
१५-६९ वर्ष उमेरका सहभागीहरूको परिणामहरू	१.७
खानामा नुनको मात्रा नियन्त्रण गर्न सधैँ जसो केहि उपाय अपनाउनेको प्रतिशत (जस्तै तयारी खानेकुरा कम मात्रामा खाने वा खादै नखाने, घर बाहिरको खाना नखाने आदि)	९.७
औसत नुन सेवन प्रतिदिन (ग्राममा)(स्पष्ट युरिन परिक्षणमा आधारित)*	८.७
<b>शारीरिक क्रियाकलाप (Physical Activity)</b>	
अपर्याप्त शारीरिक गतिविधि गर्नेको प्रतिशत (प्रति हप्ता १५० मिनेट भन्दा कम समय मध्यम परिश्रम पर्ने वा सो सरहको गतिविधि भनेर परिभाषित गरिएको) **	७.२
प्रति दिन शारीरिक गतिविधिमा खर्च हुने औसत समयको मध्यक (मध्यम परिश्रम मिनेटमा) (इन्टर क्वार्टाइल रेन्जमा प्रस्तुत गरिएको)	२९०.०
<b>पाठेघरको मुख्यको क्यान्सरको स्क्रीनिङ (३० -४९ वर्ष उमेरको महिला) (Cervical Cancer Screening (women 30-49 years of age)</b>	
पाठेघरको मुख्यको क्यान्सरको (सर्विकल क्यान्सर) को परिक्षण गराउनेको प्रतिशत	९.८
वितेको ५ वर्ष भित्रमा पाठेघरको मुख्यको क्यान्सरको (सर्विकल क्यान्सर) को परिक्षण गराउनेको प्रतिशत	८.०
<b>मुख स्वास्थ्य (Oral Health)</b>	
दिनमा एक पटक वा बढी दाँत सफा गर्नेको प्रतिशत	८९.२
दाँत, मुख वा गिजाको समस्या( दुख्ने, सुन्निने, रगत आउने वा असजिलो हुने) हुने को प्रतिशत	१४.८
विगत १२ महिना भित्र दन्त चिकित्सक संग स्वास्थ्य जाँच गर्नेको प्रतिशत	१.७
<b>दुर्घटना, हिँसा तथा चोटपटक (Violence and injuries)</b>	
विगत १२ महिनामा, सडक दुर्घटनामा पर्नेको प्रतिशत	५.९
विगत ३० दिनमा, कुनै पनि सवारी साधन चलाउँदा वा सवारी साधनमा यात्रा गर्दा सधैँ वा कहिलेकाहिं सिट बेल्टको प्रयोग गर्नेको प्रतिशत	२.७
विगत ३० दिनमा, मोटरसाइकल वा स्कुटरमा यात्रा गर्दा सधैँ वा कहिलेकाहिं हेल्मेट प्रयोग गर्नेको प्रतिशत	३३.५
<b>मानसिक स्वास्थ्य (Mental Health)</b>	
केहि वा धेरै मात्रामा क्रम तथा व्यवसाय सम्बन्धि तनाव हुनेको प्रतिशत	५८.९
केहि वा धेरै मात्रामा घर मा हुने सामान्य तनावको प्रतिशत	६०.५
विगतका वर्षहरूमा तनावपूर्ण घटनाहरू को कारण धेरै तनाव हुनेको प्रतिशत	९.८
<b>विगत बाहु महिनामा जोर्नी तथा ढाडको दुखाई (Joint and back pain in last 12 months)</b>	
विगत बाहु महिनामा, दुर्घटनाबाहेक अरु कारणले एक महिना भन्दा बढी समय सम्म जोर्नीमा वा जोर्नीको वरिपरी दुखाई,झोरोपन वा सुजन हुनेको प्रतिशत	१८.९
विगत ३० दिनमा, ढाडमा दुखाई भएको कारणले गर्दा घरायसी क्रम गर्न अथवा काममा जान समस्या पर्नेको प्रतिशत	२०.२
विगत ३० दिनमा, गम्भीर रूपमा टाउको दुख्ने समस्या भएको कारणले गर्दा घरायसी काम गर्न अथवा काममा जान समस्या पर्नेको प्रतिशत	१७.२

१५-६९ वर्ष उमेरका सहभागीहरूको परिपामहरू		Both Sexes दुबैमा
<b>बढी मास इन्डेक्स र मोटोपन (BMI and Obesity)</b>		
औसत Body mass index - BMI ( $\text{kg}/\text{m}^2$ )	२२.२	
अधिक वजन र मोटोपन हुनेको प्रतिशत ( $\text{BMI} \geq २५ \text{ kg}/\text{m}^2$ )	१९.५	
मोटोपन हुनेको प्रतिशत ( $\text{BMI} \geq ३० \text{ kg}/\text{m}^2$ )	३.६	
<b>उच्च रक्तचाप, रगतमा चिनीको मात्रा र कोलेस्ट्रोल (Hypertension, Diabetes and raised cholesterol levels)</b>		
रक्तचाप बढी हुनेको प्रतिशत ( $\text{SBP} \geq १४० \text{ mmHg}$ र/वा $\text{DBP} \geq ९० \text{ mmHg}$ वा हाल उच्च रक्तचापको लागि औषधी खाइरहेको)	२८.२	
रगतमा चिनीको मात्रा बढी हुनेको प्रतिशत (फारिट ड ब्लड रल्कोज $\geq १२६ \text{ mg/dl}$ )वा हाल रगतमा बढी मात्रामा चिनी भएको कारण औषधी खाइरहेको) ***	६.४	
जम्मा कोलेस्ट्रोल (रगतमा चिलोपना) को मात्रा बढी हुनेको प्रतिशत ( $\geq ५.० \text{ mmol/L}$ वा $\geq १९० \text{ mg/dl}$ वा हाल कोलेस्ट्रोलको लागि औषधी खाइरहेको)	११.६	
<b>मुटु रोगको जोखिम (Cardiovascular disease (CVD) risk)</b>		
४०-६९ वर्ष उमेर समुहको लागि १० वर्ष भित्र मुटु रोगको जोखिम ३०% वा ३०% भन्दा बढी हुनेको प्रतिशत वा हाल मुटु रोग भएकाको प्रतिशत ****	२.१	
<b>स्वास्थ्य प्रणाली (Health system)</b>		
स्वास्थ्यकर्मीबाट रक्तचाप नापेको प्रतिशत (४०-६९ वर्ष भित्रको)	५१.१	
स्वास्थ्यकर्मीबाट रगतमा चिनीको मात्रा नापेको प्रतिशत (४०-६९ वर्ष भित्रको)	२०.९	
रक्तचाप मापन गर्दा उच्च रक्तचाप पाइएको र/वा औषधी खाइरहेको पाइएको को प्रतिशत	५.३	
रगत परिक्षण गर्दा रगतमा चिनीको मात्रा बढी पाइएको र/वा औषधी खाइरहेको पाइएको को प्रतिशत	२१.४	
स्वास्थ्य बीमा कार्यक्रममा सदस्यता भएकाको प्रतिशत	२.१	
उच्च रक्तचापको लागि सामान्यतया सरकारी संस्था/सेवा प्रदायकको मा जानेको प्रतिशत	३७.९	
मुख स्वास्थ्य सम्बन्धि समस्याको लागि सामान्यतया सरकारी संस्था/सेवा प्रदायकको मा जानेको प्रतिशत	२०.२	

\* दक्षिण युरोपको इन्टर-साल्ट समिकारण मा आधारित:

$$\text{Male: } (20.861 + 0.15 \times 0.45 \text{ Naspol} \left( \frac{\text{mmol}}{\text{l}} \right)) - 3.09 \times \text{Crespit} \left( \frac{\text{mmol}}{\text{l}} \right) - 1.16 \times \text{BMI} \left( \frac{\text{kg}}{\text{m}^2} \right) - 0.22 \times \text{Age (year)}$$

$$\text{Female: } (21.98 - 0.43 \times 0.45 \text{ Naspol} \left( \frac{\text{mmol}}{\text{l}} \right)) - 2.44 \times \text{Crespit} \left( \frac{\text{mmol}}{\text{l}} \right) + 2.42 \times \text{BMI} \left( \frac{\text{kg}}{\text{m}^2} \right) - 2.34 \times \text{Age (year)} - 0.03 \times \text{Age}^2 (\text{year})$$

\*\*अपर्याप्त शारीरिक गतिविधिको पूर्ण परिमाण को लागि, GPAQ विश्लेषण गाईड हेन्होस्.

(<http://www.who.int/chp/steps/GPAQ/en/index.html>) or to the WHO Global recommendations on physical activity for health ([http://www.who.int/dietphysicalactivity/factsheet\\_recommendations/en/index.html](http://www.who.int/dietphysicalactivity/factsheet_recommendations/en/index.html))

\*\*\* [https://www.cliawaived.com/web/items/pdf/PTS-1765\\_Glucose\\_Cholesterol\\_Test\\_Insert~1068file1.pdf](https://www.cliawaived.com/web/items/pdf/PTS-1765_Glucose_Cholesterol_Test_Insert~1068file1.pdf)

\*\*\*\*१० वर्ष मुटु रोग जोखिम  $\geq ३०\%$  लाई उमेर, लिङ्ग, रक्तचाप, धूम्रपान स्थिति (हाल धूम्रपान गर्नेहरू वा परिक्षण भन्दा १ वर्ष भन्दा कम समय अघि धूम्रपान छोड्नेहरू), जम्मा कोलेस्ट्रोल र मध्यमेह (पहिले निदान गरिएको वा फारिट ड्लाज्मा रल्कोजको मात्रा  $> ७.० \text{ mmol/l}$  ( $१२६ \text{ mg/dl}$ )) को आधार मा परिभाषित गरिएको छ ।



# नेपाल STEPS सर्वेक्षण, २०१९

## संक्षिप्त नतिजा

### कर्णाली प्रदेश



नेपालमा नसर्ने रोग सम्बन्धि जोखिम तत्वको सर्वेक्षण (STEPS सर्वेक्षण) फेब्रुअरी देखि मे २०१९ सम्म गरिएको थियो । यस सर्वेक्षणमा जनसांख्यिक र बानीव्यहोरा सम्बन्धी (सुर्तजन्य पदार्थ, मदिरा, आहार, शारीरिक क्रियाकलाप) विवरणहरु संकलन गरिएको थियो । मोटोपन र उच्च रक्तचापको व्यापकता पत्ता लगा उन उचाइ, तौल र रक्तचाप जस्ता शारीरिक मापन गरिएको थियो । त्यसै गरी रगतमा चिनी र कोलेस्ट्रोलको मात्रा पत्ता लाउन बायोकेमिकल (biochemical) मापनहरु संकलन गरिएको थियो ।

यो सर्वेक्षण ५५-६९ वर्ष उमेरका समुहका वयस्कहरुको जनसंख्यामा आधारित छ । उक्त उमेर समुहको प्रतिनिधित्व गर्न multistage sample design को प्रयोग गरिएको थियो । यस सर्वेक्षणमा ५५९३ जना वयस्कहरु सहभागी भएका थिए र समग्रमा, सहभागिता ८६.४% थियो । २०२४ मा STEPS सर्वेक्षण पुनः गर्ने योजना रहेको छ ।

५५-६९ वर्ष उमेरका सहभागीहरूको परिणामहरू		Both Sexes दुबैमा
<b>सुर्तजन्य पदार्थ सेवन (Tobacco Use)</b>		
हाल सुर्तजन्य पदार्थ (धुम्रपान वा धुँवारहित) सेवन गर्नेको प्रतिशत	२९.७	
हाल धुम्रपान सेवन गर्नेको प्रतिशत	२०.६	
हाल दैनिक धुम्रपान सेवन गर्नेको प्रतिशत	१६.३	
हाल चुरोट (उत्पादन गरिएको चुरोट/हातले बेरेको चुरोट) सेवन गर्नेको प्रतिशत	२०.३	
हाल धुँवारहित सुर्तजन्य पदार्थ सेवन गर्नेको प्रतिशत	१७.२	
हाल दैनिक धुँवारहित सुर्तजन्य पदार्थ सेवन गर्नेको प्रतिशत	१४.९	
दैनिक धुम्रपान गर्ने मध्य, पहिलो पटक धुम्रपान गर्न शुरु गर्दाको औसत उमेर	१७.६	
<b>मद्यपान सेवन (Alcohol Consumption)</b>		
जीवनमा कहिल्यै मद्यपान सेवन नगर्नेको प्रतिशत	७२.१	
बिगतमा मद्यपान सेवन गर्ने गरेको तर १२ महिना भित्र नगर्नेको प्रतिशत	४.९	
हाल मद्यपान सेवन गर्नेको प्रतिशत (बितेको १२ महिना भित्रमा मद्यपान सेवन गरेको)	२३	
हाल मद्यपान सेवन गर्नेको प्रतिशत (बितेको ३० दिन भित्रमा मद्यपान सेवन गरेको)	१९.६	
बितेको ३० दिन भित्रमा अत्यधिक मद्यपान सेवन (६ वा ६ भन्दा बढी स्टान्डर्ड ड्रिंक्स) गर्नेको प्रतिशत (कुल जनसंख्या)	८.८	
हाल मद्यपान सेवन (बितेको ३० दिनमा) गर्ने मध्य, बितेको ७ दिन भित्रमा छिमेकी देश/अन्य देशबाट किनेको वा पिउनलाई अयोग्य वा कर नतिरेको मादक पदार्थ पिउनेको प्रतिशत	६.७.७	
<b>आहार (Diet)</b>		
औसतमा १ दिनमा खाने गरेको फलफुल र/वा तरकारीको सर्भिङ्डको औसत संख्या (१ सर्भिङ्ड = ८० ग्राम)	९.९	
औसतमा १ दिनमा ५ सर्भिङ्ड भन्दा थोरै फलफुल र/वा तरकारी खानेको प्रतिशत	९६.९	
<b>नुन (Salt)</b>		
खाना खानु अघि वा खाइरहँदा खानामा नुन वा नुनीलो सस् सधैँ वा प्राय थपेर खानेको प्रतिशत	१२.०	
नुन बढि मात्रामा हालिएको तयारी खानेकुरा (जंक फुड) सधैँ वा प्रायजसो खानेको प्रतिशत	२१.२	

१५-६९ वर्ष उमेरका सहभागीहरूको परिणामहरू		Both Sexes दुबैमा
खानामा नुनको मात्रा नियन्त्रण गर्न सधैँ जसो केहि उपाय अपनाउनेको प्रतिशत (जस्तै तयारी खानेकुरा कम मात्रा मा खाने वा खाइँ नखाने, घर बाहिरको खाना नखाने आदि)	२.६	
औसत नुन सेवन प्रतिदिन (ग्राममा) (स्पष्ट युरिन परिक्षणमा आधारित)*	९.५	
<b>शारीरिक क्रियाकलाप (Physical Activity)</b>		
अपर्याप्त शारीरिक गतिविधि गर्नेको प्रतिशत (प्रति हप्ता ७५० मिनेट भन्दा कम समय मध्यम परिश्रम पर्ने वा सो सरहको गतिविधि भनेर परिभाषित गरिएको) **	४.२	
प्रति दिन शारीरिक गतिविधिमा खर्च हुने औसत समयको मध्यक (मध्यम परिश्रम मिनेटमा) (इन्टर क्वार्टाइल रेन्जमा प्रस्तुत गरिएको)	३००.०	
<b>पाठेघरको मुखको क्यान्सरको स्क्रीनिङ (३० -४९ वर्ष उमेरको महिला) (Cervical Cancer Screening (women 30-49 years of age))</b>		
पाठेघरको मुखको क्यान्सरको (सर्विकल क्यान्सर) को परिक्षण गराउनेको प्रतिशत	१५.८	
बितेको ५ वर्ष भित्र मा पाठेघरको मुखको क्यान्सरको (सर्विकल क्यान्सर) को परिक्षण गराउनेको प्रतिशत	११.६	
<b>मुख स्वास्थ्य (Oral Health)</b>		
दिनमा एक पटक वा बढी दाँत सफा गर्नेको प्रतिशत	८५.६	
दाँत, मुख वा गिजाको समस्या (दुख्ने, सुन्निने, रगत आउने वा असजिलो हुने) हुने को प्रतिशत	२१.९	
बिगत १२ महिना भित्र दन्त चिकित्सक संग स्वास्थ्य जाँच गर्नेको प्रतिशत	२.९	
<b>दुर्घटना, हिँसा तथा चोटपटक (Violence and injuries)</b>		
बिगत १२ महिनामा, सडक दुर्घटनामा पर्नेको प्रतिशत	४.५	
बिगत ३० दिनमा, कुनै पनि सवारी साधन चलाउँदा वा सवारी साधनमा यात्रा गर्दा सधैँ वा कहिलेकाहिं सिट बेल्टको प्रयोग गर्नेको प्रतिशत	६.२	
बिगत ३० दिनमा, मोटरसाइकल वा स्कुटरमा यात्रा गर्दा सधैँ वा कहिलेकाहिं हेल्मेट प्रयोग गर्नेको प्रतिशत	२१.३	
<b>मानसिक स्वास्थ्य (Mental Health)</b>		
केहि वा धेरै मात्रामा काम तथा व्यवसाय सम्बन्धि तनाव हुनेको प्रतिशत	५९.५	
केहि वा धेरै मात्रामा घरमा हुने सामान्य तनावको प्रतिशत	६३.५	
बिगतका वर्षहरूमा तनावपुर्ण घटनाहरू को करण धेरै तनाव हुनेको प्रतिशत	१३.५	
<b>बिगत बाहु महिनामा जोरी तथा ढाडको दुखाई (Joint and back pain in last 12 months)</b>		
बिगत बाहु महिनामा, दुर्घटनावाहक अरु करणले एक महिना भन्दा बढी समय सम्म जोरीमा वा जोरीको वरिपरी दुखाई, अहोरोपन वा सुजन हुनेको प्रतिशत	२५.९	
बिगत ३० दिनमा, ढाडमा दुखाई भएको कारणले गर्दा घरायसी काम गर्न अथवा काममा जान समस्या पर्नेको प्रतिशत	२३.६	
बिगत ३० दिनमा, गम्भीर रूपमा टाउको दुख्ने समस्या भएको कारणले गर्दा घरायसी काम गर्न अथवा काममा जान समस्या पर्नेको प्रतिशत	२२.७	

१५-६९ वर्ष उमेरका सहभागीहरूको परिपामहरू		Both Sexes दुबैमा
<b>बढी मास इन्डेक्स र मोटोपन (BMI and Obesity)</b>		
औसत Body mass index - BMI ( $\text{kg}/\text{m}^2$ )	२१.४	
अधिक वजन र मोटोपन हुनेको प्रतिशत ( $\text{BMI} \geq 25 \text{ kg}/\text{m}^2$ )	११.३	
मोटोपन हुनेको प्रतिशत ( $\text{BMI} \geq 30 \text{ kg}/\text{m}^2$ )	१.६	
<b>उच्च रक्तचाप, रगतमा चिनीको मात्रा र कोलेस्टरोल (Hypertension, Diabetes and raised cholesterol levels)</b>		
रक्तचाप बढी हुनेको प्रतिशत ( $\text{SBP} \geq 140 \text{ mmHg}$ वा $\text{DBP} \geq 90 \text{ mmHg}$ वा हाल उच्च रक्तचापको लागि औषधी खाइरहेको)	२१.४	
रगतमा चिनीको मात्रा बढी हुनेको प्रतिशत (फास्टिङ ब्लड ग्लूकोज $\geq 126 \text{ mg/dL}$ वा हाल रगतमा बढी मात्रामा चिनी भएको कारण औषधी खाइरहेको) ***	०.७	
जम्मा कोलेस्टरोल (रगतमा चिल्लोपना) को मात्रा बढी हुनेको प्रतिशत ( $\geq 5.0 \text{ mmol/L}$ वा $\geq 190 \text{ mg/dL}$ वा हाल कोलेस्टरोलको लागि औषधी खाइरहेको)	५.०	
<b>मुटु रोगको जोखिम (Cardiovascular disease (CVD) risk)</b>		
४०-६९ वर्ष उमेर समुहको लागी १० वर्ष भित्र मुटु रोगको जोखिम ३०% वा ३०% भन्दा बढी हुनेको प्रतिशत वा हाल मुटु रोग भएकाको प्रतिशत ****	३.७	
<b>स्वास्थ्य प्रणाली (Health system)</b>		
स्वास्थ्यकर्मीबाट रक्तचाप नापेको प्रतिशत (४०-६९ वर्ष भित्रको)	४३.०	
स्वास्थ्यकर्मीबाट रगतमा चिनीको मात्रा नापेको प्रतिशत (४०-६९ वर्ष भित्रको)	९.३	
रक्तचाप मापन गर्दा उच्च रक्तचाप पाइएको र/वा औषधी खाइरहेको पाइएको को प्रतिशत	८.१	
रगत परिक्षण गर्दा रगतमा चिनीको मात्रा बढी पाइएको र/वा औषधी खाइरहेको पाइएको को प्रतिशत	६७.०	
स्वास्थ्य बीमा कार्यक्रममा सदस्यता भएकाको प्रतिशत	३.७	
उच्च रक्तचापको लागि सामान्यतया सरकारी संस्था/सेवा प्रदायकको मा जानेको प्रतिशत	४६.०	
मुख स्वास्थ्य सम्बन्धि समस्याको लागि सामान्यतया सरकारी संस्था/सेवा प्रदायकको मा जानेको प्रतिशत	४२.५	

\* दक्षिण युरोपको इन्टर-साल्ट समिकारण मा आधारित:

$$\text{Male: } \left( 20.816 - 0.05 \times 0.05 \text{ Naesppt} \left( \frac{\text{mmol}}{\text{l}} \right) \right) - 3.09 \times \text{Gsppt} \left( \frac{\text{mmol}}{\text{l}} \right) - 2.16 \times \text{BMI} \left( \frac{\text{kg}}{\text{m}^2} \right) - 0.22 \times \text{Age (year)}$$

$$\text{Female: } \left( 21.98 - 0.05 \times 0.05 \text{ Naesppt} \left( \frac{\text{mmol}}{\text{l}} \right) \right) - 2.44 \times \text{Gsppt} \left( \frac{\text{mmol}}{\text{l}} \right) + 2.42 \times \text{BMI} \left( \frac{\text{kg}}{\text{m}^2} \right) + 2.34 \times \text{Age (year)} - 0.03 \times \text{Age}^2 (\text{year})$$

\*\*अपर्याप्त शारीरिक गतिविधिको पूर्ण परिभाषा को लागी, GPAQ विश्लेषण गाईड हेर्नुहोस्

(<http://www.who.int/chp/steps/GPAQ/en/index.html>) or to the WHO Global recommendations on physical activity for health ([http://www.who.int/dietphysicalactivity/factsheet\\_recommendations/en/index.html](http://www.who.int/dietphysicalactivity/factsheet_recommendations/en/index.html))

\*\*\* [https://www.cliawaived.com/web/items/pdf/PTS-1765\\_Glucose\\_Cholesterol\\_Test\\_Insert~1068file1.pdf](https://www.cliawaived.com/web/items/pdf/PTS-1765_Glucose_Cholesterol_Test_Insert~1068file1.pdf)

\*\*\*\*१० वर्ष मुटु रोग जोखिम  $\geq 30\%$  लाई उमेर, लिङ्ग, रक्तचाप, धूम्रपान स्थिति (हाल धूम्रपान गर्नेहरू वा परिक्षण भन्दा १ वर्ष भन्दा कम समय अघि धूम्रपान छोड्नेहरू), जम्मा कोलेस्टरोल र मधुमेह (पहिले निदान गरिएको वा फास्टिङ प्लाज्मा ग्लूकोजको मात्रा  $> 7.0 \text{ mmol/L}$  ( $126 \text{ mg/dL}$ )) को आधारमा परिभाषित गरिएको छ।



# नेपाल STEPS सर्वेक्षण, २०१९

## संक्षिप्त नतिजा

### सुदूरपश्चिम प्रदेश



नेपालमा नसर्ने रोग सम्बन्धी जोखिम तत्वको सर्वेक्षण (STEPS सर्वेक्षण) फेब्रुअरी देखि मे २०१९ सम्म गरिएको थियो । यस सर्वेक्षणमा जनसांख्यिक र बानीव्यहोरा सम्बन्धी (सुर्तजन्य पदार्थ, मदिरा, आहार, शारीरिक क्रियाकलाप) विवरणहरु संकलन गरिएको थियो । मोटोपन र उच्च रक्तचापको व्यापकता पत्ता लगाउन उचाइ, तौल र रक्तचाप जस्ता शारीरीक मापन गरिएको थियो । त्यसै गरी रगतमा चिनी र कोलेस्ट्रोलको मात्रा पत्ता लाउन बायोकेमिकल (biochemical) मापनहरु संकलन गरिएको थियो ।

यो सर्वेक्षण ५५-६९ वर्ष उमेर को समुहका वयस्कहरुको जनसंख्यामा आधारित छ । उक्त उमेर समुहको प्रतिनिधित्व गर्न multistage sample design को प्रयोग गरिएको थियो । यस सर्वेक्षणमा ५५.९३ जना वयस्कहरु सहभागी भएका थिए र समग्रमा, सहभागिता ८६.४% थियो । २०२४ मा STEPS सर्वेक्षण पुनः गर्ने योजना रहेको छ ।

५५-६९ वर्ष उमेरका सहभागीहरुको परिणामहरू	Both Sexes दुबैमा
<b>सुर्तजन्य पदार्थ सेवन (Tobacco Use)</b>	
हाल सुर्तजन्य पदार्थ (धुम्रपान वा धुँवारहित) सेवन गर्नेको प्रतिशत	३३.८
हाल धुम्रपान सेवन गर्नेको प्रतिशत	२६.६
हाल दैनिक धुम्रपान सेवन गर्नेको प्रतिशत	१८.३
हाल चुरोट (उत्पादन गरिएको चुरोट वा हातले बेरेको चुरोट) सेवन गर्नेको प्रतिशत	१९.८
हाल धुँवारहित सुर्तजन्य पदार्थ सेवन गर्नेको प्रतिशत	१६.८
हाल दैनिक धुँवारहित सुर्तजन्य पदार्थ सेवन गर्नेको प्रतिशत	१३.७
दैनिक धुम्रपान गर्ने मध्य, पहिलो पटक धुम्रपान गर्न शुरू गर्दाको औसत उमेर	१७.०
<b>मद्यपान सेवन (Alcohol Consumption)</b>	
जीवनमा कहिल्यै मद्यपान सेवन नगर्नेको प्रतिशत	६४.४
बिगतमा मद्यपान सेवन गर्ने गरेको तर १२ महिना भित्र नगर्नेको प्रतिशत	३.९
हाल मद्यपान सेवन गर्नेको प्रतिशत (बितेको १२ महिना भित्रमा मद्यपान सेवन गरेको)	३१.७
हाल मद्यपान सेवन गर्नेको प्रतिशत (बितेको ३० दिन भित्रमा मद्यपान सेवन गरेको)	२७.०
बितेको ३० दिन भित्रमा अत्यधिक मद्यपान सेवन (६ वा ६ भन्दा बढी स्टान्डर्ड ड्रिंक्स) गर्नेको प्रतिशत (कुल जनसंख्या)	६.९
हाल मद्यपान सेवन (बितेको ३० दिनमा) गर्ने मध्य, बितेको ७ दिन भित्रमा छिमेकी देश/अन्य देशबाट किनेको वा पिउनलाई अयोग्य वा कर नतिरेको मादक पदार्थ पिउनेको प्रतिशत	६०.९
<b>आहार (Diet)</b>	
औसतमा १ दिनमा खाने गरेको फलफुल र/वा तरकारीको सर्भिङ्डको औसत संख्या (१ सर्भिङ्ड = ८० ग्राम)	१.६
औसतमा १ दिनमा ५ सर्भिङ्ड भन्दा थोरै फलफुल र/वा तरकारी खानेको प्रतिशत	९८.८
<b>नुन (Salt)</b>	
खाना खानु अघि वा खाइरहँदा खानामा नुन वा नुनीलो सस् सधैँ वा प्राय थपेर खानेको प्रतिशत	१३.८
नुन बढि मात्रामा हालिएको तयारी खानेकुरा (जंक फुड) सधैँ वा प्रायजसो खानेको प्रतिशत	१३.७

	Both Sexes दुबैमा
१५-६९ वर्ष उमेरका सहभागीहरूको परिणामहरू	६.१
खानामा नुनको मात्रा नियन्त्रण गर्न सधैँ जसो केहि उपाय अपनाउनेको प्रतिशत (जस्तै तयारी खानेकुरा कम मात्रामा खाने वा खाइँ नखाने, घर बाहिरको खाना नखाने आदि)	६.१
औसत नुन सेवन प्रतिदिन (ग्राममा)(स्पष्ट युरिन परिक्षणमा आधारित)*	९.१
<b>शारीरिक क्रियाकलाप (Physical Activity)</b>	
अपर्याप्त शारीरिक गतिविधि गर्नेको प्रतिशत (प्रति हप्ता १५० मिनेट भन्दा कम समय मध्यम परिश्रम पर्ने वा सो सरहको गतिविधि भनेर परिभाषित गरिएको) **	९.४
प्रति दिन शारीरिक गतिविधिमा खर्च हुने औसत समयको मध्यक (मध्यम परिश्रम मिनेटमा) (इन्टर क्वार्टील रेन्जमा प्रस्तुत गरिएको)	२८२.९
<b>पाठेघरको मुख्यको क्यान्सरको स्क्रीनिङ (३० -४९ वर्ष उमेरको महिला) (Cervical Cancer Screening (women 30-49 years of age)</b>	
पाठेघरको मुख्यको क्यान्सरको (सर्विकल क्यान्सर) को परिक्षण गराउनेको प्रतिशत	८.८
बितेको ५ वर्ष भित्र मा पाठेघरको मुख्यको क्यान्सरको (सर्विकल क्यान्सर) को परिक्षण गराउनेको प्रतिशत	८.०
<b>मुख स्वास्थ्य (Oral Health)</b>	
दिनमा एक पटक वा बढी दाँत सफा गर्नेको प्रतिशत	९९.६
दाँत, मुख वा गिजाको समस्या( दुख्ने, सुन्निने, रगत आउने वा असजिलो हुने) हुने को प्रतिशत	२१.६
बिगत १२ महिना भित्र दन्त चिकित्सक संग स्वास्थ्य जाँच गर्नेको प्रतिशत	५.२
<b>दुर्घटना, हिँसा तथा चोटपटक (Violence and injuries)</b>	
बिगत १२ महिनामा, सडक दुर्घटनामा पर्नेको प्रतिशत	७.२
बिगत ३० दिनमा, कुनै पनि सवारी साधन चलाउँदा वा सवारी साधनमा यात्रा गर्दा सधैँ वा कहिलेकाहिं सिट बेल्टको प्रयोग गर्नेको प्रतिशत	४.३
बिगत ३० दिनमा, मोटरसाइकल वा स्कुटरमा यात्रा गर्दा सधैँ वा कहिलेकाहिं हेल्मेट प्रयोग गर्नेको प्रतिशत	१९.७
<b>मानसिक स्वास्थ्य (Mental Health)</b>	
केहि वा धेरै मात्रामा काम तथा व्यवसाय सम्बन्धि तनाव हुनेको प्रतिशत	४९.२
केहि वा धेरै मात्रामा घरमा हुने सामान्य तनावको प्रतिशत	६१.०
बिगतका वर्षहरूमा तनावपूर्ण घटनाहरू को कारण धेरै तनाव हुनेको प्रतिशत	११.३
<b>बिगत बाहु महिनामा जोर्नी तथा ढाडको दुखाइ (Joint and back pain in last 12 months)</b>	
बिगत बाहु महिनामा, दुर्घटनाबाहेक अरु कारणले एक महिना भन्दा बढी समय सम्म जोर्नीमा वा जोर्नीको वरिपरी दुखाइ,अहोरोपन वा सुजन हुनेको प्रतिशत	२५.६
बिगत ३० दिनमा, ढाडमा दुखाई भएको कारणले गर्दा घरायसी काम गर्न अथवा काममा जान समस्या पर्नेको प्रतिशत	२६.७
बिगत ३० दिनमा, गम्भीर रूपमा टाउको दुख्ने समस्या भएको कारणले गर्दा घरायसी काम गर्न अथवा काममा जान समस्या पर्नेको प्रतिशत	२३.४

१५-६९ वर्ष उमेरका सहभागीहरूको परिपामहरू		Both Sexes दुबैमा
<b>बढी मास इन्डेक्स र मोटोपन (BMI and Obesity)</b>		
औसत Body mass index - BMI ( $\text{kg}/\text{m}^2$ )		२१.५
अधिक वजन र मोटोपन हुनेको प्रतिशत ( $\text{BMI} \geq २५ \text{ kg}/\text{m}^2$ )		११.२
मोटोपन हुनेको प्रतिशत ( $\text{BMI} \geq ३० \text{ kg}/\text{m}^2$ )		१.८
<b>उच्च रक्तचाप, रगतमा चिनीको मात्रा र कोलेस्टरोल (Hypertension, Diabetes and raised cholesterol levels)</b>		
रक्तचाप बढी हुनेको प्रतिशत ( $\text{SBP} \geq १४० \text{ mmHg}$ वा $\text{DBP} \geq ९० \text{ mmHg}$ वा हाल उच्च रक्तचापको लागि औषधी खाइरहेको)		२१.०
रगतमा चिनीको मात्रा बढी हुनेको प्रतिशत (फास्टिङ ब्लड ग्लूकोज $\geq १२६ \text{ mg/dl}$ ) वा हाल रगतमा बढी मात्रामा चिनी भएको कारण औषधी खाइरहेको) ***		३.९
जम्मा कोलेस्टरोल (रगतमा चिल्लोपना) को मात्रा बढी हुनेको प्रतिशत ( $\geq ५.० \text{ mmol/L}$ वा $\geq १९० \text{ mg/dl}$ वा हाल कोलेस्टरोलको लागि औषधी खाइरहेको)		१०.०
<b>मुटु रोगको जोखिम (Cardiovascular disease (CVD) risk)</b>		
४०-६९ वर्ष उमेर समुहको लागि १० वर्ष भित्र मुटु रोगको जोखिम ३०% वा ३०% भन्दा बढी हुनेको प्रतिशत वा हाल मुटु रोग भएकाको प्रतिशत ****		९.८
<b>स्वास्थ्य प्रणाली (Health system)</b>		
स्वास्थ्यकर्मीबाट रक्तचाप नानेको प्रतिशत (४०-६९ वर्ष भित्रको)		५१.५
स्वास्थ्यकर्मीबाट रगतमा चिनीको मात्रा नानेको प्रतिशत (४०-६९ वर्ष भित्रको)		१४.५
रक्तचाप मापन गर्दा उच्च रक्तचाप पाइएको र/वा औषधी खाइरहेको पाइएको को प्रतिशत		३.६
रगत परिक्षण गर्दा रगतमा चिनीको मात्रा बढी पाइएको र/वा औषधी खाइरहेको पाइएको को प्रतिशत		६.४
स्वास्थ्य बीमा कार्यक्रममा सदस्यता भएकाको प्रतिशत		९.८
उच्च रक्तचापको लागि सामान्यतया सरकारी संस्था/सेवा प्रदायकको मा जानेको प्रतिशत		३२.०
मुख स्वास्थ्य सम्बन्धि समस्याको लागि सामान्यतया सरकारी संस्था/सेवा प्रदायकको मा जानेको प्रतिशत		४९.२

\* दक्षिण युरोपको इन्टर-साल्ट समिक्षण मा आधारित:

$$\text{Male: } \left( 20.061 - 0.45 \times 0.45 \text{ Nsppot} \left( \frac{\text{mmol/L}}{L} \right) \right) - 3.05 \times \text{Crspot} \left( \frac{\text{mmol/L}}{L} \right) + 4.16 \times \text{BMI} \left( \frac{\text{kg}}{\text{m}^2} \right) + 0.22 \times \text{Age (year)}$$

$$\text{Female: } \left( 21.98 + 0.33 \times 0.45 \text{ Nsppot} \left( \frac{\text{mmol/L}}{L} \right) \right) - 2.42 \times \text{Crspot} \left( \frac{\text{mmol/L}}{L} \right) - 7.42 \times \text{BMI} \left( \frac{\text{kg}}{\text{m}^2} \right) + 2.32 \times \text{Age (year)} - 0.03 \times \text{Age}^2 (\text{year})$$

\*\*अपर्याप्त शारीरिक गतिविधिको पूर्ण परिभाषा को लागि, GPAQ विश्लेषण गाईड हेर्नुहोस्

(<http://www.who.int/chp/steps/GPAQ/en/index.html>) or to the WHO Global recommendations on physical activity for health ([http://www.who.int/dietphysicalactivity/factsheet\\_recommendations/en/index.html](http://www.who.int/dietphysicalactivity/factsheet_recommendations/en/index.html))

\*\*\* [https://www.clinicaltrialsinregister.com/web/items/pdf/PTS-1765\\_Glucose\\_Cholesterol\\_Test\\_Insert~1068file1.pdf](https://www.clinicaltrialsinregister.com/web/items/pdf/PTS-1765_Glucose_Cholesterol_Test_Insert~1068file1.pdf)

\*\*\*\* १० वर्ष मुटु रोग जोखिम  $\geq ३०\%$  लाई उमेर, लिङ्ग, रक्तचाप, धूमपान स्थिति (हाल धूमपान गर्नेहरू वा परिक्षण भन्दा १ वर्ष भन्दा कम समय अघि धूमपान छोडूनेहरू), जम्मा कोलेस्टरोल र मधुमेह (पहिले निदान गरिएको वा फास्टिङ प्लाज्मा ग्लूकोजको मात्रा  $> ७.० \text{ mmol/L}$  ( $1२६ \text{ mg/dl}$ )) को आधारमा परिभाषित गरिएको छ।

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