STEPS

PREVALENCE OF NONCOMMUNICABLE DISEASE RISK FACTORS IN UKRAINE_2019

World Health Organization
REGIONAL OFFICE FOR Europe

МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ

ЦЕНТР ГРОМАДСЬКОГО ЗДОРОВ'Я

Український інститут соціальних досліджень імені Олександра Яременка
ГРОМАДСЬКА ОРГАНІЗАЦІЯ

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Abstract

In Ukraine, as in other countries, noncommunicable diseases (NCDs) remain the principal cause of morbidity, disability and premature mortality. The most effective way to reduce the NCD burden is to prevent NCD development, by addressing the behavioural risk factors underlying NCDs at the population and individual levels: smoking, alcohol use, excessive salt intake, low physical activity, overweight and obesity, and unhealthy diets.

In Ukraine, a national survey of the prevalence of major NCD risk factors, aligned with the WHO-endorsed STEPwise approach to surveillance (STEPS) methodology, was conducted for the first time in 2019. The survey results will allow an objective view of the current situation regarding the prevalence of NCD risk factors in the adult population of the country to be formed and will determine approaches to NCD prevention and control in Ukraine over the coming years.

Keywords

Noncommunicable diseases
Risk factors
Ukraine
Tobacco
Alcohol drinking
Diet
Physical activity
Obesity
Blood pressure
Cholesterol
Cardiovascular disease

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Contents

Foreword

by Dr Maxym Stepanov,
Minister of Health of Ukraine

Noncommunicable diseases (NCDs) are the leading cause of mortality worldwide and Ukraine is no exception. The main social and economic burden of NCDs is caused by four diseases: cardiovascular disease, diabetes, cancer and chronic obstructive pulmonary disease. All of these lead to long-term incapacity, reduced family well-being and lower productivity, as well as imposing a major burden on the country's health-care system and society in general.

NCDs in Ukraine are the cause of more than 80% of the years of potential life lost due to premature mortality and disability and about 90% of all deaths with high premature mortality rate. Almost 80% of all deaths in Ukraine are attributable to circulatory system diseases, tumours and respiratory diseases. This situation also affects average life expectancy, which is 72 years (66.3 and 76.3 years for men and women, respectively) – much lower than that of other European countries.

High mortality in the working-age population is a major reason for the low level of life expectancy. The life expectancy of Ukrainian men of working age is not only much lower than in western Europe, but also significantly lower than in central Europe. In particular, the probability of surviving between 15 and 60 years for Ukrainian men is about 62%, while in western Europe it exceeds 90%, and in neighbouring Poland, Czechia, Slovakia and Bulgaria it stands at about 80%. For women, the gap in these indicators is less pronounced.

Ukraine, like most other European countries, is characterized by a significant prevalence of NCD risk factors, which are responsible for the critical health indicators of the Ukrainian population. At the same time, it should be noted that until 2019 Ukraine did not have any national representative data on the main NCD risk factors, which certainly hindered the adoption of evidence-informed decisions that could potentially improve the situation. Fragmentary studies on individual risk factors, such as tobacco, revealed only the tip of the iceberg that the NCD burden represented.

The National Plan on Noncommunicable Diseases to achieve the global Sustainable Development Goals, adopted by the Government of Ukraine in 2018, has finally brought the issue of combating NCDs to the state level and marked the first decision made by the government to tackle NCDs on the basis of the principle "Health in All Policies". The plan, among other measures, provides for a number of national studies to be conducted on the prevalence of NCD risk factors among different age and gender groups.

The availability of such data will allow an assessment of the current situation and proposal of measures to enhance the health of the population, including improved access to prevention services. It will also facilitate monitoring of progress towards the defined goals.

As the STEPS survey was conducted in Ukraine for the first time, it was mainly aimed at obtaining basic information on the main NCD risk factors, both behavioural and biological. The country has included some additional questions related to mental health, cervical and breast cancer, injury and violence in the survey. In this way, the information obtained can serve as a starting point for monitoring NCD risk factors in Ukraine, allowing the effectiveness of the National Plan implementation to be monitored. At the same time, the study results make it possible to compare the prevalence of NCD risk factors in Ukraine with those of other countries and thus to choose the most effective preventive interventions for Ukraine on the basis of the best international practices.

The Ministry of Health of Ukraine and I personally would like to express our gratitude:

- to the WHO Country Office in Ukraine, for supporting Ukraine's efforts to ensure its participation in the implementation of the European Health Policy 2020 and the WHO Global and European Action Plans for the Prevention and Control of Noncommunicable Diseases at the national level;
- to the Representative Office of the World Bank in Ukraine and the WHO Regional Office for Europe, for the financial support provided to conduct the first round of the STEPS survey in Ukraine; and
- to all the personnel at international and national levels, for the technical assistance provided in conducting the research.

Foreword

by Dr Hans Henri P. Kluge,
WHO Regional Director for Europe

While noncommunicable diseases (NCDs) represent a significant global public health challenge, this is particularly so in Europe, where they cause 89% of deaths and 84% of years lived with disability. The current COVID-19 pandemic serves as a reminder of the impact of NCD comorbidities, which have a detrimental effect on both disease severity and sickness duration. Moreover, the impact of NCDs reaches well beyond population health and well-being, having a severe and detrimental effect on (among other things) direct and indirect health-care costs, household out-of-pocket expenditure, loss of healthy work life, absenteeism and decreased productivity. Population ageing and several common behavioural, biological, environmental and social risk factors interact to determine NCD frequency and distribution in the population, often creating health inequalities as they do so. Such risk factors are, for the most part, known and modifiable. However, in order to address them, countries need timely, accurate and comparable information about their frequency and distribution in populations. Such information is indispensable in order to plan health policies and strategies, to implement health interventions at both population and individual levels, to establish targets and monitor progress, and to evaluate health system performance.

Since information on NCDs and their risk factors is not customarily available in routine health information systems, the WHO Regional Office for Europe has adopted and further developed the WHO STEPwise approach to surveillance (STEPS) survey system, including improved measurement methods and tools, to support countries in collecting most of the basic NCD data and indicators. STEPS surveys now provide nationally representative data on the prevalence and distribution of key NCD risk factors and are adjusted and expanded, with the application of digital tools, to related areas, such as mental health, violence and injury, and patient-reported experience measures (PREMs). Many of the indicators collected through the STEPS surveys also respond to mandates relating to international surveillance and monitoring of NCDs, such as the WHO Global Action Plan for the Prevention and Control of NCDs 2013–2020 (GAP) and its Global Monitoring Framework (GMF), the European Action Plan for the Prevention and Control of NCDs 2016–2025, and the United Nations Sustainable Development Goals (SDGs), thus allowing progress on different health-related issues to be measured.

The European Programme of Work 2020–2025 (EPW) “United action for better health in Europe”, which I am proposing as a roadmap for health and well-being in the WHO European Region, will support national authorities to guarantee universal access to high-quality health care without the risk of

impoverishment, to offer effective protection against health emergencies, and to help healthy communities, where public health and health promotion ensure well-being for all, to thrive.

The STEPS survey in Ukraine makes an important and relevant contribution in this regard, as it measures not only the prevalence of NCD risk factors but also the coverage and effectiveness of selected priority interventions aimed at reducing them. It marks a very significant milestone as the country will have at its disposal, for the first time, comprehensive information to inform decision-making and the design of targeted policies to address the huge burden imposed by this group of largely preventable and amenable diseases, including cancers, cardiovascular diseases and diabetes, among others.

In particular, as mental health is one of my flagship initiatives, I am delighted that this specific edition of STEPS in Ukraine has included a module on depression and suicidal behaviour, which I am convinced can give a strong impulse to mental health action in the country.

Finally, I am convinced that implementation of the STEPS survey will prove to be a key strategic element in supporting the Ukrainian authorities to deal with NCDs and their risk factors as well as to improve the health and well-being of their people. The WHO Regional Office for Europe appreciates the contributions made by all the partners involved in successfully conducting the STEPS survey and reiterates its continued commitment to join and support Ukraine in its efforts to achieve united action for better health.

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Abbreviations

BMI	body mass index
BP	blood pressure
CI	confidence interval
CVD	cardiovascular disease
DBP	diastolic blood pressure
ESPAD	European School Survey Project on Alcohol and Other Drugs
GATS	Global Adult Tobacco Survey
HDL	high-density lipoprotein
HTP	heated tobacco product
NCD	noncommunicable disease
NGO	nongovernmental organization
PSU	primary sampling unit
SSU	secondary sampling unit
SBP	systolic blood pressure
TSU	tertiary sampling unit
UISR after O. Yaremenko	Ukrainian Institute for Social Research after Oleksandr Yaremenko

Executive **summary**

33.9%
of the population aged 18–69 years were current smokers

The aim of the study was to determine the nationally representative prevalence of major behavioural and biological risk factors for noncommunicable diseases (NCDs) among the adult population aged 18–69 years in Ukraine, including consideration of regional units and urban and rural settings for sampling and analysis. The population-based health examination survey was aligned with the WHO-endorsed STEPwise approach to surveillance (STEPS) principles, methods and procedures.

In brief, the survey used a questionnaire to gather socioeconomic and demographic data, including medical history of key NCDs and their common behavioural risk factors (such as tobacco use, alcohol consumption, unhealthy diet and insufficient physical activity). It also included a physical examination comprising measurements to assess risk factors such as raised blood pressure and overweight and obesity; and biochemical determination of risk factors such as raised blood glucose and cholesterol (through blood tests) and high sodium intake (through urine tests). In addition to core modules, optional modules on depression and suicidal behaviours, violence and injury, and cervical cancer were included.

Based on multistage cluster sampling, 7704 randomly selected households were approached, and 4409 participants agreed to take part in the survey and provide information (the response rate was 57%). Data collection was undertaken from July to November 2019.

The study revealed very high prevalence of NCDs and their behavioural and biological risk factors in Ukraine. One third (33.9%) of the population aged 18–69 years were current smokers, including half of all men (50.3%) and every sixth woman (16.7%). Novel tobacco products such as heated tobacco products and electronic cigarettes were increasingly used, especially by younger population groups, as well as hookah, which was used by 18.7% of the population aged 18–29 years. Every fifth current smoker (21%) had tried unsuccessfully to stop smoking; the proportion was particularly high among women aged 18–29 years, where nearly half (48.8%) had made an unsuccessful attempt to stop smoking.

Alcohol consumption was frequent and levels consumed were high in Ukraine. Two thirds of men and nearly half of women had consumed alcohol in the previous 30 days, with every fifth person (19.7%) consuming six or more drinks on a drinking occasion (heavy episodic drinking). Heavy episodic drinking was three times higher among men (29.5%) than among women (9.4%). Symptoms associated with alcohol dependence were noticeable among persons who had consumed alcohol over the previous 12 months, and three to four times more frequent among men than among women. Every eighth person (12.7%)

reported not being able to stop drinking once they had started, every tenth (10.8%) reported failing to do what was normally expected of them the next day, and every eighth (13.2%) drank in the morning to ease a hangover. Unrecorded alcohol (produced at home and other untaxed forms) was consumed frequently and accounted for 17.3% of total alcohol consumption.

Unhealthy dietary patterns were also common. Two thirds (66.4%) of the population did not consume a sufficient quantity of fruits and vegetables (five portions daily). Nearly half the population (44.9%) always or often added salt or salty sauce to their food before or during eating, two thirds (66.7%) always or often added salt to food when cooking at home, and a quarter (26.9%) always or often ate processed food with a high salt content. Average salt intake was 12.6 g per day – more than twice the maximum recommended level of 5 g per day. Only 13% of the population had a salt intake less than 5 g per day. On a positive note, levels of physical activity were high in Ukraine – among the highest in the WHO European Region. Only 10% of the population did not meet the WHO recommendation of at least 150 minutes of moderate-intensity physical activity, or equivalent, per week.

Every eighth adult (12.4%) in Ukraine had reported symptoms consistent with a clinical diagnosis of depression. However, only one in four people with probable depression (3.0% of the total population) had been told by a doctor or health-care professional that they had it. Only 0.4% of the population had undergone treatment, either with antidepressant medication or psychological therapy – equivalent to a treatment coverage rate of only 3.2% of probable cases of depression.

Adherence to road safety regulations was low in Ukraine. Half of those who had used a car in the previous 30 days did not always use a seat belt, reported that the driver was speeding, or used equipment such as mobile phones or tablets while driving. Helmet usage was very low: 82.2% of motorcycle or motor scooter drivers and passengers, and 95% of bicycle users, did not always use a helmet. Over the previous 12 months, 7% of the population had been involved in a road crash as driver, passenger, pedestrian or cyclist, and one third (35.4%) of these had injuries that required medical attention. In addition, 6.9% of the population had an unintentional injury other than a road crash requiring medical attention, with falls being the most common preventable cause of such injuries. Almost half of respondents (44.1%) were physically abused in childhood. Furthermore, 2.1% of women and 0.8% of men were sexually abused in childhood; 3.2% of women and 0.9% of men as adults.

Just over half of all women (53.1%) had undergone screening for cervical cancer on at least one occasion in their life. Among women who had received

19.7%

of the population had consumed six or more drinks on a drinking occasion (heavy episodic drinking)

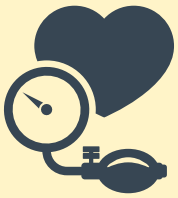
66.4%
of the population did not consume a sufficient quantity of fruits and vegetables (five portions a day)

abnormal/positive, suspected cancer or inconclusive results, the large majority (91.4%) received treatment to their cervix. Of the 46.9% of women who had not had a cervical cancer test, the reasons for not having a test were as follows: 48.7% did not have sufficient knowledge about the procedure (how and/or where to get a test); 7.8% mentioned embarrassment (fear of the visit being disclosed, social stigma); 26.5% did not have time to do the test; 7.8% said that the clinic was too far away; and 9.2% gave fear as the reason.

The mean body mass index (BMI) of an adult was 26.8 kg/m^2 and increased with age. Only two fifths (39.6%) of the population in Ukraine had normal weight (BMI 18.5–24.9 kg/m^2). Almost three fifths (59.1%) were overweight (BMI ≥25 kg/m^2), including a quarter of the population (24.8%) who were obese (BMI ≥30 kg/m^2). Both overweight and obesity increased sharply with age, and obesity was more prevalent among women (men: 20.1%; women: 29.8%).

One third of the population (34.8%) had raised blood pressure (BP) or hypertension, defined as levels of systolic blood pressure (SBP) ≥140 mmHg and/or diastolic blood pressure (DBP) ≥90 mmHg, or currently taking medication for raised BP. Of these, a third (33.6%) had not been previously diagnosed; 17.6% had been diagnosed but were not taking medication; 34.4% were on medication but BP was not controlled (SBP ≥140 and/or DBP ≥90 mmHg); and only 14.4% were on medication and had controlled BP levels (SBP <140 mmHg and DBP <90 mmHg).

Prevalence of raised fasting plasma glucose (≥7.0 mmol/L) or currently taking oral hypoglycaemic drugs or insulin was 7.1%, and nearly half of these people (3.8% of the overall population) had not previously been diagnosed with diabetes. In addition, 40.7% of the population had total blood cholesterol levels of ≥5.0 mmol/L or were currently on medication for raised cholesterol.



32.8%
of the population had 3–5 risk factors for developing CVD

Overall, 32.8% of the population had 3–5 risk factors for developing CVD, and 60.1% had 1–2, with the number of risk factors present increasing with age. In addition, a quarter (23.4%) of the population aged 40–69 years had a 30% or higher 10-year cardiometabolic risk of developing a CVD event such as stroke and myocardial infarction. However, only one third (36.6%) of these high-risk individuals were receiving medication and counselling for their prevention.

The STEPS survey collected a wealth of information on NCDs and their associated risk factors, providing, for the first time, comprehensive, internationally comparable and nationally representative data on these diseases and their risk factors in Ukraine. These data are now available to evaluate progress, to set priorities, and to plan necessary policies, interventions and actions to protect people's health and ingrain healthy attitudes over the coming years.

1. Background

1.1 Noncommunicable diseases worldwide

Noncommunicable diseases (NCDs) are currently the leading cause of death worldwide. According to WHO estimates (2018), 41 million deaths occur globally due to NCDs every year, and 15 million of these occur in the 30–69 age group.[1] Four disease groups, comprising cardiovascular diseases (CVDs), cancers, diabetes and chronic obstructive pulmonary diseases, account for about 80% of all deaths due to NCDs. A large proportion of NCD causes are preventable; these include modifiable behavioural risk factors such as tobacco use, unhealthy diet, lack of physical activity and harmful use of alcohol. These behavioural risk factors may also lead to biological ones, such as overweight and obesity, and raised blood pressure (BP), glucose and cholesterol. If no action is taken, over the next three decades the NCD burden will amount to trillions of dollars of lost resources due to the direct costs of health care and the indirect costs of wasted human and social capital. Feasible and cost-effective interventions to reduce the burden and impact of NCDs exist, and sustained action to prevent risk factors and improve health care can avert millions of preventable premature deaths.

1.2 NCDs in Ukraine

NCDs are the leading cause of premature death (death occurring before the age of 70 years) in Ukraine, accounting for 91% of the total number of deaths.[2] Among the four leading NCDs, the main causes of death are CVDs (accounting for 65.8% of all deaths from all causes in 2012; 67.0% in 2017), followed by cancer (14.0% in 2012; 13.6% in 2017).

Given the ageing population and the limited health measures currently in place, it is likely that the NCD burden in Ukraine will increase in the coming decades. Life expectancy in Ukraine remains relatively low compared to other countries of the WHO European Region: 72.2 years in 2017, compared to 82.7 years (for example) in France. Ukraine is experiencing gradual ageing of the population because of low birth rates and increasing life expectancy: the proportion of pensioners (men from 60 years; women from 58 years) in the country was 28.1% in 2017. As in other European countries, this has resulted in growing morbidity and mortality due to NCDs and hence an increasing financial and social burden on the national health system. These

NCDs CAUSE 91% OF ALL DEATHS IN UKRAINE

problems will become more serious if health systems are not properly adapted and relevant measures are not taken. Substantial challenges need to be overcome if the gap between Ukraine and other WHO European Region countries is to be reduced.

In 2013 the World Health Assembly adopted the Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013–2020.[3] The plan is articulated around six objectives and based on nine targets to be achieved by 2025; it will be monitored through 25 outcome indicators and nine progress indicators. The goal of the Global Action Plan is a 25% reduction in premature mortality from NCDs by 2025. Ukraine is involved in the implementation of the Action Plan for the Prevention and Control of Noncommunicable Diseases in the WHO European Region 2016–2025, the principal objective of which is to decrease the burden of preventable morbidity, disability and mortality due to NCDs.[4] On 26 July 2018 the National Action Plan on NCDs was approved by all relevant ministries and endorsed by the Cabinet of Ministers of Ukraine.[5]

Solving the various problems related to CVDs and diabetes represents a priority for Ukraine's Ministry of Health and for the government as a whole. Reliable data on the distribution of major NCD risk factors at the population level in Ukraine will assist in devising relevant policies, implementing efficient interventions to prevent and control NCDs, and monitoring the effectiveness of these interventions.

1.3 Prevalence of NCD risk factors in Ukraine

Tobacco use is one of the main causes of NCDs and premature deaths in Ukraine. 85 000 Ukrainian citizens die annually from diseases caused by tobacco. According to the Global Adult Tobacco Survey (GATS) 2010 and 2017,[6,7] the prevalence of daily smoking in Ukraine decreased by 20% between from 2010 and 2017. However, 23% of adults (8.2 million) currently used tobacco products. Men were five times more likely to be smokers than women. Thus, in the most economically productive age groups, i.e. 25–44-year-olds and 45–64-year-olds, 46.4% and 38.3%, respectively, of men smoked daily. Predictably, these groups suffered from the heaviest burden of NCDs – in particular, from cancer, cardiovascular and respiratory diseases. In the period 2013–2017, the prevalence of smoking among young people aged 18–30 years old also decreased (from 37% in 2013 to 26.7% in 2017, or by 28%). Prevalence of smoking among teenagers of 15–17 years declined consistently (from 21.2% in 2007 to 12.2% in 2015). These figures show that young people in Ukraine smoke less and less, and even more importantly, that fewer of them start smoking. At the same time, smoking electronic cigarettes and hookah gained popularity among young people.

Specifically, 11.3% of teenagers of 15–17 years smoked hookah, and 5.5% electronic cigarettes.

In 2016 alcohol consumption in Ukraine was 8.6 litre of pure alcohol per capita at the age of 15 and over. The European School Survey Project on Alcohol and Other Drugs (ESPAD) 2019 revealed that 85.7% of adolescents in Ukraine have used alcoholic beverages at least once during their lifetime.[8] According to an HBSC study conducted in 2018,[9] 39.4% of school-aged children stated that they had one or more experience of alcohol use.

According to the 2019 Health Index Survey,[10] every second adult Ukrainian (53.7%) is overweight. Overweight is more common among women, who have a slightly higher body mass index (BMI) (26.3) compared to men (25.9). The only sociodemographic group for which the observed average BMI is within the normal range is the youngest respondents, aged 18–29 (23.2); for all other age groups, the BMI value is gradually increasing – from 25.0 among 30–44-year-olds to 28.0 for those aged 60 years and older.

85 000

Ukrainian citizens die annually from diseases caused by tobacco

TO DETERMINE THE PREVALENCE OF BEHAVIOURAL AND BIOLOGICAL RISK FACTORS FOR NCDs

2. Survey goals and objectives

2.1 Survey goals

The primary goal of the survey was to ascertain key health indicator levels and patterns in the Ukrainian population, and their determinant factors, particularly the prevalence of behavioural and biological risk factors for NCDs, using the WHO STEPwise methodology.[11] The secondary goal was to improve NCD prevention programmes and the quality of medical care provision.

2.2 Survey objectives

To estimate the prevalence of behavioural and biological risk factors and medical history of NCDs, and their determinants among 18–69-year-olds, specifically:

- tobacco use
- alcohol consumption
- physical inactivity
- unhealthy diet
- overweight and obesity
- raised BP
- raised blood glucose
- history of cardiovascular diseases
- cervical and breast cancer screening
- injuries and violence
- depression and suicidal behaviour
- abnormal blood glucose and lipids
- mean population dietary salt intake.

To determine the associated behavioural causes of high BP, overweight, abnormal blood glucose, lipids and high dietary salt intake.

Based on the assessments above, to provide recommendations for developing and refining national NCD prevention and control policies and raising the quality of health-care services provision.

2.3 Rationale for the survey

Ukraine had never previously conducted a STEPS survey. However, the country systematically collects data, and produces and disseminates analytical materials on the topic of NCD risk factors, such as alcohol consumption and tobacco use in the population. The principal sources of these data and analytical materials are ESPAD 2019[8]; GATS 2010[6] and 2017[7]; and the Health Index Survey 2019[10].

STEPS surveys bring added value in terms of integrating reliable and comparable or standardized data concerning the main NCD risk factors, their distribution and association with socioeconomic attributes, making them the most valuable tool for designing and monitoring NCD prevention and control strategies. STEPS is also a health examination study and collects objective data, not only self-reported data, on the prevalence of biological risk factors.

This survey was conducted in accordance with WHO methodology that provides reliable and internationally comparable information on the prevalence of risk factors for NCDs in different countries across the world.[11]

The study of exposure to major risk factors and prevalence of four main NCDs in a specific context constitutes one of the foundations for prevention and control of NCDs, including monitoring progress of the National Action Plan on NCDs and implementation of related programmes.

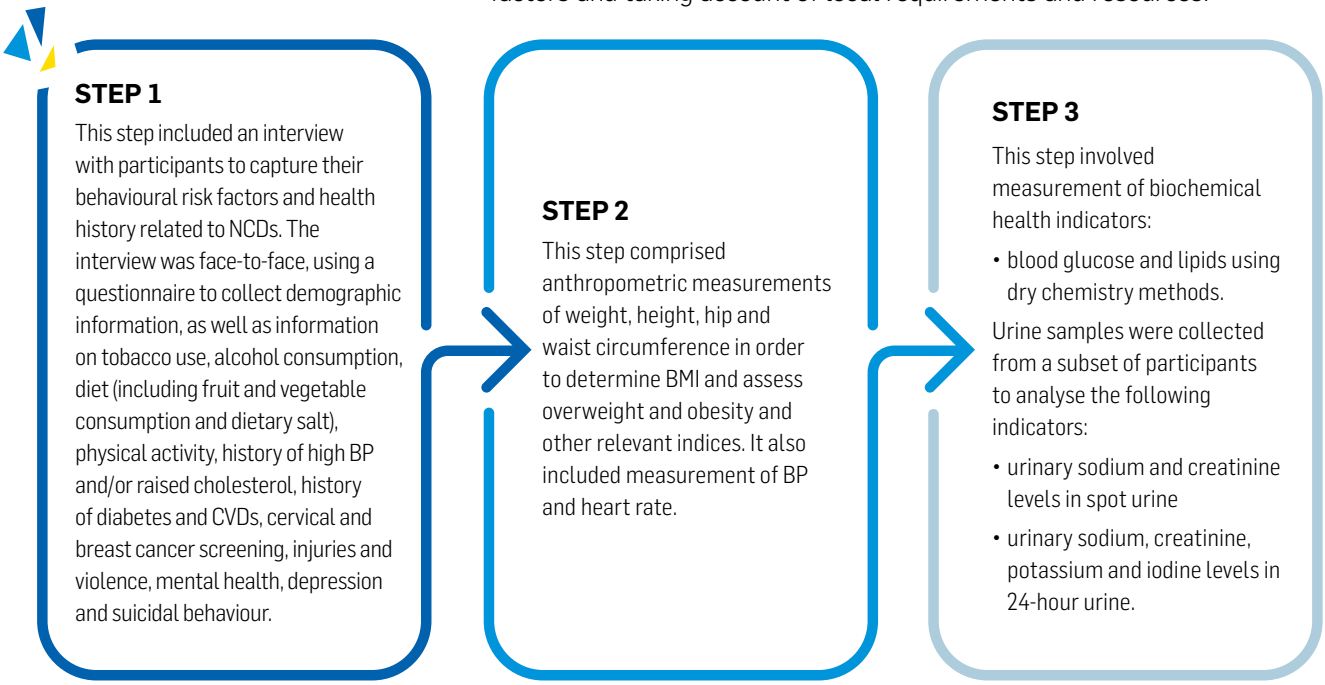
STEPS SURVEYS PROVIDE RELIABLE AND INTERNATIONALLY COMPARABLE INFORMATION ON THE PREVALENCE OF RISK FACTORS

3. Survey methodology

3.1 Survey design

A cross-sectional national survey was conducted between July and November 2019 to obtain data that are representative of the adult population of Ukraine, aged 18 to 69 years.

The survey was carried out using three consecutive steps, according to the WHO concept of using a stepwise approach to the surveillance of NCD risk factors and taking account of local requirements and resources.



The WHO STEPS instrument for chronic disease risk factor surveillance was translated from English into Ukrainian and Russian and used to take account of specific characteristics/requirements within the country.[12]

3.2 Sample size calculation

For simple random selection, the sample size was calculated using the following formula:

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

where:

n = necessary sample size;
Z = 1.96, for 95% confidence interval (CI);
P = 0.5 (expected prevalence of risk factors among the population – 50% assessment is the most conservative and demands maximum sample size; it can also be used in cases where there are no existing data);
d = margin of error (alpha, usually equals 0.05 for STEPS survey).

Thus, the calculation for the sample size is as follows:

$$n = \frac{1.96^2 \times 0.5 \times (1 - 0.5)}{0.05^2} = \mathbf{384.16}$$

To be able to analyse data obtained regarding sex and age groups, it is necessary to:

- multiply the sample size defined above by the number of groups;
- take the design effect into account (for STEPS research, the recommended complex sampling design effect value is **1.5**; see section 3.3 below for sampling design).

The list of sex and age groups is as follows:

(1) males, 18–29 years old
(2) males, 30–44 years old
(3) males, 45–59 years old
(4) males, 60–69 years old
(5) females, 18–29 years old
(6) females, 30–44 years old
(7) females, 45–59 years old
(8) females, 60–69 years old.

Thus, the sample size was defined in the following way: 384.16 × 8 × 1.5 = **4609.92** respondents. Taking into account the expected response rate, which was set at 60% based on the experience of other surveys (such as GATS 2017[7]), the sample size was corrected in accordance with this value by dividing the calculated product by 0.6.

Therefore, the sample size for survey implementation was **n = 4609.92/0.6 = 7683** (after rounding, approximately **7700**) households, assuming one respondent is selected for the survey from each household. Assuming the anticipated response rate of 60%, it was expected that there would be around **4610–4620** successful interviews.

7700

households were included in the survey

Sample subset for 24-hour urine data collection for salt determination

In general, to detect a reduction of approximately 1 g in salt intake over time using 24-hour urinary sodium excretion, with a standard deviation of 75 mmol/day (alpha = 0.05, power = 0.80), a minimum sample of 120 individuals per age and sex stratum is recommended. As limited resources were available, a decision was made to collect data for four population groups (not eight, as in the main survey). A response rate of approximately 27.3% after data cleaning was assumed. Calculations resulted in a minimum final sample size of **1764** individuals **(n = 120 × 4 ÷ 0.273 = 1764)**.

3.3 Sample structure

The general population of interest in the STEPS survey in Ukraine was defined as the national male and female population, aged between 18 to 69 years, urban and rural, resident in the country.

A challenge faced by the STEPS team was a lack of complete and updated information on the survey target population structure, as the last national population census was held in 2001 and no alternative sources were available. Ukraine has no national household registry either, which is a barrier to constructing a simple random sample. At the regional level, availability of data varies from location to location.

As there were no population or household registries in Ukraine, the electoral registry was suggested as the only available sampling frame for potential use in the survey implementation. Information on the number of electoral districts and electoral units, and the number of voters in each electoral unit, along with a description of the borders of electoral districts and units (a list of settlements, districts, streets, etc.) is publicly available. However, a further limitation to be addressed at the level of electoral units was that information on voters' addresses (settlement/street/house/apartment) is not publicly available. In the absence of detailed information on all individuals or households in the general population, it is impossible to apply the simple random sampling method, hence the need for an alternative approach. In such circumstances, **the multistage cluster sampling approach, with random selection of units at each stage**, is a suitable and efficient procedure, and was applied as follows.

STAGE 1

Primary sampling units (PSUs) – selection of electoral districts

The list of electoral districts used was one that covers the whole territory of the country and includes a sufficient number of districts (199*) for PSUs. Following the recommendations for STEPS survey implementation,[13] the number of PSUs to include lies within a range of 50–100.

To build a representative nationwide sample, 66 electoral districts were selected randomly out of 199. The probability of selection for each electoral district is 0.332 (66/199).

* Herein and afterwards, the territories are meant to be those controlled by the Government of Ukraine.

STAGE 2

Secondary sampling units (SSUs) – electoral units inside selected PSUs

At this stage, a list of all the electoral units in the selected PSUs was created – approximately 10 000 units in all; from these, the final list of units was selected.

The population of Ukraine is spread unevenly between settlement types (urban, 69.4%; rural, 30.6% in 2019)[14] and the number of rural electoral units is higher than the number of urban ones (as rural electoral units are smaller in size). To take account of this, a stratified sampling of urban and rural units was performed, with 70% electoral units being urban and 30% rural. Thus, 449 out of 3922 urban electoral units were selected using a random number generation method, while 193 rural electoral units (or 30%) were likewise selected out of 5935. The probability of selection of every urban electoral unit is 0.1145 (449/3922) and for every rural electoral unit 0.0325 (193/5935).

In addition, out of these 642 electoral units, 147 were selected randomly for salt/sodium determination in spot and 24-hour urine collections.

STAGE 3

Tertiary sampling units (TSUs) – households

According to national standard criteria,[15] a household is defined as a set of people who live together in one residential building or part of it, provide themselves with everything necessary for life, lead a joint economy, and fully or partially unite and spend money. These people may be in a family or kinship relationship, not in any of these relationships, or in these and other relationships. A household can consist of one person.

To achieve the required sample size of 7700 households, it was necessary to randomly select 12 households per SSU.

To work around the lack of household addresses (street, house/apartment number) in the database, the following procedures were used to randomly select households within the SSUs (electoral units) in both rural and urban areas.

For rural areas

To select households, the database of postal addresses (street, house number), which is publicly available, was used. Each address was paired with one household. The fieldwork coordination team made a preliminary random selection of 12 households in each SSU for the survey and sent them to the interviewer teams.

For urban areas

For locations in which the population lives in apartment buildings, the following procedure was used:

(1) the interviewer team received a list of household addresses that were included in the selected SSU (electoral unit);

(2) as the first step of their work in the SSU, the interviewer team visited all selected addresses and determined the number of apartments in multi-apartment buildings;

(3) interviewers then reported data on the number of apartments in each building to the coordination team;

(4) the coordination team generated a list of apartments in the SSU, selected 12 households using a random selection algorithm, and sent back the information for the interviewer team to use.

In addition, reserve households were randomly selected in each SSU, for both rural and urban areas, to address some potential issues. If, during household visits, the interviewers found that a given address from the initial 12 households belonged not to a residential house/apartment but to non-residential premises (such as a post office, shop, hospital or school in a rural area, or a solicitor, hairdresser or some other business in an urban area) or if the address did not exist at all, they would send this information to the coordination team. The coordination team would then replace the non-residential address with a reserve address (which had been randomly selected beforehand). There were no other cases of address replacement.

After the list of households in the 642 selected electoral units had been drawn up and 12 households selected randomly from each SSU, the probability of selection was calculated for each household (based on the number of households in each electoral district).

STAGE 4

Participant selection

At the final stage, a selection of household resident participants was made from the selected households using the eSTEPS mobile application.[16]

Inclusion criteria

A person may be included in the survey if they:

- are 18–69 years old;
- have lived in a household for three months or more;
- have left a household less than one month ago;
- have physical and mental ability to participate in the survey.

Exclusion criteria

A person should be excluded from the survey if they:

- are service personnel who live outside the home while on military service;
- are in prison facilities;
- have an alcohol or drug intoxication condition that prevents them from participating in the study or presents a threat to the survey team.

Pregnant women are excluded for some parts of the survey, including height and weight measurements, waist and hip circumference, and urine collection.

All participants sign an informed consent form; any person who does not sign the form should be excluded.

As a **result of fieldwork**, the next population sample was obtained:

General sample

- 642 SSUs comprising 7704 households
- 4409 respondents participated in the survey

Response rate: 57%

Non-response:
- 27% – unavailable households (apartment or house not inhabited or no one answered the door)
- 16% – refusals

Urine subsample

- 147 SSUs comprising 1764 households
- 359 spot urine samples collected

Response rate: 20%

Non-response:
- 23% – unavailable households
- 57% – refusals

- 264 24-hour urine samples collected

Response rate: 15%

Non-response:
- 23% – unavailable households
- 62% – refusals

3.4 Data collection process

3.4.1 Timeframe

Overall, the STEPS survey was conducted in Ukraine from February to December 2019. Planning, logistical procedures and fieldwork preparations were undertaken during February–June 2019. Field data collection was undertaken for 19 weeks from July to November, while data analysis was done in December 2019.

The survey entailed face-to-face interviews with a questionnaire, conducting physical measurements and biochemical testing. An expanded WHO STEPS questionnaire was converted into Excel and uploaded onto Android tablets to collect and record responses. Entered data were sent to a dedicated, password-protected database established on a WHO web platform immediately after an interview or at the end of each day. Paper questionnaires were used occasionally for cases of tablet failure.

3.4.2 Survey tools and methods

STEP 1 Survey questionnaire on NCD behaviours, medical history and health care

The English 3.2 version of the WHO STEPS questionnaire and tools (including standard operating procedures and training materials) were translated and

adapted to specific Ukrainian conditions by the Ukraine survey team and made available in both Ukrainian and Russian languages.

A STEPS questionnaire with core and expanded items was used to collect sociodemographic data and health behavioural information on tobacco use, alcohol consumption, diet and physical activity. Other information collected included: medical history of high BP, total blood cholesterol and/or high-density lipoprotein (HDL) cholesterol, diabetes, CVDs, lifestyle counselling, breast and cervical cancer screening, depression and suicidal behaviour, and violence and injury.

29.5%

9.4%

Heavy episodic drinking was three times higher among men than among women

Tobacco use

Tobacco use was assessed with standardized questions on current (past 30 days) and previous smoking; frequency of smoking (daily or not, formerly smoked, never smoked); age of initiation and duration of smoking; type and amount of tobacco use, daily or weekly; smokeless tobacco use by type and frequency; exposure to second-hand smoking at home or at workplace; advice received from health professional; and age and time since smoking stopped. Questions were also asked about smoking cessation attempts. Showcards were adapted to the local context and used to clarify terms used.

Alcohol consumption

Alcohol consumption was assessed using the concept of a standard drink, signifying any drink that contains about 10 g of pure alcohol. It has been determined that approximately 30 ml of spirits, 120 ml of wine or 285 ml of beer contain this amount of alcohol. To facilitate identification, showcards with different types of containers commonly used to consume alcoholic beverages as standard drinks in Ukraine were shown to participants, in order to determine consumption over 30 and seven days prior to interview. Also, to estimate total alcohol consumption, interviewers considered not only the most popular types of alcohol but also less common ones, asking how much of these drinks were consumed on each occasion. Furthermore, the questionnaire included questions on stopping alcohol consumption for health or other reasons.

Respondents who reported consuming alcohol within the past 30 days were classified as current drinkers; those who reported no consumption of alcoholic beverages within the previous 12 months as abstainers or ex-drinkers. In addition, heavy episodic drinking patterns were determined by asking questions about the largest number of drinks consumed per drinking occasion and by considering the percentage of people who had consumed six or more standard drinks on one occasion over the past 30 days.

Diet

To determine the dietary patterns of the survey population, participants were asked about the frequency of their fruit and vegetable consumption, the average number of portions of these foods consumed daily, the amount of salt added and/or salty sauces used, and their consumption of processed foods.

To assess whether consumption of fruits and vegetables was sufficient, the number of servings (of 80 g each) was determined and compared to the WHO recommendation of five or more servings per day. Showcards were used to assist recollection of fruit and vegetable consumption on a typical day. The population mean number of daily portions and of days per week on which fruits and/or vegetables were consumed was calculated.

To assess salt consumption, participants were asked how often they added salt or a salty sauce to food during preparation, or before or while eating, and how frequently they consumed processed foods high in salt. Participants were also asked about their perception of the quantity of salt they consumed, the link between salt and health problems, the importance of reducing salt intake, and measures that can be taken to control it.

Frequency of consumption of sugared soft drinks was also assessed.

Physical activity

Physical activity was assessed using the WHO Global Physical Activity Questionnaire,[17] which collects data based on frequency, duration and intensity of physical activity in three domains: at work (paid or unpaid, at and away from home), during travel (transport-related) and in leisure time, for at least 10 minutes or more continuously per day. Showcards were used to depict different types and places of physical activity.

The WHO global recommendations on physical activity for (good) health suggest that, in the course of a week, an adult should do at least the following amount of physical activity: 150 minutes of moderate-intensity physical activity; or 75 minutes of vigorous-intensity physical activity; or an equivalent combination of moderate- and vigorous-intensity physical activity.

Mean and median minutes of physical activity per day by domain were computed; in addition, time spent on sedentary activities on average per day was calculated. The proportion of participants not meeting the WHO recommendations was also calculated.

Medical history and lifestyle advice

The STEPS survey collected information on self-reported measurement, diagnosis and treatment of high BP, high glucose and high cholesterol.

Information on history of diagnosis of diabetes and CVD and use of aspirin and lipid-lowering drugs for CVD prevention was also assessed. This information opens up possibilities for exploring several aspects of health service use and NCD management. Furthermore, in combination with actual measurements of risk factors, results of this kind allow assessment of selected aspects of universal health coverage, including unmet health-care needs, and performance of the health system in addressing the main NCDs and risk factors. Participants were asked about any advice given by a doctor or health worker over the previous 12 months about reducing common risk factors for NCDs, such as quitting or not starting tobacco use, reducing salt intake, consuming at least five servings of fruits and vegetables daily, reducing fat in the diet, starting or increasing physical activity, maintaining a healthy body weight or losing weight, and reducing consumption of sugary beverages.

50%

Half of those who had used a car in the previous 30 days did not always use a seat belt

Cervical and breast cancer screening

Cervical cancer screening, treatment, knowledge and access to health system services were assessed. Cervical cancer screening status was assessed by asking whether participants had ever undergone Pap smear (cytology) or other appropriate test procedures. This method is important in differential diagnosis of malignant, benign, precancerous and inflammatory lesions. Several questions regarding place of examination, communication of screening results, follow-up and treatment were asked. Reasons for not taking a cervical cancer test were assessed as well. Breast cancer screening status was assessed by asking participants when they had ever undergone specific tests, including clinical breast examination and mammogram.

Depression and suicidal behaviour

History of depression diagnosed by a health-care worker and subsequent treatment by pharmacological or nonpharmacological means were assessed. Selected depressive symptoms (sadness, loss of interest, low energy, loss of appetite, sleep problems, etc.) were assessed and evaluated with an established algorithm consistent with clinical symptoms of depression, which was also used in WHO's Study on Global Ageing and Adult Health (SAGE).[18] The module also included questions about thoughts, plans and suicide attempts.

Violence and injury

This part contained questions on different experiences and behaviours related to road traffic injuries, drinking alcohol while driving (or as a passenger), and safety and violence.

34.8%
One third of the population had raised BP or hypertension

STEP 2 Physical measurements

Objective information was obtained through physical measurements. Blood pressure, heart rate and anthropometrical measures – height, weight, waist and hip circumference – were obtained as follows.

Blood pressure

Resting BP levels, both systolic (SBP) and diastolic (DBP), were measured using a digital device and a standardized procedure as recommended by WHO.[19] Three measurements were taken and recorded at three-minute intervals, but only the second and third readings were used in the analysis to obtain a participant's mean value. Survey participants were also asked whether they had taken medication for high BP over the previous two weeks, as prescribed by a physician or other health professional.

Participants were classified according to their BP readings in the following categories:

- **normal** if their SBP and DBP readings were <140 mmHg and <90 mmHg, respectively;
- **raised** if their SBP was ≥140 mmHg and/or their DBP was ≥90 mmHg, or if their readings were normal but they had been under treatment for raised BP in the past two weeks.

In addition, *high* levels of SBP ≥160 mmHg and/or DBP ≥100 mmHg were also determined among participants to assess a higher risk of developing CVD.

Respondents with raised BP were further categorized to determine detection rate and treatment success, as follows:

- under medication and controlled (treatment success) = those taking medication and having SBP <140 mmHg and DBP <90 mmHg;
- under medication and uncontrolled = those taking medication and having SBP ≥140 mmHg and/or DBP ≥90 mmHg;
- undetected and uncontrolled = those not taking medication and having SBP ≥140 mmHg and/or DBP ≥90 mmHg.

59.1%
Almost three fifths of the population were overweight (BMI ≥25 kg/m^2)

BMI

Measurements of participants' weight and height were carried out while standing on a flat, horizontal and firm surface. Standardized and calibrated SECA digital floor scales and portable stadiometers were used. To measure height and weight more precisely, participants were asked to follow standard procedures, including removal of shoes and any bulky or heavy clothing to avoid overestimations. Recordings of weight and height were taken with a precision of one decimal place in kilograms (kg) and centimetres (cm), respectively. Pregnant women were excluded from these measurements.

BMI was determined as the ratio of weight/height^2 and reported in kg/m^2.

Once BMI ratios had been determined, participants in the sample population were categorized according to the following WHO recommendations:

- underweight if BMI <18.5 kg/m^2
- normal weight if BMI ≥18.5 and <25 kg/m^2
- overweight if BMI ≥25.0 and <30 kg/m^2
- obese if BMI ≥30 kg/m^2.

Average population BMI levels and the proportion of the population in the above-mentioned categories were determined.

7.1%

Prevalence of raised fasting plasma glucose (≥7.0 mmol/L) or currently taking oral hypoglycaemic drugs or insulin was 7.1%

Waist and hip circumferences

Waist circumference and hip circumference and their ratio were also assessed as other measures of obesity, in particular of central obesity.

Waist circumference measurements were made while a participant remained standing, using a non-stretch MyoTape measuring tape with millimetre precision. Waist circumference was measured by placing a tape measure around the bare abdomen at the midpoint between the lower margin of the last palpable rib and the top of the iliac crest.

STEP 3 Biochemical markers

Blood tests

Biomarker levels among survey respondents were determined to assess raised blood glucose, total cholesterol and HDL cholesterol, as indicators of risk of hyperglycaemia and diabetes and cardiometabolic risk.

Blood glucose, total cholesterol and HDL cholesterol were measured using a portable dry chemistry instrument (CardioChek Plus Analyzer) as recommended by WHO. Blood samples were taken after at least 12 hours of fasting by trained personnel in each team. The procedure was performed in the respondent's household or in the testing centre set up by the survey team where possible. The fingertip was used to facilitate withdrawal of 40–50 µL of blood. Results were recorded on paper for participants and registered in the Android tablet according to the personal identification number in the QR code for submission to the platform.

Mean population plasma glucose and blood lipid levels and their 95% CIs were calculated. Proportions of the population were categorized according to the WHO cut-off points for glucose, total cholesterol and HDL cholesterol (Table 1).

Table 1. Biochemical blood indicator cut-off points as recommended by WHO

Biochemical indicator	Normal	At risk	Increased
Plasma glucose	<6.1 mmol/L	≥6.1 mmol/L and <7.0 mmol/L	≥7 mmol/L or using glucose-lowering drugs
Total cholesterol	<5.0 mmol/L	≥5.0 mmol/L to 6.1 mmol/L	≥6.2 mmol/L or using cholesterol-lowering drugs
HDL cholesterol			
Men	≥1.03 mmol/L	<1.03 mmol/L	
Women	≥1.3 mmol/L	<1.3 mmol/L	

Urine tests

On the day of the survey, after completion of Steps 1 and 2, participants in "urine subsample" TSUs were asked to provide urine for spot analysis. The urine collection procedure was explained and the participants were provided with one 10 ml test tube and a 60 ml container. They were requested to start the urine collection immediately in the household and performed the void into the tube provided (in order to obtain concentrations of sodium and creatinine in the spot urine).

In order to avoid diurnal variations, the gold-standard approach to assessing population salt intake is to obtain urine samples collected over 24 hours. After the blood tests, participants in "urine subsample" TSUs were asked to provide urine collected over the next 24 hours. The urine collection procedure was explained and the participants provided with one 5-litre container. Participants were invited to come to the testing centre set up by the survey team or were visited in their homes by the study team 24 hours after the start of urine collection. At this point, the weight of the collected urine was measured and two 10 ml aliquots of 24-hour urine were taken for analysis (this is done in order to obtain concentrations of sodium, creatinine, potassium and iodine in the 24-hour urine).

44.9%

Nearly half the population always or often added salt or salty sauce to their food before or during eating

Urine samples for sodium, creatinine and potassium analysis were cooled and brought by the survey team to test centres of the preselected company – the Synevo Laboratory – which has an extensive network of branches and pick-up points for analysis throughout the country. Laboratory staff sent results of urine analysis to the survey team (according to the respondent's identification code).

Urine samples for iodine analysis were sent by the survey team to the preselected laboratory in Kyiv – the Institute of Endocrinology and Metabolism named after V.P. Komisarenka of the National Academy of Medical Sciences of Ukraine. Altogether, 359 spot urine samples were collected, and 264 24-hour urine samples.

3.4.3 Field staff

Sixty-three interviewers, recruited by the nongovernmental organization (NGO) Ukrainian Institute for Social Research after Oleksandr Yaremenko (UISR after O. Yaremenko), were involved in fieldwork and managed by a team supervisor.

TWO TRAINING WORKSHOPS WERE CONDUCTED

3.4.4 Training of field staff

Two training workshops were conducted in order to prepare interviewers for fieldwork.

The main workshop (13–17 May 2019) covered the following topics.

- Information about survey purpose, goals and objectives
- Getting acquainted with the survey flow
  - sample structure, access to households
  - documents and forms: tracking forms, informed consent forms
  - respondent selection and recruitment
  - ethics of communication with respondents
  - Step 1 data collection process, including registration of population in selected households and use of questionnaire
  - Steps 2 and 3: taking physical and biochemical measurements
- Getting acquainted with equipment, including practical piloting
  - Android tablets
  - digitalized BP monitors
  - scales
  - stadiometers
  - measuring tape for waist and hip circumference
  - biochemical devices for dry chemistry measuring of blood lipids and blood glucose

Training also included piloting survey instruments and tools in the field. After this, participants' comments and suggestions were discussed by the national team and incorporated in the final versions of the questionnaire.

In addition, the workshop provided a platform for testing the performance of CardioChek devices. Interviewers ran tests for glucose and blood lipids taken from other participants and recorded their results. Staff of an ISO 17025-accredited laboratory then collected venous blood to run the same tests in the laboratory. This procedure allowed the accuracy of CardioChek measurements to be validated.

An additional workshop (24–25 June 2019) was conducted to train interviewers in the process of urine collections for both spot and 24-hour determination of salt/sodium excretion.

3.4.5 Ethical considerations

All aspects of the survey were conducted in accordance with relevant standards and operational guidance.[20] Ethical approval for the survey was obtained from two ethical committees – the Public Health Centre of the Ukrainian Ministry of Health and the Sociological Association of Ukraine.

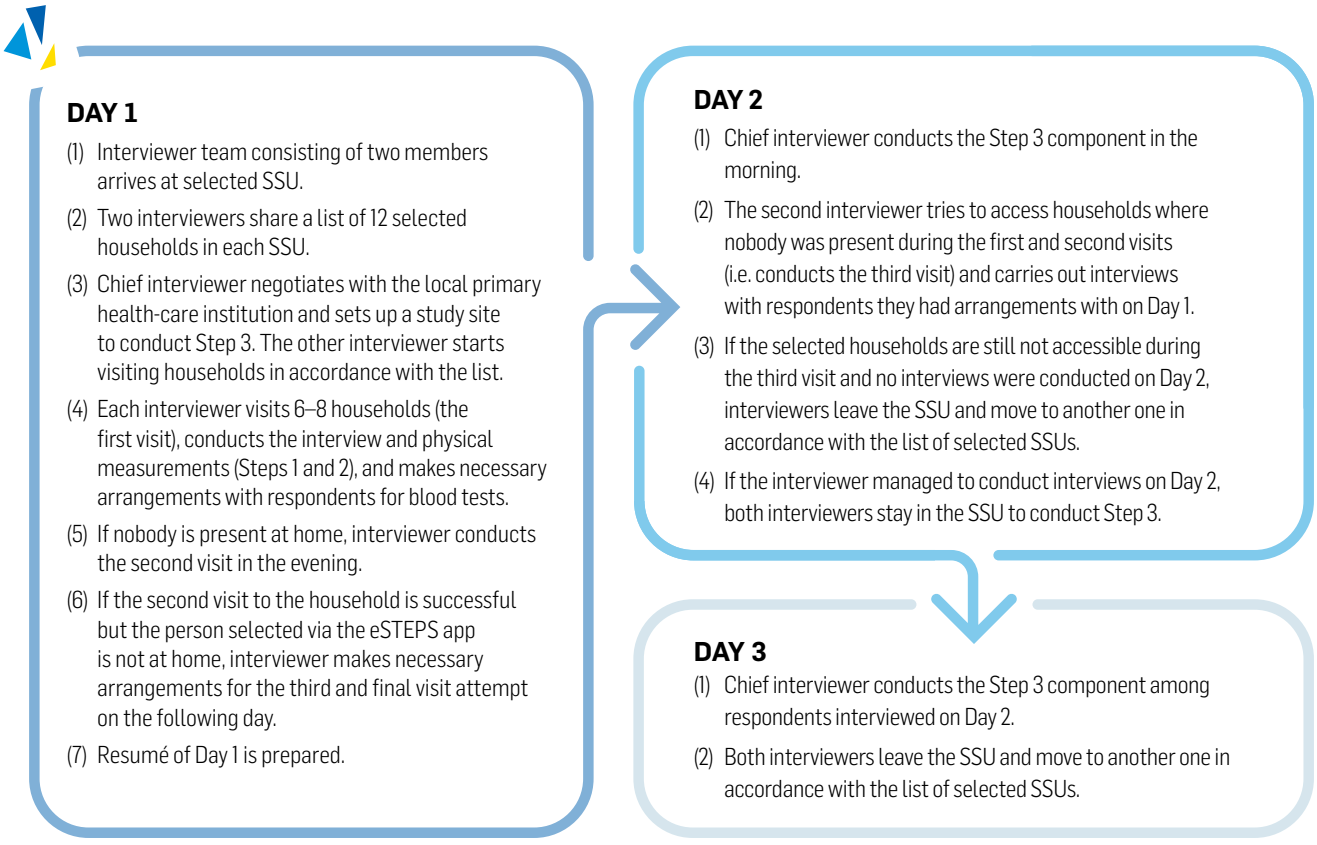
3.4.6 Informed consent and participant feedback

A core informed consent form was used for Steps 1 and 2, and a separate (additional) form was used for Step 3 on the following day. Before starting an interview, the interviewer gave the form to the respondent to read (or read it to them) and asked if they had any questions; the respondent then signed it, and a copy of each form was left with the respondent and one kept for the survey team. Interviews were conducted in a manner that ensured respondents' confidentiality and privacy. After each step, participants were provided with personalized feedback on their risk factors (such as BP and plasma glucose levels).

3.4.7 Data collection algorithms

The following fieldwork algorithms were applied.

For SSUs where no urine collection was required



For SSUs where urine sample was required

DAY 1

(1) Interviewer team consisting of two members arrives at selected SSU.

(2) Two interviewers share a list of 12 selected households in each SSU.

(3) Chief interviewer negotiates with the local primary health-care institution and sets up a study site to conduct Step 3. The other interviewer starts visiting households in accordance with the list.

(4) Each interviewer visits 6–8 households (the first visit), conducts the interview and physical measurements (Steps 1 and 2), provides a container for spot urine test if the respondent has been selected for this test and receives the urine sample for spot analysis, and makes necessary arrangements with respondents for blood tests.

(5) If nobody is present at home, interviewer conducts the second visit in the evening.

(6) If the second visit to the household is successful but the person selected via the eSTEPS app is not at home, interviewer makes necessary arrangements for the third and final visit attempt on the following day.

(7) Resumé of Day 1 is prepared.

DAY 2

(1) Chief interviewer conducts the Step 3 component in the morning and provides respondent with a container for 24-hour urine test if they have been selected for this test.

(2) The second interviewer tries to access households where nobody was present during the first and second visits (i.e. conducts the third visit) and carries out interviews with respondents they had arrangements with on Day 1.

(3) If the selected households are still not accessible during third visit, no interviews were conducted on Day 2, and no respondents received containers for 24-hour urine on Day 2, interviewers leave the SSU and move to another one in accordance with the list of selected SSUs.

(4) If the interviewer managed to conduct interviews on Day 2 or they need to collect 24-hour urine from respondents who received containers on Day 2, both interviewers stay in the SSU to conduct Step 3.

DAY 3

(1) Chief interviewer conducts the Step 3 component among respondents interviewed on Day 2 and provides these respondents with a container for 24-hour urine test if they have been selected for this test.

(2) Interviewers collect 24-hour urine samples from respondents who received containers for 24-hour urine on Day 2.

(3) If there are no respondents who begin to collect 24-hour urine on Day 3, the two interviewers leave the SSU and move to another one in accordance with the list of selected SSUs.

DAY 4

(1) Interviewers collect 24-hour urine samples from respondents who received containers for 24-hour urine on Day 3.

(2) Both interviewers leave the SSU and move to another one in accordance with the list of selected SSUs.

3.4.8 Data entry

Data entry was done on mobile devices used by each member of the survey team to record respondents' answers to the Step 1 interview and the physical and biochemical results from Steps 2 and 3, with the exception of the results from the urine analysis of sodium, creatinine, potassium and iodine, which were sent separately by central laboratories.

The survey coordinator had access to data uploaded to the server from the survey team tablets and monitored the quality of data entered. WHO eSTEPS software was used on the Android tablets to capture all the survey data (except urine test-related questionnaires and results from urine analysis). Each tablet stored data both locally and on the WHO platform. Urine-related questionnaires were filled in on paper and later entered electronically by the UISR after O. Yaremenko team.

DATA ENTRY
ON MOBILE DEVICES

Android tablet devices had a SIM card from a mobile operator, which allowed continuous access to the internet and entered data to be sent immediately after the interview or at the end of each day to the database on the WHO platform.

3.4.9 Data management

During all stages of the survey, survey data, hosted on the WHO platform, were accessible to the UISR after O. Yaremenko analytical team, the Public Health Centre team, and staff from the WHO European Office for the Prevention and Control of NCDs and WHO headquarters.

Data quality control measures were taken before and during the field stage and during the data-cleaning process. A number of automatic checks were incorporated into the questionnaire, making most of the questions mandatory (while still allowing participates to refuse to give an answer) and preventing entry of implausible values. Skip patterns and automatic transitions to appropriate follow-up questions were implemented to facilitate the interview process. For regular monitoring of sampling progress and quality of collected data, the survey team provided an analysis of the data collection process on a weekly basis. In addition, WHO provided regular data quality reports with an overview of the distribution and disaggregation of key quality-assurance indicators. In the event of data mismatch or data entry errors, interviewers received relevant feedback and adjustments were made. Cleaning of the database was conducted on the WHO platform.

Data collection tools included mechanisms for improving data quality and minimizing the probability of entering incorrect data. For example, interviewers visited only addresses from a predefined list of households that were registered with data collection software; respondents from households were selected automatically by the data collection software algorithm; coordinates of the place of interview were saved using a GPS module in the tablets; and every respondent received a unique identification QR code that was scanned with the tablet to match their blood and urine samples, thus preventing typing errors.

In addition, the survey supervisors team conducted control telephone calls with a random sample of respondents (sample size 20% of the overall sample) for validation of their participation in the survey and verification of the quality of the interview. Monitoring visits to data collection sites were also conducted during the field stage.

Data cleaning was done prior to data analysis, following guidance provided by WHO in the eSTEPS manual.[21] This included checking ranges and combinations of variables, detecting and handling missing data and outliers.

For 24-hour urine data, separate data cleaning and normalization were conducted. As part of the data cleaning, urine samples were excluded in the following circumstances:

(1) participants declaring that they had missed more than one void of urine in the collection period;

(2) urinary volume <500 mL;

(3) duration of urine collection <21 hours or >27 hours; and

(4) 24-hour urinary creatinine excretion outside two standard deviations of the sex-specific distribution.

Data cleaning resulted in valid urine samples from 113 participants. Furthermore, in order to adjust for difference in duration of urine collection, data were normalized to 24 hours.

3.4.10 Weighting of data

Given the complex nature of the survey sampling, appropriate weighting of data was essential to ensure that the results were representative of the target population (i.e. resident adults aged 18–69 years in Ukraine). Weights were calculated to adjust for each of the following aspects: the probability of selection of an individual (i.e. sample weight) and non-response rate at household level, and differences in age and sex distribution between the sample and target population. Separate weights were calculated for each step of the survey.

3.4.11 Data analysis

Data analysis was conducted by UISR after O. Yaremenko and Public Health Centre specialists using Epi Info version 3.5 software,[22] with tools and analysis commands developed by WHO and adapted for use by the Ukraine survey team.

A WHO-supported workshop for data management and analysis was conducted on 25–29 November 2019, following completion of fieldwork and processing of collected data. The objective of the workshop was to review procedures and train survey staff to undertake proper data analysis using WHO-proposed NCD indicators and guidelines. Topics covered in the workshop included:

(a) data management, including uploading, cleaning and checking of the survey database;

(b) weighting procedure;

(c) basic descriptive data analysis, including comparing the effect of sample weighting on results;

(d) use of Epi Info analysis software, including running of programmes developed by WHO, generating new variables, presenting results in multidimensional tabular standardized format, and their interpretation;

(e) creating the Databook based on STEPS standard reporting tools, with main tables and graphs; and

(f) creating a fact sheet, highlighting key survey results.

Guidelines provided by WHO were used as the basis for developing the survey report, including main indicators and the set of data tables. The survey report consists of descriptive statistics with means, medians, proportions and frequency distributions.

The prevalence and measures of central tendency of NCD risk factors were estimated. Outcome measures (prevalence and mean variance) and differences between groups (age, sex and urban/rural groups) were assessed with a 95% CI. Margins of error in prevalence and in measures of central tendency are represented by standard errors, 95% CIs or interquartile ranges, which are also provided as a measure of variability.

3.4.12 Risks and benefits

Risks

When a blood sample is taken, there is a risk of infection, albeit small. To address this risk, all necessary safety precautions were taken: single-use lancets (special needles for piercing skin in a sealed case) were used; skin was cleaned with an alcohol wipe; and the person taking the blood sample wore single-use gloves.

Respondents' concerns about body measurements or blood and urine test results were addressed by referring people to the nearest health facility for professional help. Respondents were reminded that results were written down in the booklet on NCDs they had received and should be brought to the health professional.

Data safety measures were taken to minimize the risk of survey data leaks. All survey personnel signed confidentiality agreements, obliging non-disclosure of research data, while collected data were stored on secure servers. In addition, different stages of research were performed by different people.

Interviews and measurements were conducted in the household in conditions ensuring privacy and confidentiality, in a separate room with only respondent and interviewer present. This minimized the risk of the interviewee's responses causing conflicts with other members of the household.

FEEDBACK OF TEST RESULTS AND MEASUREMENTS WAS PROVIDED TO PARTICIPANTS

Benefits

After taking part in the survey, respondents received their test results and measurements free of charge: BP, height, weight and BMI, hip and waist circumference, and blood glucose and lipids. In addition, respondents were given a booklet with useful information about NCDs and advice on how to reduce NCD risk factors. These benefits were especially valuable for members of the rural population, who have less access, both physical and financial, to health care and laboratory tests that can provide useful information on their health status and risk factor levels.

Incentives for participants

Participation in the survey was free of charge for respondents. The research team created conditions and procedures that helped to minimize any additional cost or inconvenience to respondents. All necessary equipment and materials were provided to participants. In particular, respondents received a special set of containers for collecting the 24-hour urine sample which helped them to keep to their normal daily schedule (for food, work and leisure). Respondents were able to control how much time and effort they gave to participating in the survey.

CONDITIONS AND PROCEDURES THAT **MINIMIZE INCONVENIENCE TO PARTICIPANTS**

4. Survey results

In the body of the main report, only selected results are presented. Detailed tabulations of all questions are given in the standard STEPS Databook.[23] Data were analysed by sex, age group and setting (urban/rural). Differences between population groups are in general mentioned only in case of statistical significance, assessed by non-overlapping CIs.

4.1 Sociodemographic data

The social and demographic indicators analysed were age, sex, ethnicity, marital status, education and type of employment over the previous 12 months. Results for these indicators are not weighted.

Of the 4409 respondents, 1648 were men (37.4%) and 2761 were women (62.6%). Nearly 60% of all respondents were aged 45–69 years, the proportions being similar by sex.

Average length of education was 12.8 years. Most respondents had completed special secondary education (48.5%), followed by those who had completed college/university (29.7%) and high school (13.7%). Other types of education were completed by less than 10% of respondents.

The great majority (94.6%) of the population considered themselves Ukrainian; the remainder were 3.6% Russians, 0.5% Belarusians and 1.3% who considered that they belonged to other ethnic groups.

Slightly more than half (51.6%) of the population were married. Among the remainder, 15.3% were widowed (men: 8.1%; women: 19.6%); 13.8% were divorced (men: 10.4%; women: 15.9%); 11.4% were never married (men: 16.5%; women: 8.3%); 4.8% were married but lived separately from their spouse; and 3.0% cohabitated.

Almost a quarter of the population (22.2%) had been employed by state-owned enterprises and public institutions over the previous year (men: 16.1%; women: 26.0%), 16.3% of respondents were self-employed (men: 21.8%; women: 12.9%), and 5.6% were employees of NGOs (men: 7.3%; women: 4.5%). More than half the population (55.9%) claimed to have other employment status. Of these, 54.7% were economically inactive people who were able to work (men: 48.5%; women: 58.4%), 15.3% were retired (men: 3.0%; women: 22.6%), 0.2% were at school or university, 5.0% were homemakers or dependants, 13.5% were involved in unpaid work (men: 25.1%; women: 6.6%), and 11.4% were unable to work (men: 17.2%; female: 7.9%).

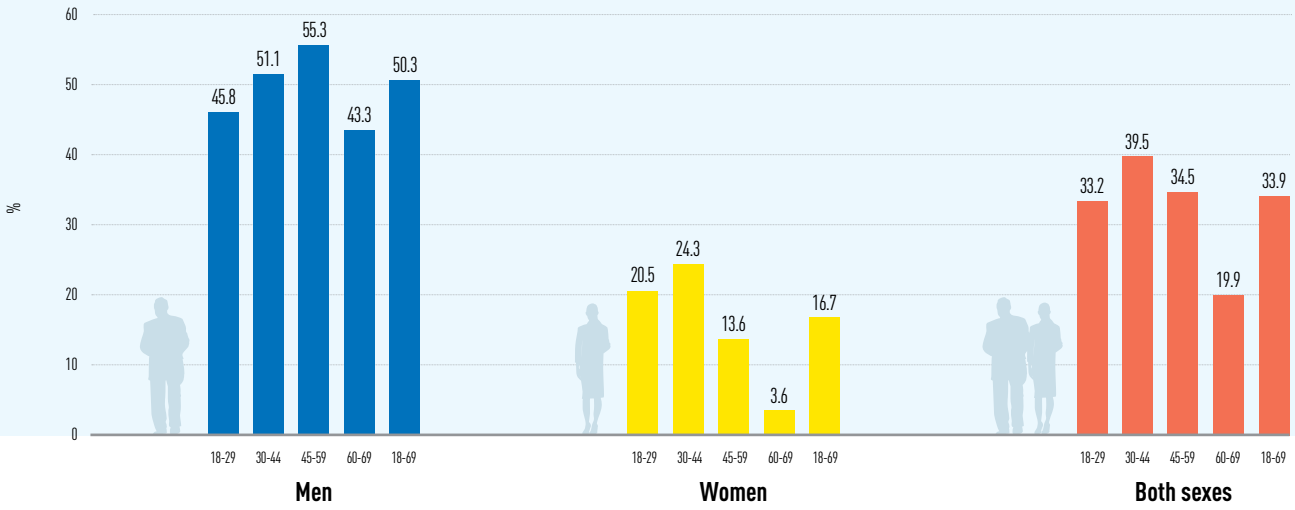


Fig. 1. Proportion of population who were current smokers, by age and sex (%)

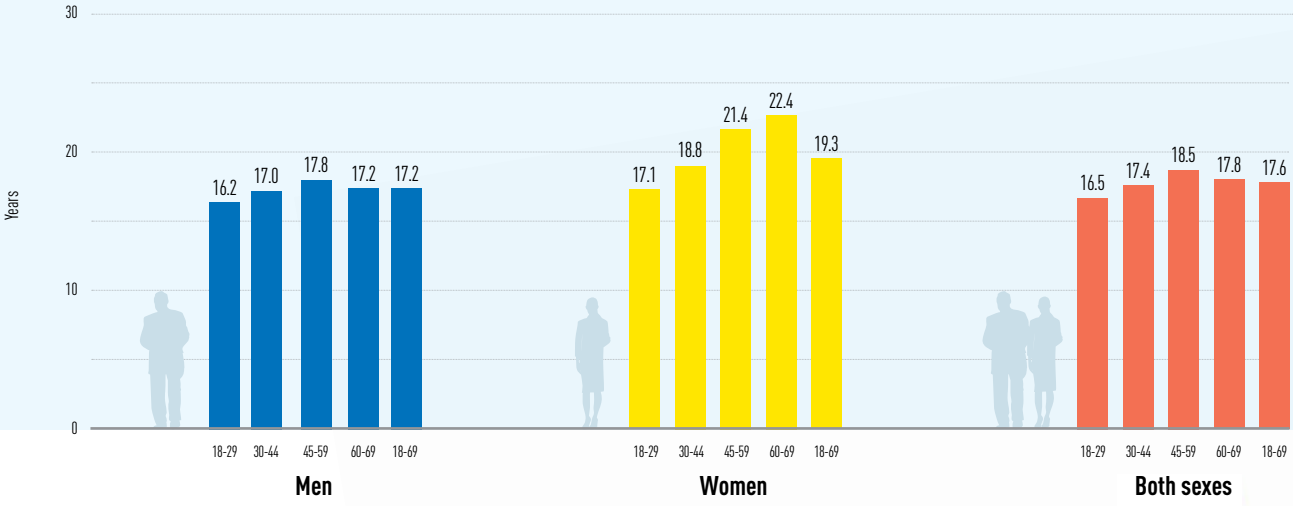
4.2 Tobacco use

4.2.1 Smoked tobacco

Just over one third of the population (33.9%) currently smoked tobacco (Fig. 1). Smoking was three times more prevalent among men (50.3%) than among women (16.7%), without significant differences between rural and urban areas. After reaching a peak at different ages, smoking prevalence tended to decline with increasing age in both men and women, although it had somewhat different patterns across the life course.

The majority of current smokers smoked tobacco products on a daily basis (83.9%), with slight differences between sexes: 88.3% of men and 71.6% of women. The average age when smokers started smoking was 17.6 years (Fig. 2). Women usually started smoking later than men – at the age of 19.3 years, compared to 17.2 years for men – and the population in younger age groups tended to start smoking earlier in life. There were no major differences between urban and rural areas in the proportion of daily smokers and age at smoking initiation.

Fig. 2. Mean age of smoking initiation, by sex (years)



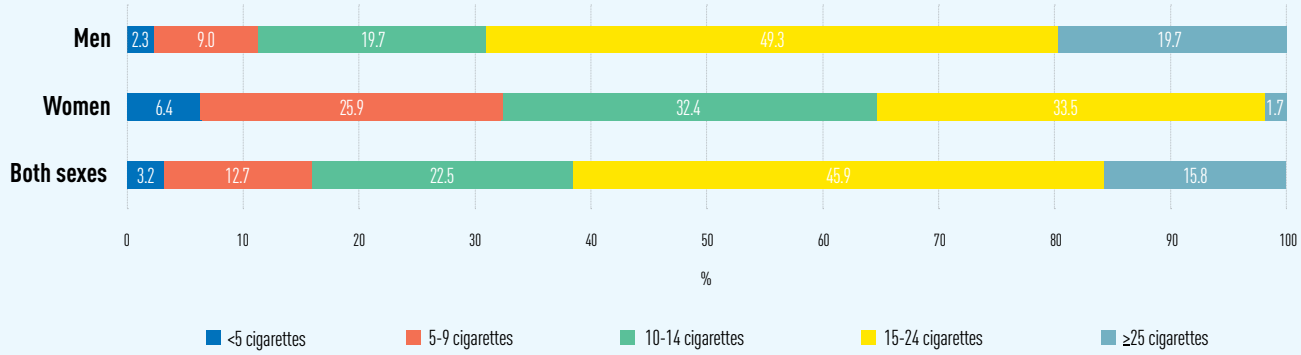


Fig. 3. Number of manufactured or hand-rolled cigarettes smoked daily per smoker, by sex (%)

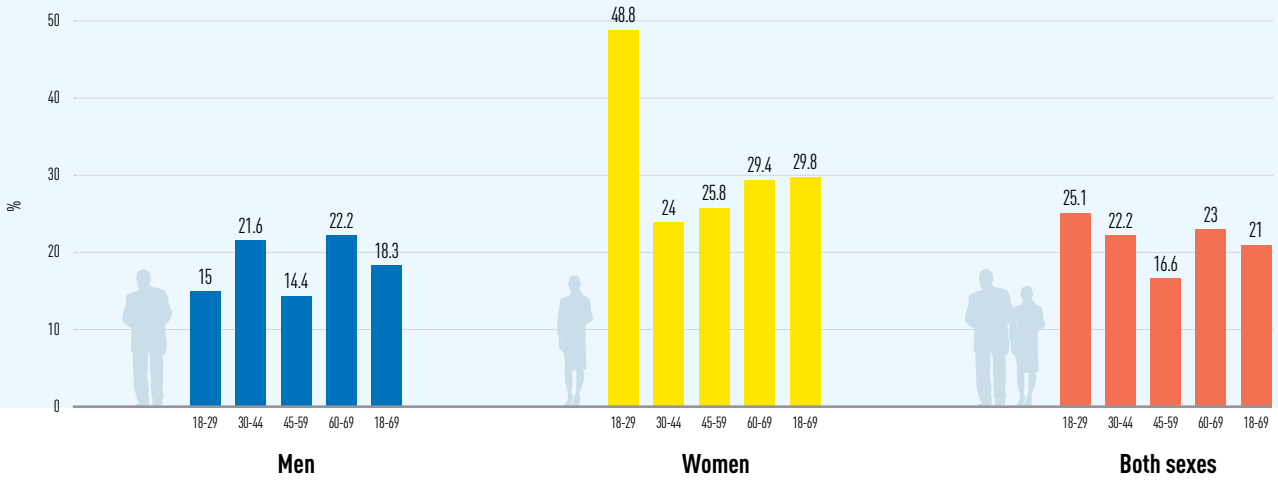
On average, each smoker smoked 15.7 cigarettes per day. Women tended to smoke less than men – 11.3 versus 16.9 cigarettes per day. Half (49.3%) of male smokers and one third (33.5%) of female smokers smoked 15–24 cigarettes per day; 19.7% and 32.4%, respectively, smoked 10–14 cigarettes per day (Fig. 3). No differences were observed between urban and rural settings.

Among current smokers, 21% had tried to stop smoking, with more women (29.8%) than men (18.3%) attempting to do so (Fig. 4). Nearly half of female smokers (48.8%) in the 18–29 age group had tried to stop smoking.

Approximately every third smoker (37.6%) had been advised by a doctor or other health worker to stop smoking (Fig. 5). Among men, younger smokers aged 18–29 years were least likely to receive this recommendation (15.1%), while smokers aged 60–69 were most likely (54.7%). For women, the trend was reversed, with older women less likely to receive advice to stop smoking. Smokers in urban areas were advised more often to stop smoking than smokers in rural areas (urban: 41.8%; rural: 28.4%).

At the same time, 15.4% of the population were current non-smokers but used to smoke daily. More men than women were former daily smokers (23.7% of men versus 6.7% of women). The average time since cessation was 10.4 years.

Fig. 4. Proportion of current smokers who had tried to stop smoking, by age and sex (%)



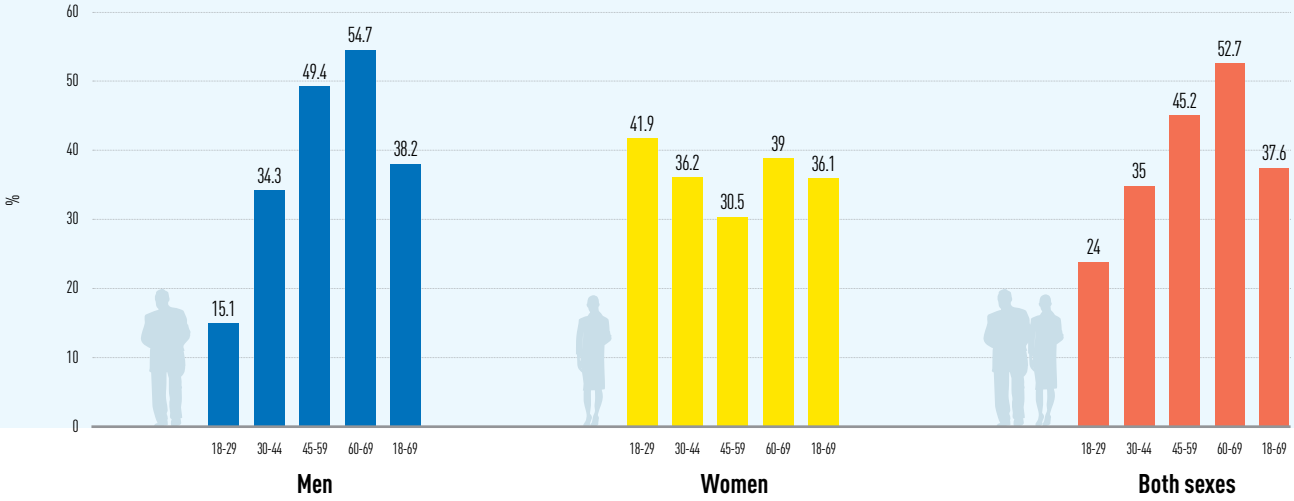


Fig. 5. Proportion of current smokers who had been advised by a doctor to stop smoking, by age and sex (%)

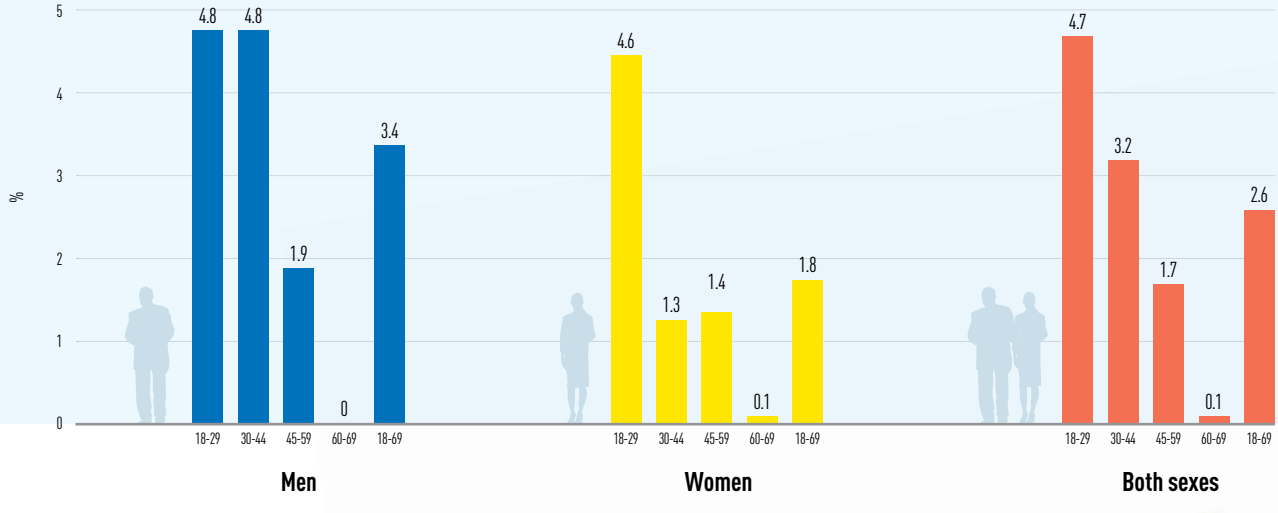
4.2.2 Heated tobacco products

Heated tobacco products (HTPs) were used by 2.6% of the population (Fig. 6), with a significant shift to the urban population (urban: 3.7%; rural: 0.7%). HTPs were more popular among younger users and were most often used daily (69.5%).

4.2.3 Electronic cigarettes

Electronic cigarettes were used by 3% of the population (Fig. 7). They were used more frequently by younger adults, and more by men than by women. Nearly half (44.4%) of electronic cigarette users used them daily (48.2% of men, 24.8% of women). There were no significant differences between urban and rural populations in usage of electronic cigarettes.

Fig. 6. Proportion of population using HTPs, by age and sex (%)



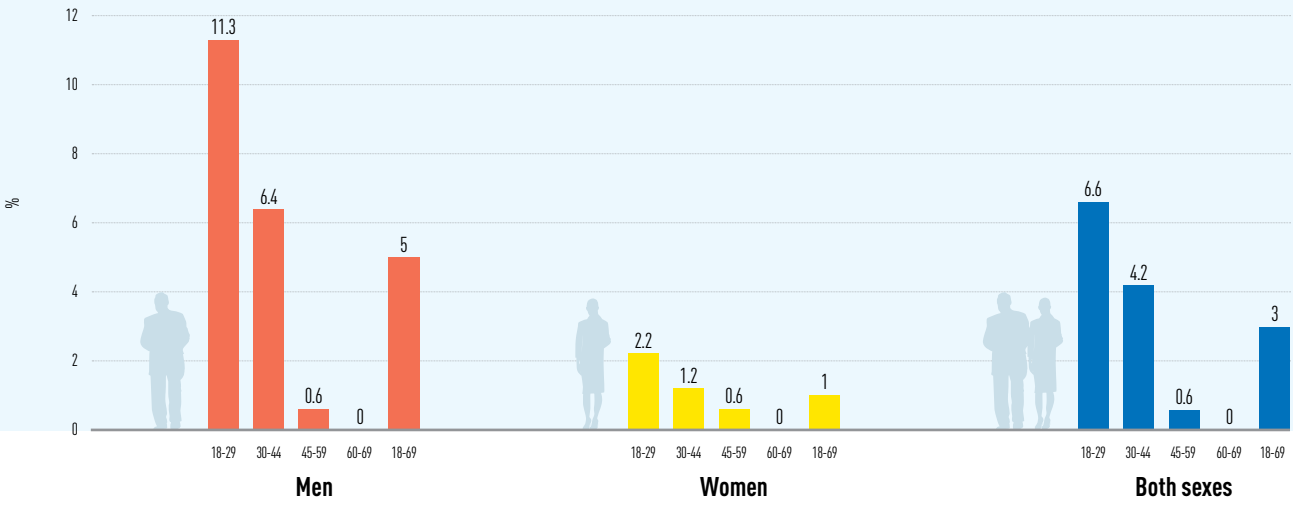


Fig. 7. Proportion of population using electronic cigarettes, by age and sex (%)

4.2.4 Hookah

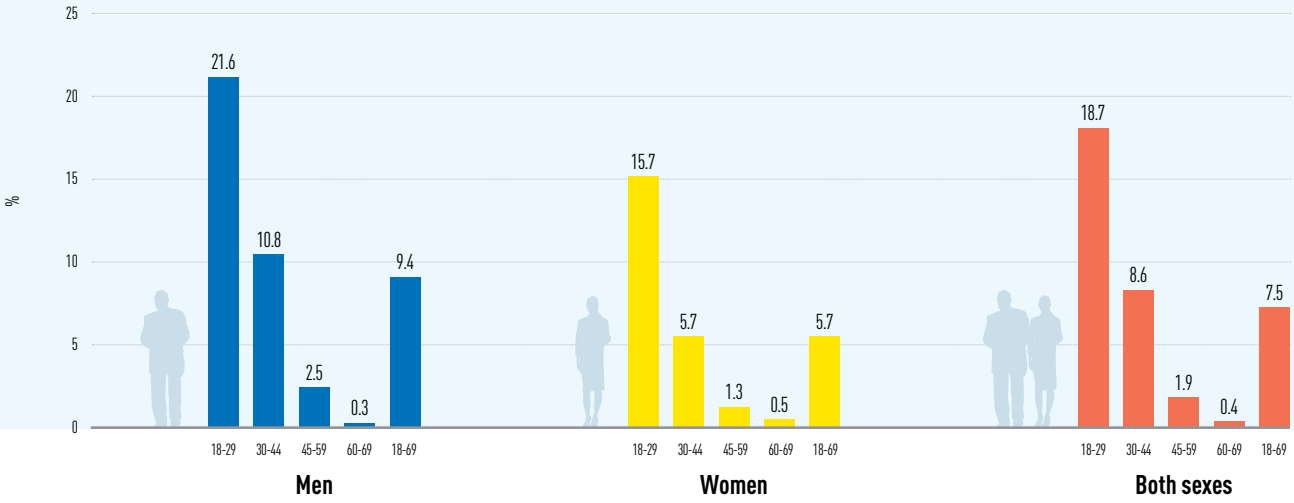
Use of hookah was widespread among the younger population (Fig. 8). Nearly every fifth person (18.7%) aged 18–29 years had used hookah in the last 30 days. Generally, 7.5% of the population smoked hookah, of which 28.4% smoked it daily. There were no significant differences between men and women, nor between rural and urban areas.

4.3 Alcohol consumption

Alcohol had been consumed by 55.6% of the population over the past 30 days (current drinkers), with higher rates among men (66.1%) than women (44.6%) (Fig. 9). Nearly a quarter (23.5%) of the population had drunk alcohol in the past 12 months but not in the past 30 days.

The largest proportion of those who had consumed alcohol over the past 30 days were aged 30–44 years (62.6%) and was higher among men (71.6%) than among women (50.8%). The largest proportion of those who had consumed alcohol over the previous 12 months but not in the past 30 days were in the

Fig. 8. Proportion of population using hookah, by age and sex (%)



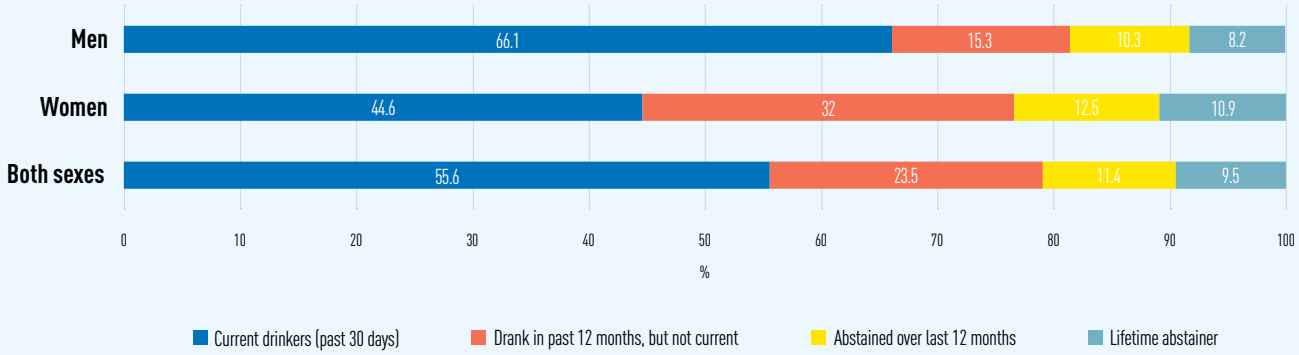


Fig. 9. Proportion of population consuming alcohol, by time and sex (%)

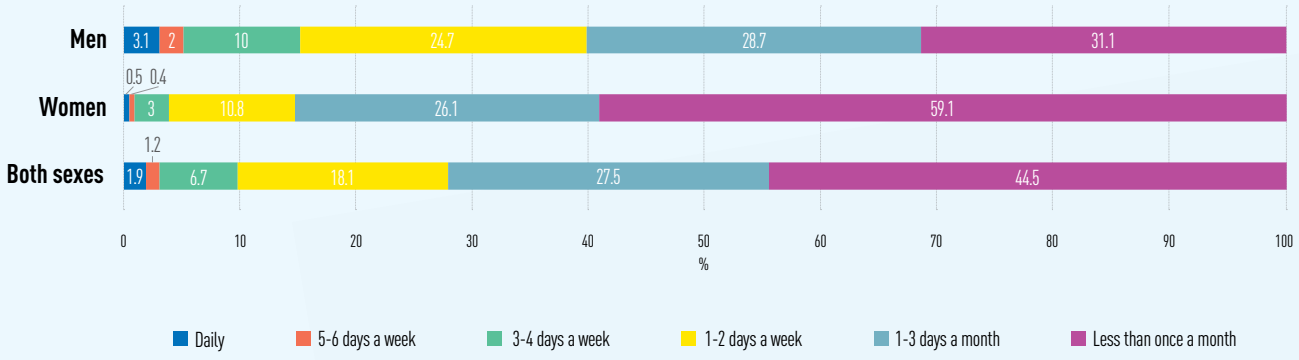
60–69 age group (29.9%), as were the largest proportion of those who had abstained over the past 12 months (17.2%). The largest group of lifetime abstainers was observed among 18–29-years-olds (13.2%).

More than one third (39%) of former drinkers (those who had not drunk alcohol during the previous 12 months but who had drunk alcohol in their lifetime) had stopped drinking because of a negative effect on their health or on the advice of a doctor or other health worker.

Over the previous 12 months, more than half of alcohol drinkers had drunk alcohol more than once a month (Fig. 10), with over a quarter (27.5%) consuming alcohol 1–3 times a month, nearly a fifth 1–2 days a week, and one in 10 more frequently. Alcohol consumption was more frequent among men than among women.

Among current drinkers, the average frequency of drinking occasions over the previous 30 days was 4.7 (Table 2); men had more drinking occasions (5.6) than women (3.3). The mean number of drinking occasions in the past 30 days in the rural population was 5.7; in the urban population, 4.2.

Fig. 10. Frequency of alcohol consumption in the previous 12 months, by sex (%)



Age group (years)	Men			Women			Both sexes		
	n	Mean	95% CI	n	Mean	95% CI	n	Mean	95% CI
18–29	154	4.9	4.1–5.7	139	2.7	2.2–3.2	293	3.9	3.3–4.5
30–44	275	5.5	3.7–7.2	334	3.9	3.3–4.5	609	4.9	3.8–6.0
45–59	297	5.8	5.0–6.7	356	3.1	2.5–3.7	653	4.7	4.2–5.3
60–69	234	6.5	5.3–7.7	199	2.7	1.5–3.9	433	5.0	4.1–5.9
18–69	960	5.6	4.7–6.5	1028	3.3	2.9–3.6	1988	4.7	4.2–5.2

Table 2. Mean number of drinking occasions per month among current (past 30 days) drinkers, by age and sex

Current drinkers drank a mean of 3.3 standard drinks on a drinking occasion (Fig. 11), with higher consumption in men (3.9) than in women (2.3).

The proportion of the population who had had six or more drinks on any occasion in the previous 30 days (heavy episodic drinking) was 19.7% (Table 3) and was three times higher among men (29.5%) than among women (9.4%). On average, men who were current drinkers had had six or more drinks 1.4 times in the previous 30 days and thus engaged in heavy episodic drinking; the equivalent figure for women was 0.4.

Among current drinkers, 23.1% had consumed no alcohol during the previous week (men: 19.4%; women: 28.8%); 55.9% had consumed alcohol on 1–2 days (men: 53%; women: 60.3%); 14.8% on 3–4 days (men: 19%; women: 8.4%); 3.1% on 5–6 days (men: 4.2%; women: 1.4%); and 3.1% had drunk alcohol daily (men: 4.3%; women: 1.2%). Current drinkers had taken a mean of 0.7 standard drinks during the previous week (men: 0.9; women: 0.4).

"Unrecorded alcohol" includes home-brewed spirits, beer and wine, alcohol brought from abroad, alcohol-containing liquids not intended for drinking (surrogate alcohol), and other untaxed alcohol. Among current drinkers, 19.9% had consumed unrecorded alcohol. Every third current drinker living in a rural area had consumed unrecorded alcohol (31.1%); in urban areas,

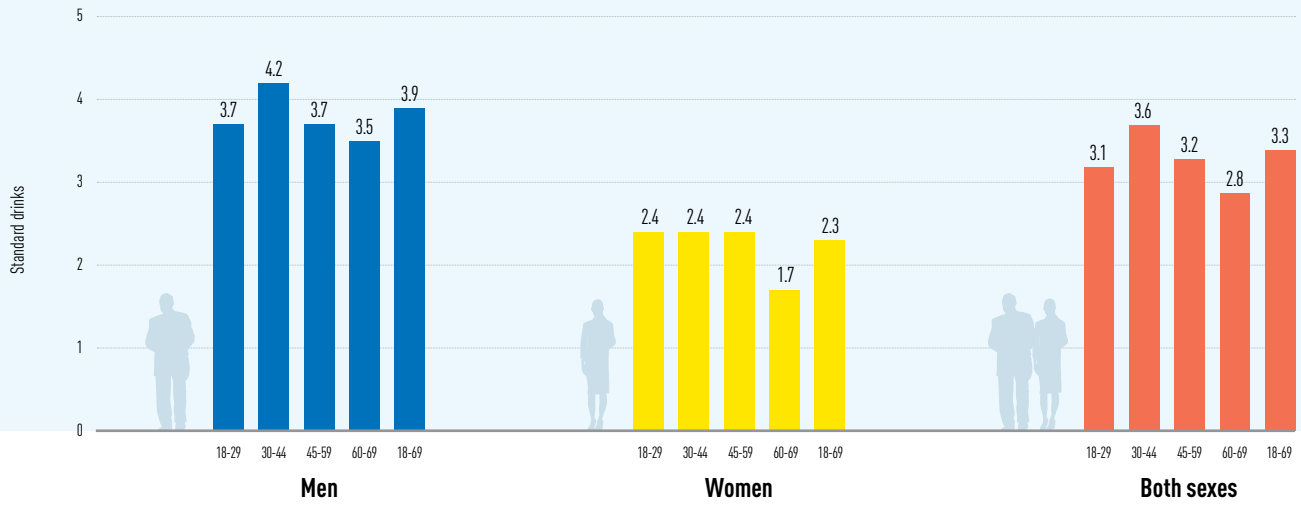


Fig. 11. Mean number of standard drinks of alcohol consumed per drinking occasion, by sex

Age group (years)	Men			Women			Both sexes		
	n	% ≥6 drinks	95% CI	n	% ≥6 drinks	95% CI	n	% ≥6 drinks	95% CI
18–29	259	19.2	13.5–24.9	336	12.4	5.8–18.9	595	15.7	11.3–20.1
30–44	463	36.6	18.3–54.9	696	10.5	7.1–13.9	1159	25.3	13.1–37.5
45–59	484	28.4	18.6–38.2	860	10.1	6.7–13.4	1344	19.3	13.6–25.0
60–69	416	25.1	18.4–31.8	837	2.6	1.3–4.0	1253	11.8	8.7–15.0
18–69	1622	29.5	20.7–38.4	2729	9.4	7.2–11.6	4351	19.7	14.4–24.9

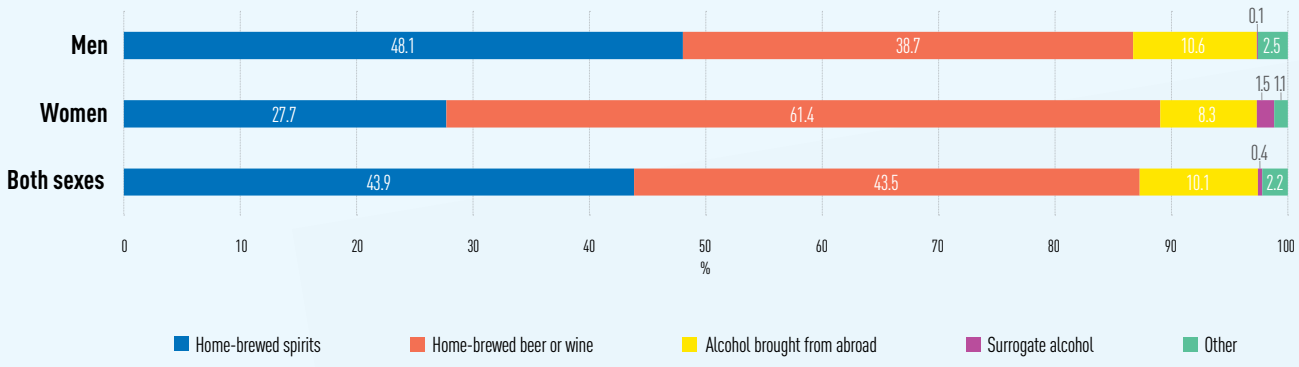
Table 3. Proportion of population who had six or more standard drinks on any single drinking occasion in the past 30 days, by age and sex

the proportion was less than half this figure (14.3%). The lowest proportion was among people aged 18–29 years (14.6%), and the highest among those aged 60–69 years (32.1%). Unrecorded alcohol represented 17.3% of all alcohol consumed by current drinkers over the previous week. The types of unrecorded alcohol consumed over the previous week were (Fig. 12): home-brewed spirits, 43.9%; home-brewed beer or wine, 43.5%; alcohol brought from abroad, 10.1%; alcohol-containing liquids not intended for drinking, 0.4%; and other alcohol, 2.2%.

Among people who had consumed alcohol over the past 12 months, 12.7% were not able to stop drinking once they had started (men: 19.6%; women: 5.7%). One in 10 drinkers (10.8%) reported failing to do what was normally expected of them over the past 12 months as a result of drinking (men: 15.7%; women: 5.5%). Drinking in the morning to ease a hangover was reported by 13.2% of people (men: 20.2%; women 5.5%). One in 10 (10.3%) had done so less than once a month (men: 15.5%; women: 4.7%), but 2.9% had done so once a month or more often (men: 4.8%; women: 0.9%).

The majority of the population (86.6%) had not had family problems or problems with their partners as a result of drinking over the past 12 months. Of those who had reported such problems, 11.7% said they had occurred less than once a month, while 1.7% said they had occurred once a month or more frequently.

Fig. 12. Type of unrecorded alcohol consumed, by sex (%)



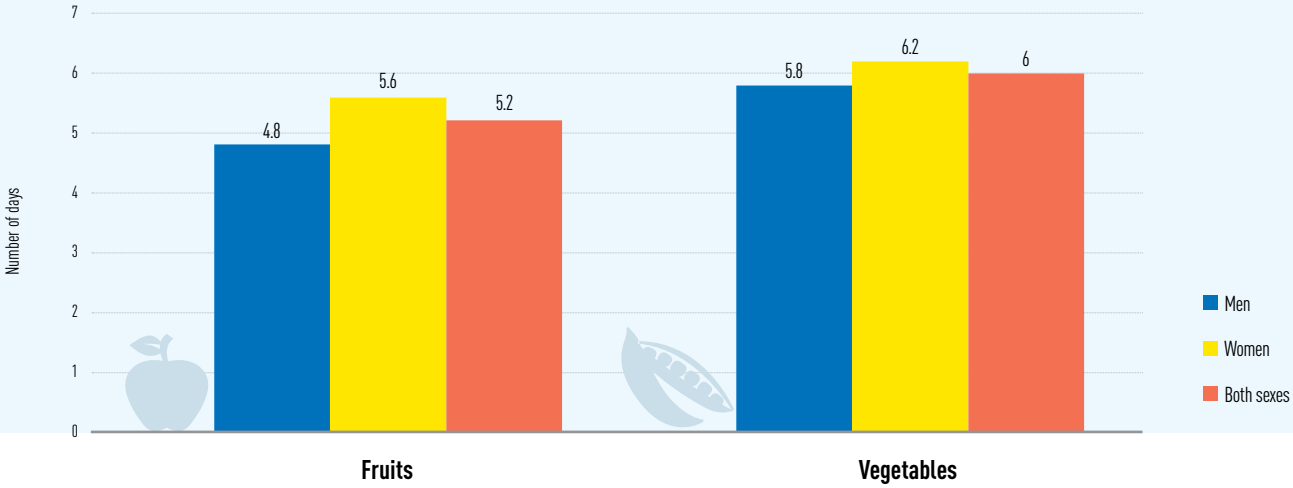


Fig. 13. Mean number of days per week on which fruits and vegetables were consumed, by sex (%)

4.4 Diet

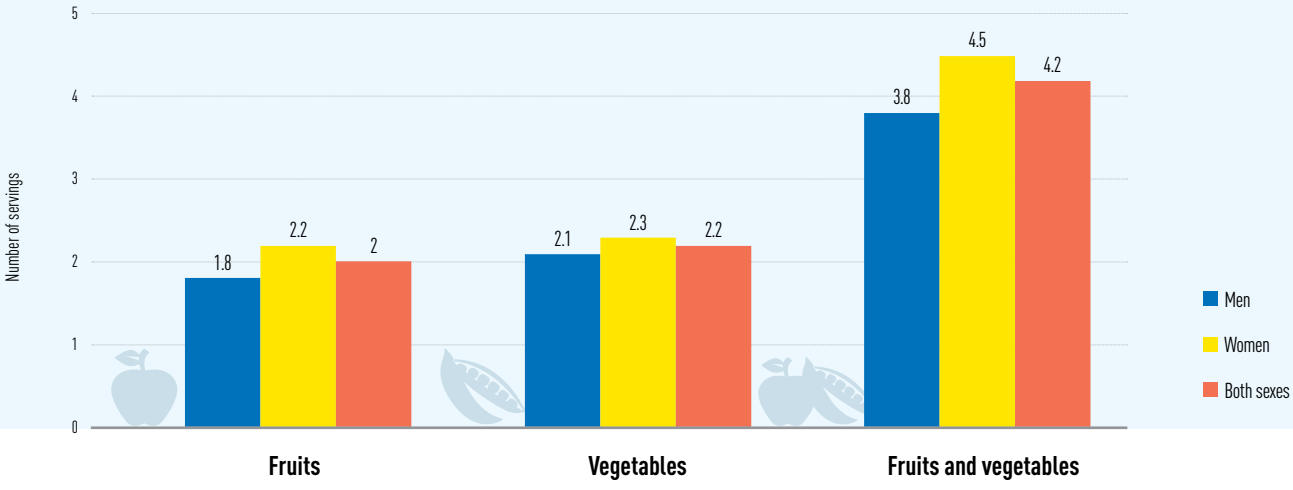
4.4.1 Fruits and vegetables

On average, fruits were consumed on 5.2 days per week (men: 4.8; women: 5.6). Vegetables were consumed slightly more often, on 6.0 days per week (men: 5.8; women: 6.2) (Fig. 13).

People consumed 2.0 servings of fruit (men: 1.8; women: 2.2) and 2.2 servings of vegetables on average per day (Fig. 14). Thus, the mean number of servings of fruits and vegetables added up to 4.2 servings per day (men: 3.8; women: 4.5).

Only one third (33.6%) of the population ate the recommended five or more servings of fruits and vegetables daily (Fig. 15), thereby meeting the minimum daily intake recommended by WHO. Women were more likely to consume five or more servings of fruits and vegetables daily (men: 26.8%, women: 40.6%). Just under a third of the population (28.5%) ate 3–4 servings daily, just over a third (34.4%) 1–2 servings; 3.5% of the population claimed not to eat any fruits or vegetables.

Fig. 14. Mean number of servings of fruits and vegetables per day, by sex (%)



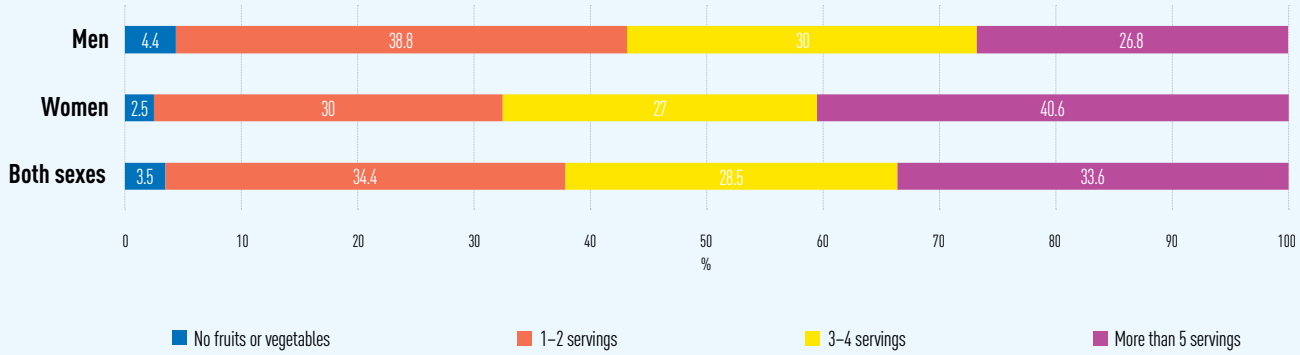


Fig. 15. Number of fruit and vegetable servings consumed per day, by sex (%)

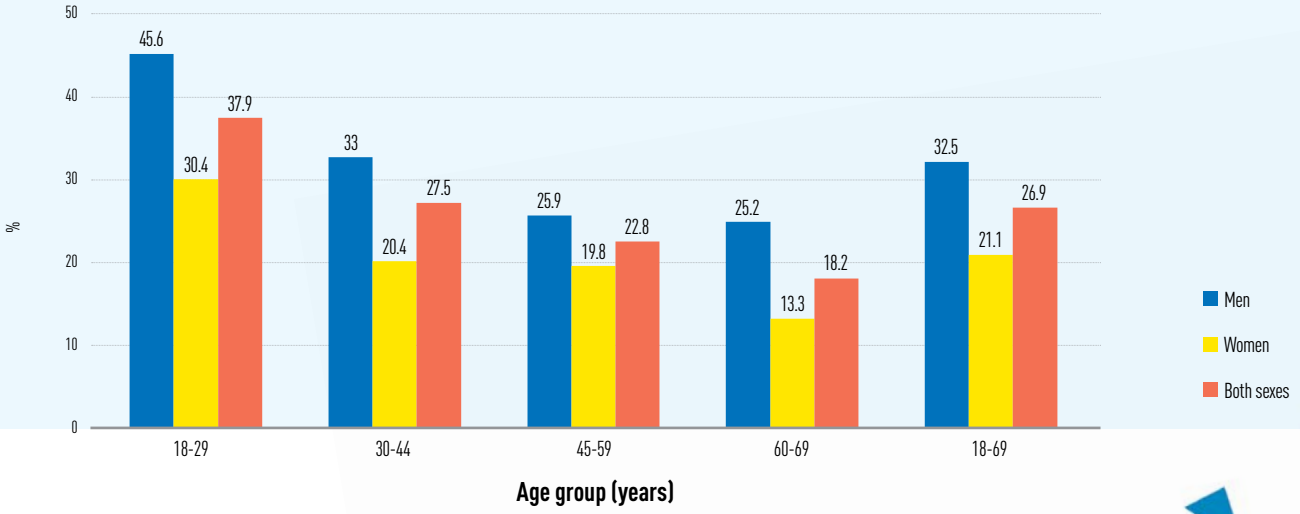
4.4.2 Salt

Nearly half the population (44.9%) always or often added salt or salty sauce to their food before or during eating (53% of men, 36.5% of women), while two thirds (66.7%) always or often added salt to food when cooking at home (70.1% of men, 63.2% of women).

A quarter of the population (26.9%) always or often ate processed foods with a high salt content, including smoked meat and fish, sausages, lard, pickles, tinned food, and salted chips and nuts (Fig. 16). More men consumed these products frequently (32.5%) than women (21.1%). The level of consumption of processed foods high in salt decreased with age: 37.9% of the population aged 18–29 years consumed such products frequently, but only 18.2% of those aged 60–69 years.

Two thirds (61.1%) of the population considered that they consumed just the right amount of dietary salt and salty sauces, and only one fifth (19.9%) thought that they consumed too much or far too much salt (Fig. 17).

Fig. 16. Proportion of population who always or often ate processed foods high in salt, by age and sex (%)



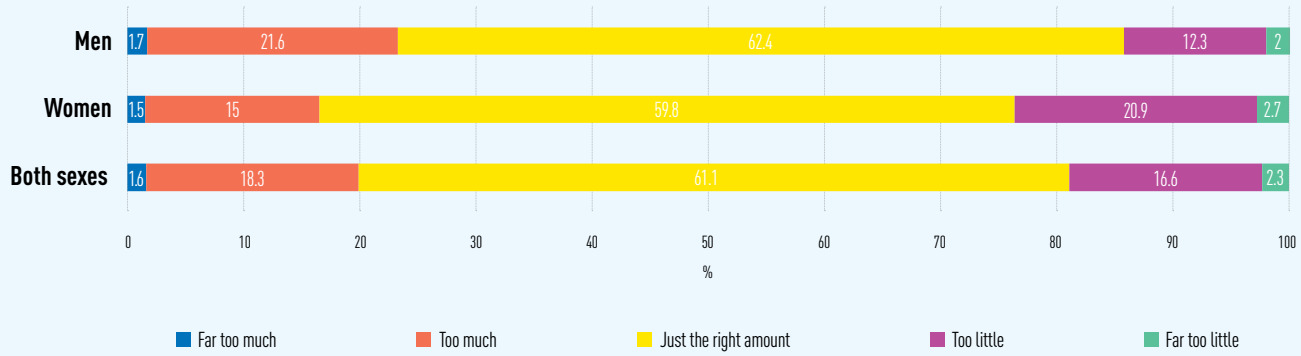


Fig. 17. Self-reported appropriateness of quantity of salt consumed, by sex (%)

Every fourth person (24.8%) felt that it was very important, and half (49.9%) somewhat important, to lower salt in their diet. The largest proportion of those who felt lowering salt is not important at all was observed among 30–44-year-olds (30.2%).

Half the population (51.5%) thought that consuming too much salt could cause serious health problems, and this knowledge was less common among men (45.4%) than among women (57.8%). Older population groups knew more about the negative health effects of excessive dietary salt intake.

Awareness of the harm caused by excessive salt intake should lead to specific behaviours to reduce it. However, only 8% of the population looked at the salt or sodium content on food labels (men: 4.9%; women: 11.1%). One third of the population (34.8%) tried to limit consumption of processed foods (men: 26.8%; women: 43.1%); 13% to buy low salt/sodium alternatives (men: 8.6%; women: 17.7%); 35.5% to use spices other than salt when cooking (men: 24.4%; women: 46.9%); and 40.5% to avoid eating foods prepared outside their home.

4.5 Physical activity

The mean self-reported time spent on physical activity was 289.8 minutes per day (Fig. 18); men, with 320.7 minutes per day, were approximately one hour (62.8 minutes) more physically active than women. Time spent on physical activity was 118.9 minutes (over one third) less for people aged 60–69 years (199 minutes versus 317.9 minutes).

More than half the time spent on physical activity was dedicated to work-related activities (151.8 minutes), slightly more than one third to transport-related activities (109.2 minutes), and only 13% to leisure-time activities (28.8 minutes) (Fig. 19). Work-related physical activity was higher among men (184.7 minutes) than women (117.9 minutes) and decreased sharply to 91.1 minutes per day in the population aged 60–69 years. Half the population

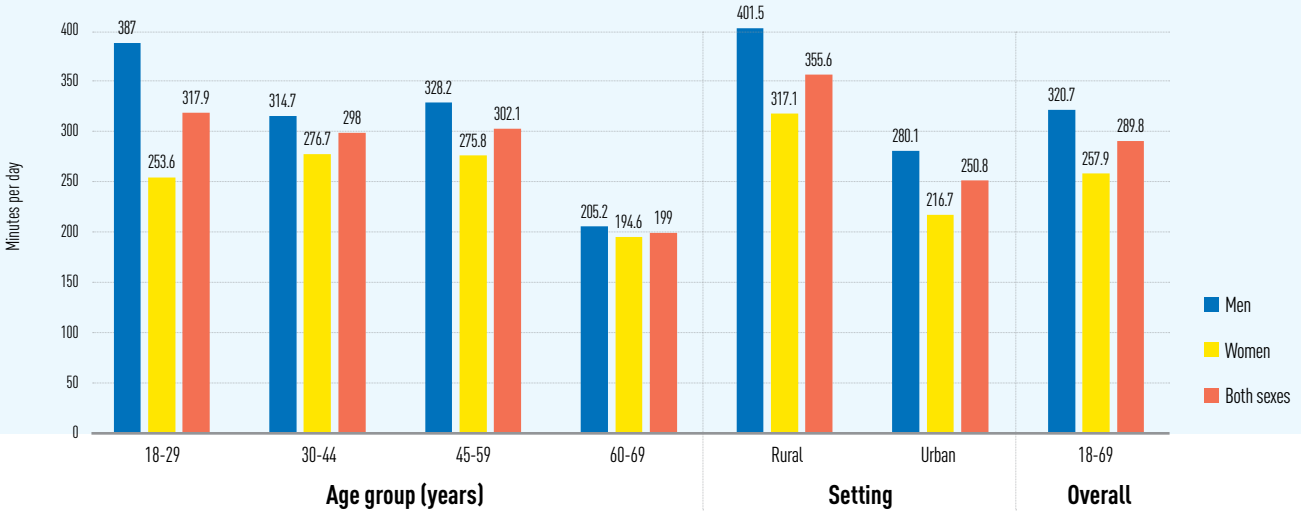


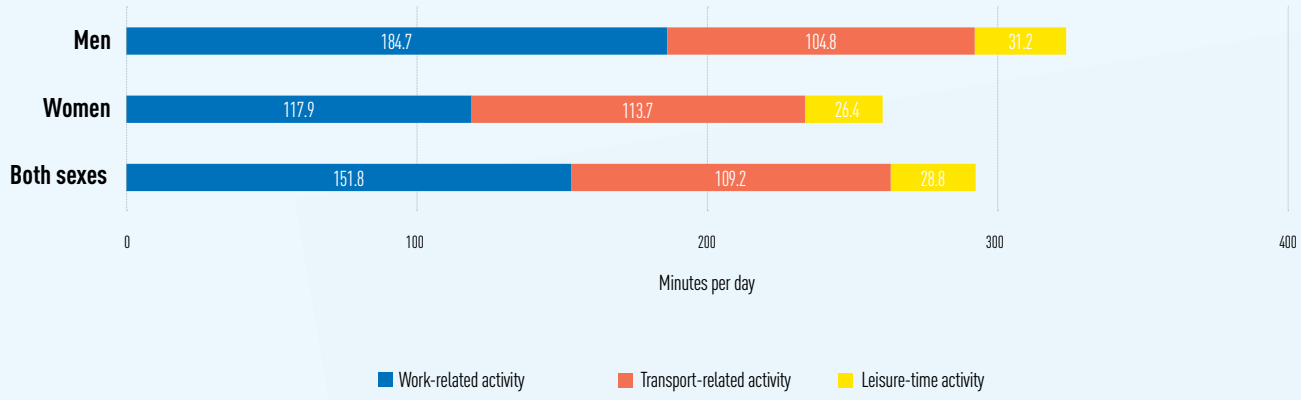
Fig. 18. Mean time spent on total physical activity per day (minutes), by age, sex and setting

(53.5%) did not perform any work-related physical activity, and this is more common among women (60.3%) than men (47%). The majority of the population (59.4%) did not engage in any leisure-time physical activity, with the trend increasing over the life course. Time spent on recreation-related physical activity was highest among people aged 18–29 years, with 50.2 minutes per day. Three quarters of the population (73.3%) did not engage in vigorous physical activity, and this was more widespread among women (86.4%) than men (60.6%). The proportion of the population not engaging in vigorous physical activity increased sharply with age, reaching 91.3% among 60–69-year-olds.

One tenth of the adult population in Ukraine did not meet WHO recommendations on physical activity for health (Fig. 20), and the share was more than twice as high among people aged 60–69 years than among younger people.

In addition, sedentary behaviour was very prevalent, as adults spent on average 235.4 minutes daily sitting or reclining – 245.5 minutes in urban areas and 218.2 minutes in rural areas.

Fig. 19. Mean time spent doing work-, transport- and leisure-related physical activity per day (minutes), by sex



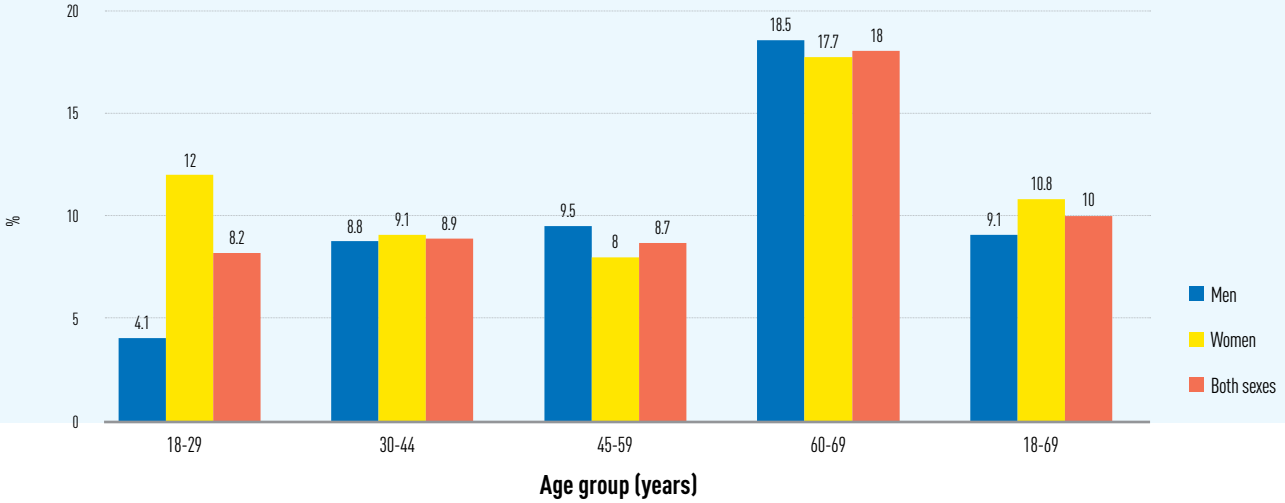


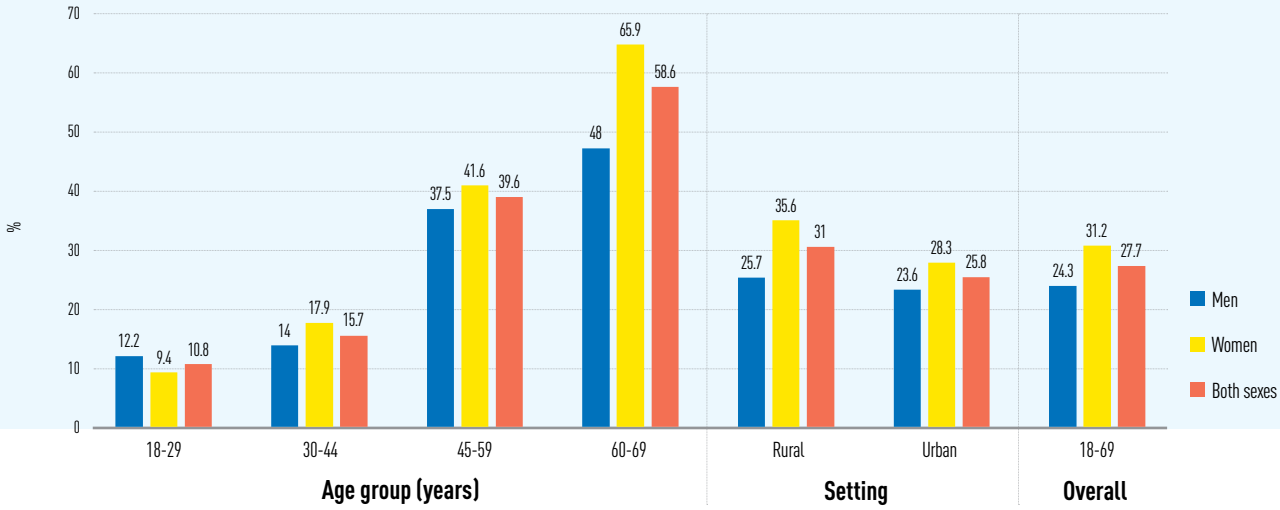
Fig. 20. Proportion of population not meeting WHO recommendations on physical activity for health, by age and sex (%)

4.6 History of raised blood pressure

Overall, 8.4% of the population reported that their BP had never been measured by a health worker; 63.6% reported not being informed of having high BP or hypertension diagnosed; 16.5% reported being informed of having high BP or diagnosed hypertension more than one year before the survey; and 11.2% reported being informed or diagnosed less than one year before the survey. In other words, over a quarter of the population (27.7%) had been informed by a health-care worker that they had raised BP or hypertension (Fig. 21); frequency increased with age, from 10.8% among 18–29-year-olds to 58.6% among 60–69-year-olds. Among 60–69-year-olds, this was more often the case for women (65.9%) than men (48%).

Overall, 54.8% of those informed of having high BP or diagnosed with hypertension before the survey were currently taking antihypertensive medication (Fig. 22). The percentage of those taking medication increased with age, from 17.2% at ages 18–29 years to 74.9% by 60–69 years. However, except for the oldest age group (men: 65.2%; women: 79.9%), no significant differences were found between sexes.

Fig. 21. Proportion of population informed by a health-care worker of raised BP or hypertension, by age, sex and setting (%)



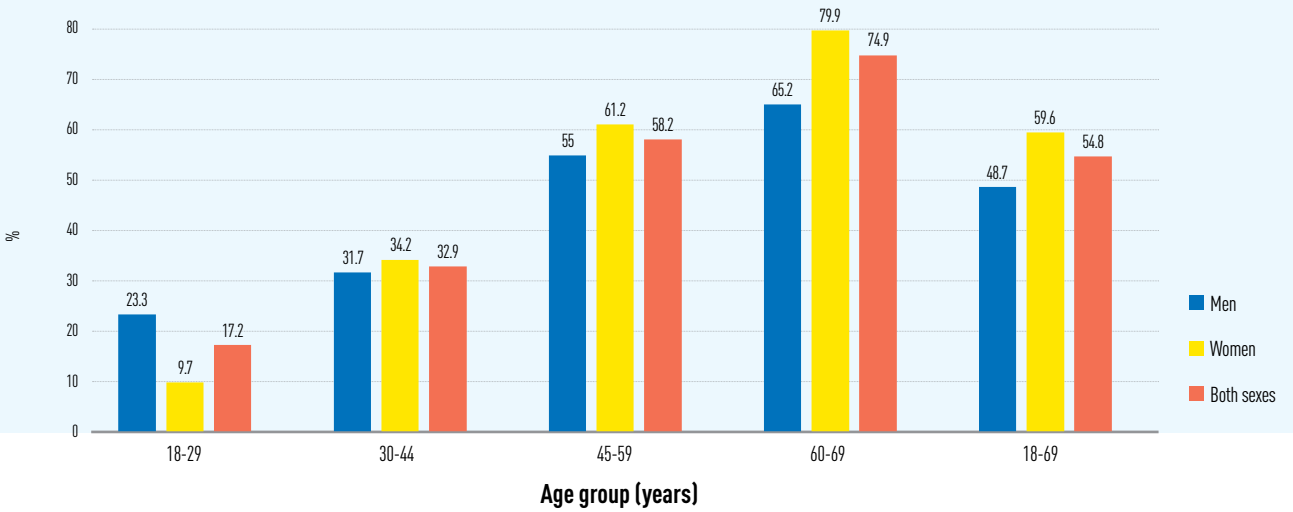


Fig. 22. Proportion of those informed of having high BP or diagnosed with hypertension currently taking medication, by age and sex (%)

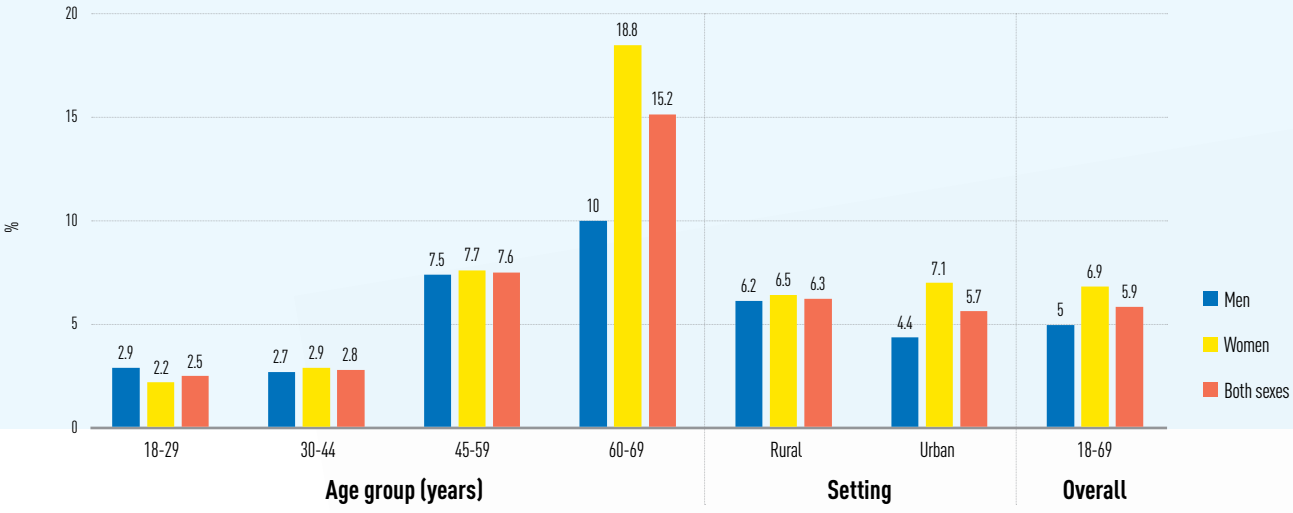
Of those informed of having high BP or diagnosed with hypertension, 6.9% reported having consulted a traditional healer and 20.0% reported currently taking herbs or other traditional remedies, with the largest proportion of the latter (27.3%) among those aged 60–69 years.

No significant differences between sexes or settlement types were observed regarding history of being informed of having raised BP or diagnosis of hypertension or treatment for it.

4.7 History of diabetes

Just over a quarter (27.4%) of the population indicated that they had never had their blood glucose measured by health personnel.* The proportion of the population never having had their blood glucose measured decreased with age from a high of 36.7% of those aged 18–29 years to a low of 22.3% among those aged 60–69 years. Overall, 5.9% of the population had been informed by a health-care worker that they had raised blood glucose or

Fig. 23. Proportion of population informed by a health-care worker that they had raised blood glucose or diabetes, by age, sex and setting (%)



* It should be noted that WHO and the International Diabetes Federation promote screening for diabetes only for people at increased risk of diabetes, not for all adults.

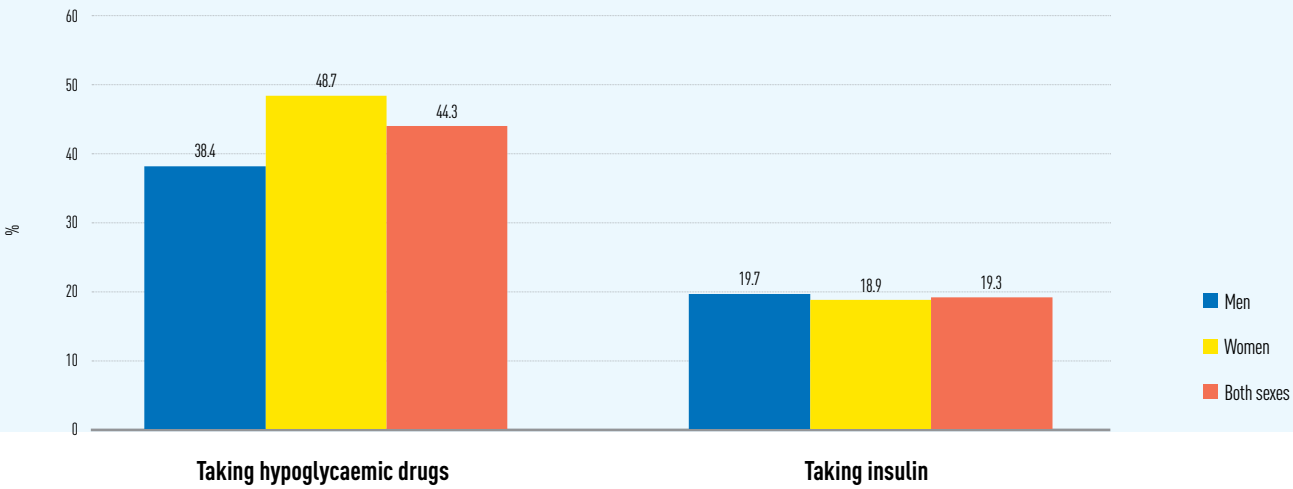


Fig. 24. Proportion of population with raised blood glucose or diagnosed diabetes who were taking hypoglycaemic drugs or insulin, by sex (%)

diabetes (Fig. 23), with the proportion increasing with age, from 2.5% among 18–29-year-olds to 15.2% among 60–69-year-olds. This was more often the case for women (18.8%) than for men (10%) among 60–69-year-olds.

Less than half (44.3%) of the population aware of their raised blood glucose or diabetes were taking oral medication for diabetes (Fig. 24); the proportion increased with age up to 63.9% for those aged 60–69 years. In addition, just under one in five people (19.3%) aware of their raised blood glucose or diabetes was taking insulin.

In addition, of those aware of their raised blood glucose or diabetes, 8.8% reported having consulted a traditional healer and 19.0% were taking herbs or other folk remedies for diabetes.

No significant differences between sexes and settlement types were observed regarding history of raised blood glucose or diabetes, or treatment for it.

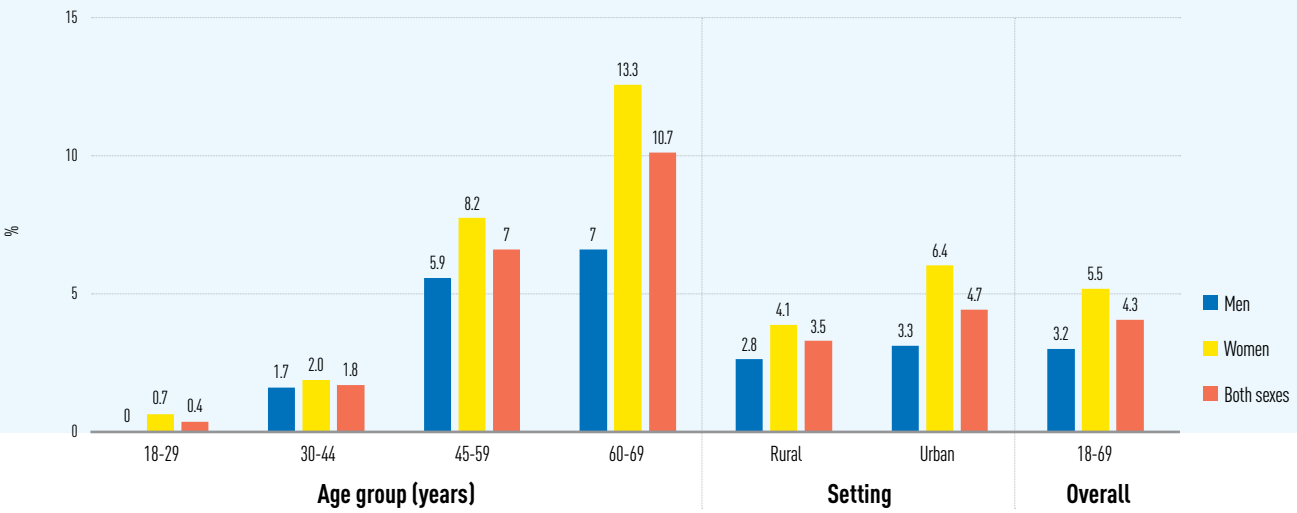
4.8 History of raised total cholesterol

Regarding history of raised total cholesterol, almost two thirds (63.9%) of the population reported never having had a total cholesterol measurement performed. Overall, 4.3% of the population had been informed by a health-care worker that they had raised blood cholesterol (Fig. 25); the proportion increased with age, from 0.4% among 18–29-year-olds to 10.7% among 60–69-year-olds. This was more often the case for women (13.3%) than for men (7%) among 60–69-year-olds.

Of those previously diagnosed with raised total blood cholesterol, a quarter (25.7%) reported that they were taking medication prescribed by a doctor, 11% reported that they had consulted a traditional healer, and 18.5% reported that they were taking herbs or other folk remedies to lower total cholesterol.*

No significant differences between sexes and settlement types were observed regarding history of raised blood cholesterol. However, the urban population

* Note that these categories are not mutually exclusive – a respondent might, for instance, take medication and consult a traditional healer.



consulted traditional healers more often than the rural population (15.5% and 0.8%, respectively), although use of herbs or other folk remedies to lower total cholesterol was comparable between the different settlement types.

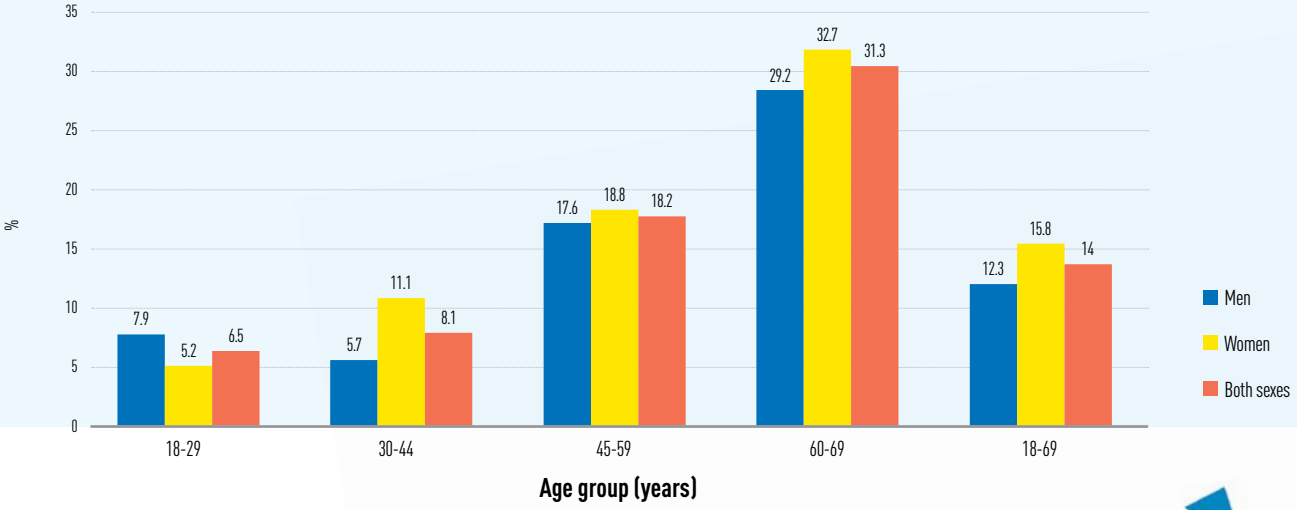
Fig. 25. Proportion of population informed by a health-care worker that they had raised blood cholesterol, by age, sex and setting (%)

4.9 History of CVD

A history of CVD, defined as heart attack, chest pain due to heart disease (angina) or stroke, was reported by 14% of the population; the proportion increased with age, from 6.5% among 18–29-year-olds to 31.3% among 60–69-year-olds (Fig. 26).

Overall, 7.8% of the population took aspirin regularly to prevent CVD, and use was nearly twice as high among women (10.3%) as among men (5.5%) (Fig. 27); the proportion increased with age, moving from 1.4% of those aged 18–29 years to nearly a quarter (22.8%) of those aged 60–69 years. Of those with reported CVD, 30.2% used aspirin to prevent a subsequent CVD event; again, the proportion increased with age, from 11.8% among 18–29-year-olds to 41.4% among 60–69-year-olds. In addition, 4.4% of the overall population reported taking statins regularly to prevent or treat CVD, the proportion

Fig. 26. Proportion of population reporting heart attack, chest pain due to heart disease (angina) or stroke, by age and sex (%)



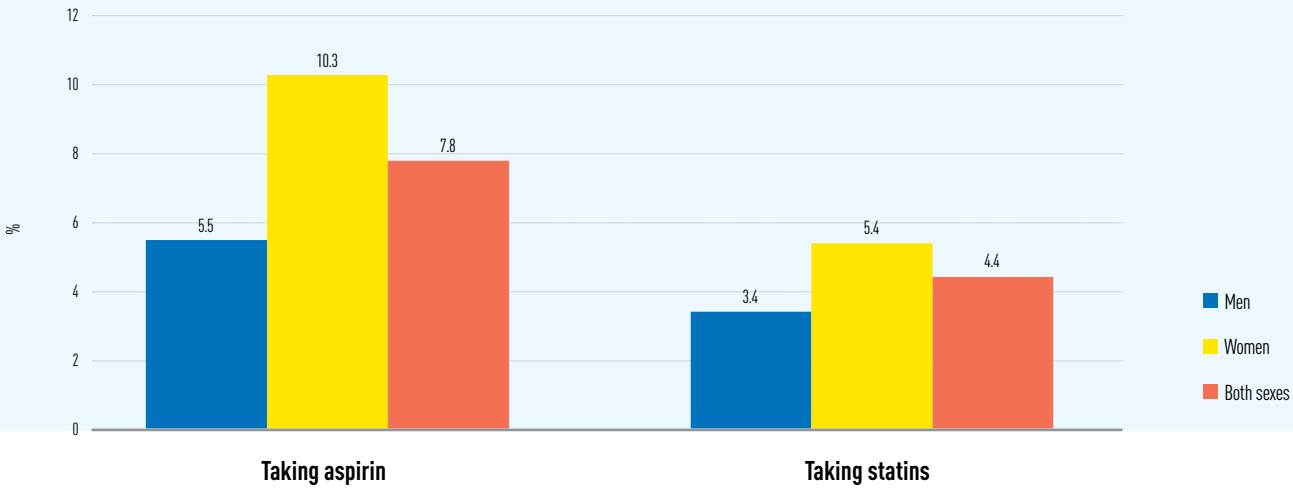


Fig. 27. Proportion of population using aspirin or statins to prevent or treat CVD, by sex (%)

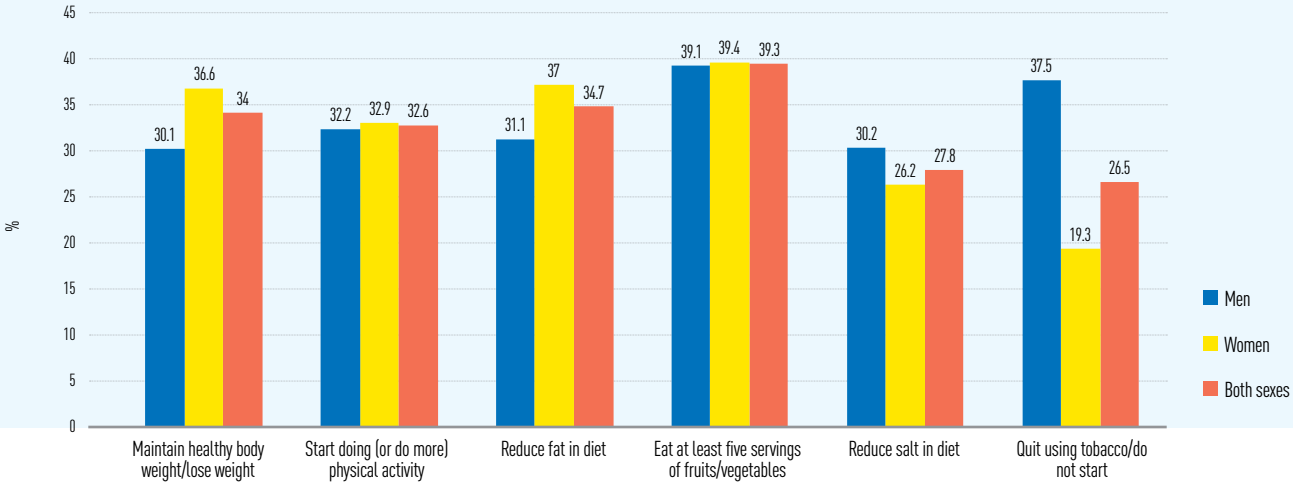
increasing with age from 1.2% among those aged 18–29 years to 10.6% among those aged 60–69 years. Of those with reported CVD, 19.2% used statins to prevent a subsequent CVD event, with the proportion increasing with age, from 3.7% among 18–29-year-olds to 21.5% among 60–69-year-olds.

No significant differences between types of settlement were observed in prevalence of CVD or use of aspirin and statins for CVD prevention.

4.10 Lifestyle advice

A quarter (26.5%) of the population in all age groups had been informed by a health worker of the dangers of smoking over the previous year and had been advised to quit, or not start using, tobacco products; the proportion receiving such advice was nearly twice as large for men (37.5%) as for women (19.3%) (Fig. 28). Advice from health workers to avoid harm caused by tobacco use and to quit was given to men more frequently as they grew older, rising from 27.0% among those aged 18–29 years to 52.2% among those aged 45–59 years, then dropping to 32.2% among 60–69-year-olds. An opposite trend was

Fig. 28. Proportion of population given advice on different lifestyle topics by a health worker over the previous year, by sex (%)



found among women, who received advice on tobacco less frequently with increasing age, from 27.1% at ages 18–29 years to 12.3% at ages 60–69 years.

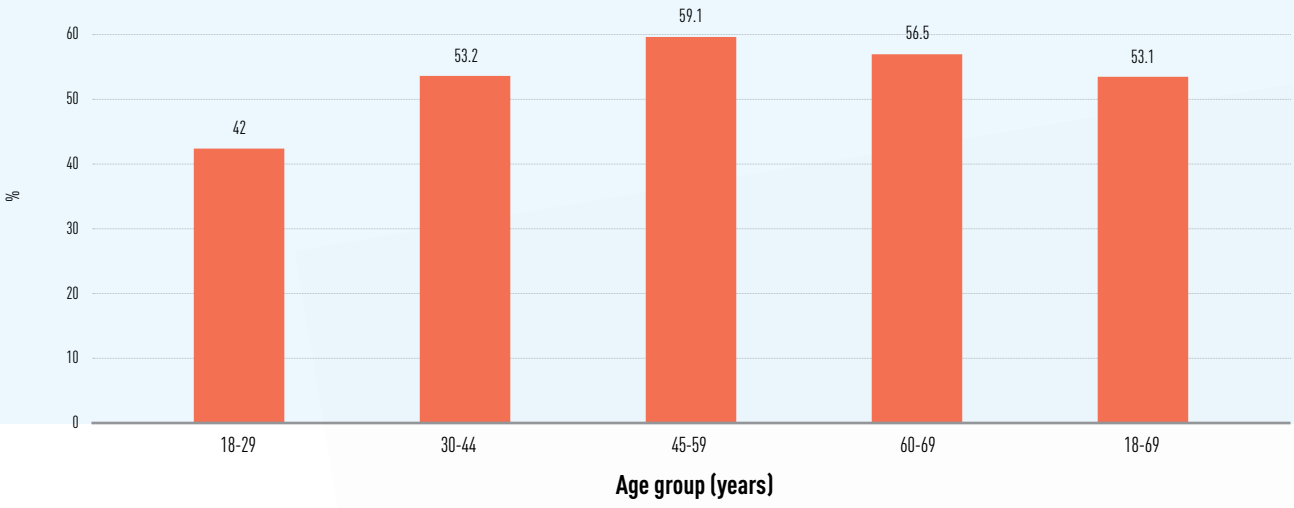
Overall, approximately one third of the population had received advice over the previous year from a health worker to reduce dietary salt consumption (27.8%), reduce fat in the diet (34.7%), start or do more physical activity (32.6%), or maintain a healthy body weight or lose weight (34%). The share of the population advised to eat at least five servings of fruits and vegetables daily was slightly higher (39.3%); those advised to limit their intake of sugary beverages slightly lower (26%). Advice to decrease salt consumption was given to both men and women increasingly with age, while advice to reduce fat in the diet and maintain a healthy body weight or to lose weight was given more frequently with age to men but not to women. The rural population was advised more often than the urban population to reduce fat in the diet (42.5% versus 30.6%). All other differences between sexes and settlement types were not significant.

4.11 Cervical and breast cancer screening

More than half (53.1%) of women aged 18–69 years had undergone screening for cervical cancer on at least one occasion (Fig. 29). This proportion was close to the value (55%) for women aged 30–49 years, which is a Global Monitoring Framework indicator. A slightly increasing trend was observed with age, without statistically significant differences. Differences between settings were not significant.

Among women who reported having had a cervical cancer test, timing of the most recent test was as follows: 32.3% within the last 12 months, 24.7% 1–2 years ago, 15.2% 3–5 years ago, and 26% more than five years ago. There was a tendency for younger women to have had more recent screening: 42.5% of women aged 18–29 years had had their most recent test within the past two years, while half (49%) of women aged 60–69 years had had their most recent test more than five years ago. The following reasons for having

Fig. 29. Proportion of women undergoing lifetime screening for cervical cancer, by age (%)



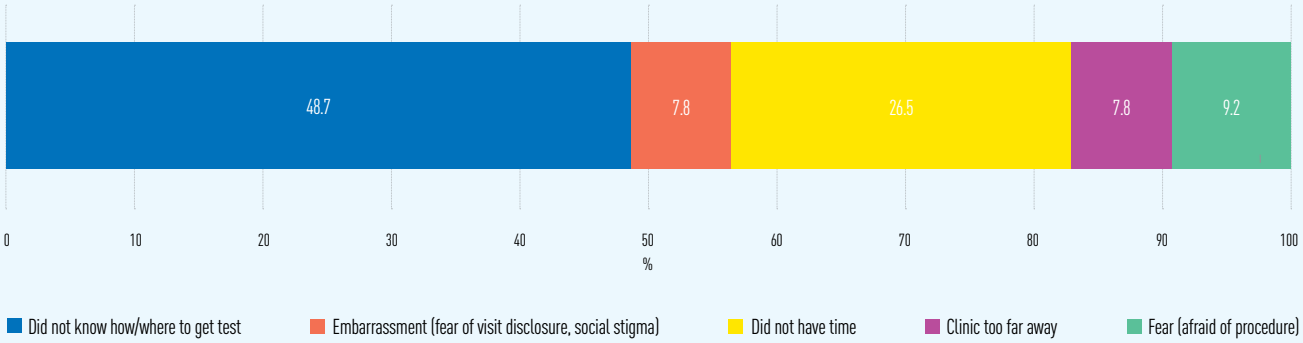


Fig. 30. Proportion of women reporting various reasons for not having a cervical cancer test (%)

the test were given: part of a routine examination (56.9%); following up on the results of abnormal or inconclusive results (2.9%); recommended by a health-care provider (21.5%); recommended by another source (1.1%); and experiencing pain or other symptoms (4.7%). Over a third (38.6%) of women had their cervical cancer test performed at a polyclinic or diagnostics centre, 24.8% at a women's consultation clinic, and 17.3% at a hospital; other types of facility, such as a primary care setting, a doctor's office at a workplace or a private clinic, were less common. There was no statistical significance in the differences between rural and urban settings in reasons given for having an examination or in places where cervical cancer tests were conducted.

Among women who had a cervical cancer test, the test results were as follows: 87.4% negative/normal, 6.2% positive/abnormal, 1.4% suspected cancer, 1.6% inconclusive, and 1.2% test results not received. Most women (82.3%) received test results by visiting the doctor or the clinic where the test was performed, 10.8% received results over the phone, 2.8% by email, and 1.6% by phone message. Communication via email was more frequent in urban settings (2.8%) than in rural ones (0.7%).

Among women who received abnormal/positive, suspected cancer or inconclusive results, three quarters (75.6%) had a follow-up visit, 19.3% did not, 3.4% refused a follow-up visit, and 1.7% did not know if a follow-up visit had taken place. Although not statistically significant, differences between age groups in terms of the proportion of women having follow-up visits were observed, with less than half (47.2%) of women aged 18–29 years of age reporting a follow-up visit compared to 90% of women aged 45–49 years. Among women who had abnormal/positive, suspect cancer or inconclusive test results, the great majority (91.4%) received treatment to their cervix following their test results. This percentage tended to be lower among younger age groups (18–29 years), where 77.1% of those with abnormal/positive, suspect cancer or inconclusive results received treatment to their cervix, although the numbers were small and results not statistically significant. This finding is expected, as in young women, especially under the age of 25 years, the lesions might resolve by themselves, so observation and monitoring might be preferred to immediate treatment.

Among the 46.9% of women who did not have a cervical cancer test, the reasons for not having one were as follows (Fig. 30): 48.7% – insufficient knowledge of the procedure (how and/or where to get a test); 7.8% – embarrassment (fear of visit disclosure, social stigma); 26.5% – not enough time to do the test; 7.8% – clinic too far away; and 9.2% – fear (afraid of procedure). There were no statistically significant differences between age groups and settings.

Slightly less than half (44.3%) of women had ever undergone a breast cancer test. The proportion was lower (30.5%) among women aged 18–29 years than among older women. Among women who had undergone a breast cancer test, 99.1% had a clinical breast exam and 64% mammography. The proportion of women who had had their most recent breast cancer test more than five years ago was higher among women aged 60–69 years – 46.9% for clinical breast exam and 31.1% for mammography – than among younger women.

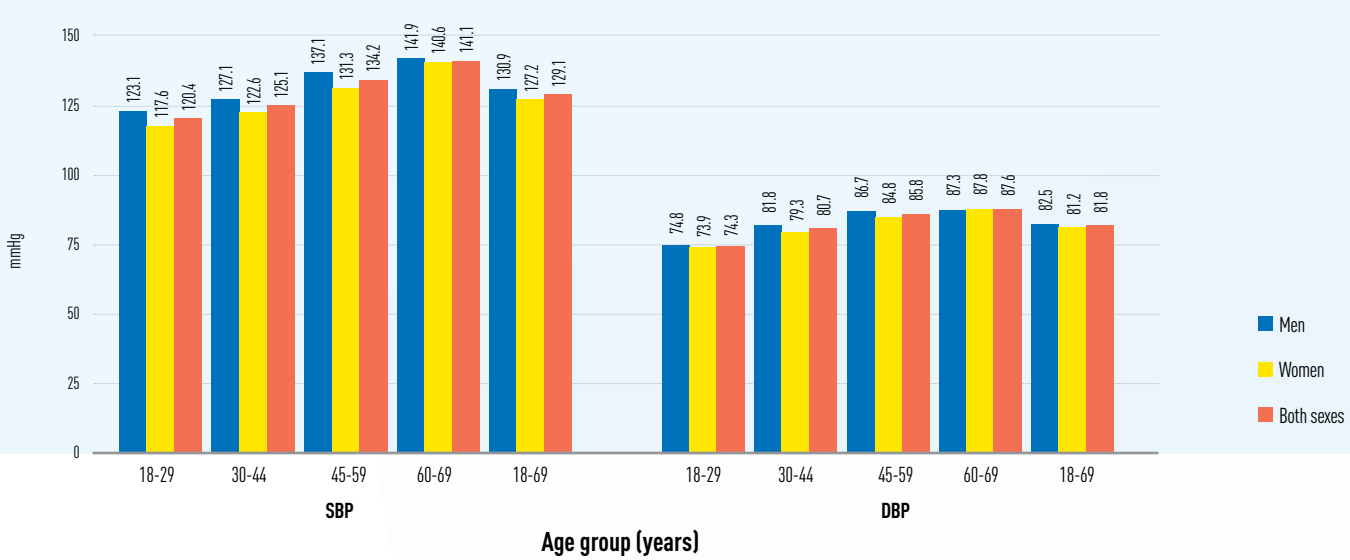
4.12 Physical measurements

4.12.1 Blood pressure and heart rate

The mean systolic blood pressure (SBP) in the population, including those currently on medication for raised BP or hypertension, was 129.1 mmHg; it was higher among men (130.9 mmHg) than women (127.2 mmHg) (Fig. 31). The population mean diastolic blood pressure (DBP) was 81.8 mmHg. SBP and DBP mean values increased with age for both men and women.

One third of the population (34.8%) had raised BP or hypertension, defined as SBP levels ≥140 mmHg and/or DBP levels ≥90 mmHg, or currently taking medication for raised BP (Fig. 32). The proportion of the population with raised BP increased sharply with age, from 12.7% among 18–29-year-olds to 71.1% among 60–69-year-olds. Every ninth adult (11.1%) had BP levels ≥ 160/100 mmHg. The proportion of people with BP levels ≥160/100 mmHg increased sharply with age, from 2.2% among 18–29-year-olds to 26.1% among 60–69-year-olds.

Fig. 31. Mean SBP and DBP, by age and sex (mmHg)



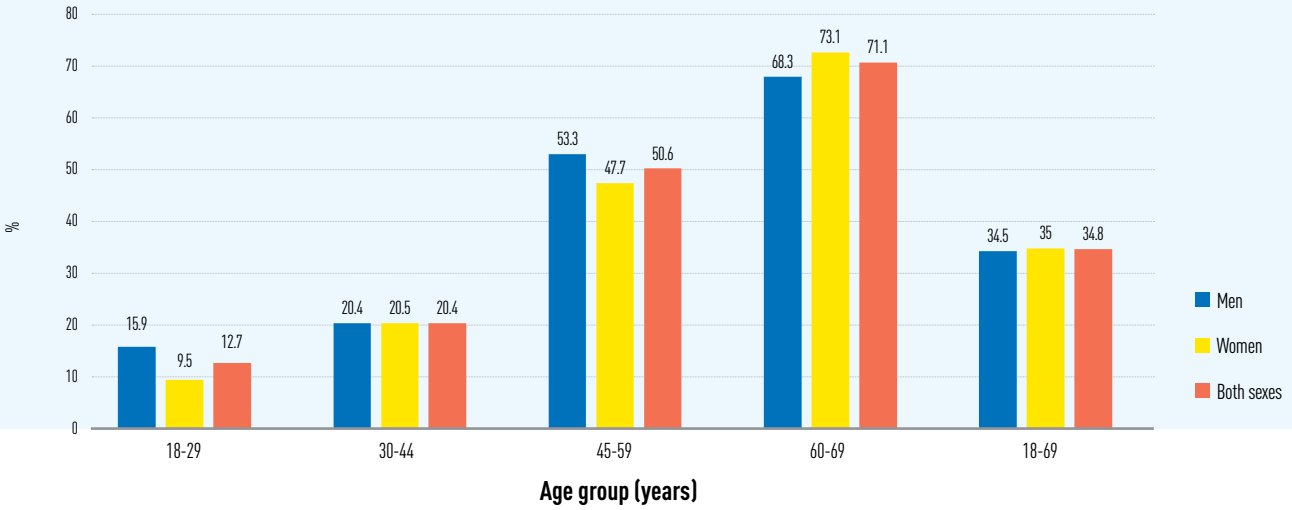


Fig. 32. Proportion of population with raised BP (SBP ≥140mmHg and/or DBP ≥90mmHg) or currently taking medication for hypertension, by age and sex (%)

Among people with raised BP (SBP ≥140 mmHg and/or DBP ≥90 mmHg) or currently taking medication for hypertension, one third (33.6%) had not been previously diagnosed, 17.6% had been diagnosed but were not taking medication, 34.4% were on medication but BP was not controlled (SBP ≥140 mmHg and/or DBP ≥90 mmHg), and only 14.4% were on medication and had controlled BP levels (SBP <140 and DBP <90 mmHg) (Fig. 33). The share of people not previously diagnosed decreased with age, from 59% among 18–29-year-olds to 20.1% among 60–69-year-olds, while the share of people previously diagnosed and treated but with uncontrolled BP increased, from 8.2% among 18–29-year-olds to 49.7% among 60–69-year-olds. A smaller share of men than women had controlled BP in the group of previously diagnosed and treated people (men: 10.9%; women: 18%).

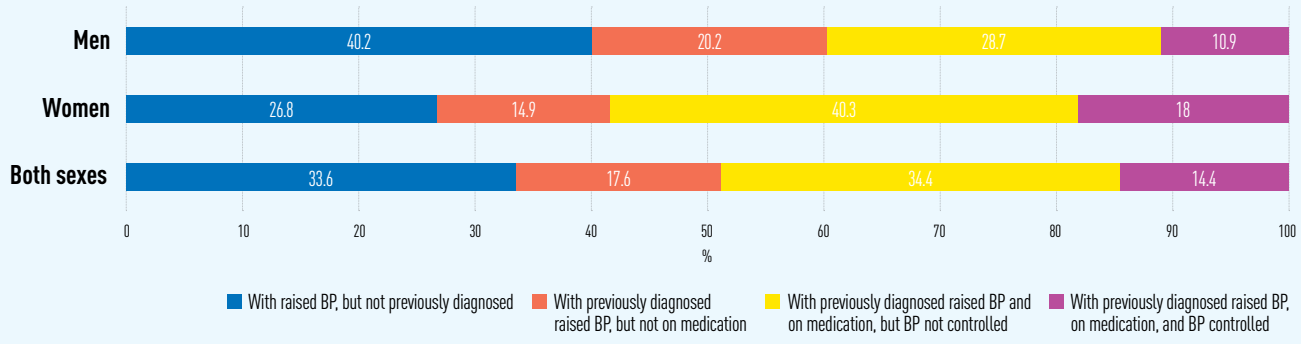
Differences in hypertension prevalence, detection, treatment and control were not significant between urban and rural settlements.

The mean heart rate in the population was 74.7 beats per minute, without significant differences by age, sex or type of settlement.

4.12.2 Height, weight and waist and hip circumference

The average height of women and men in Ukraine was 164.6 cm and 175.8 cm, respectively. The height of both men and women showed a decreasing trend

Fig. 33. Raised BP diagnosis, treatment and control among people with hypertension, by sex (%)



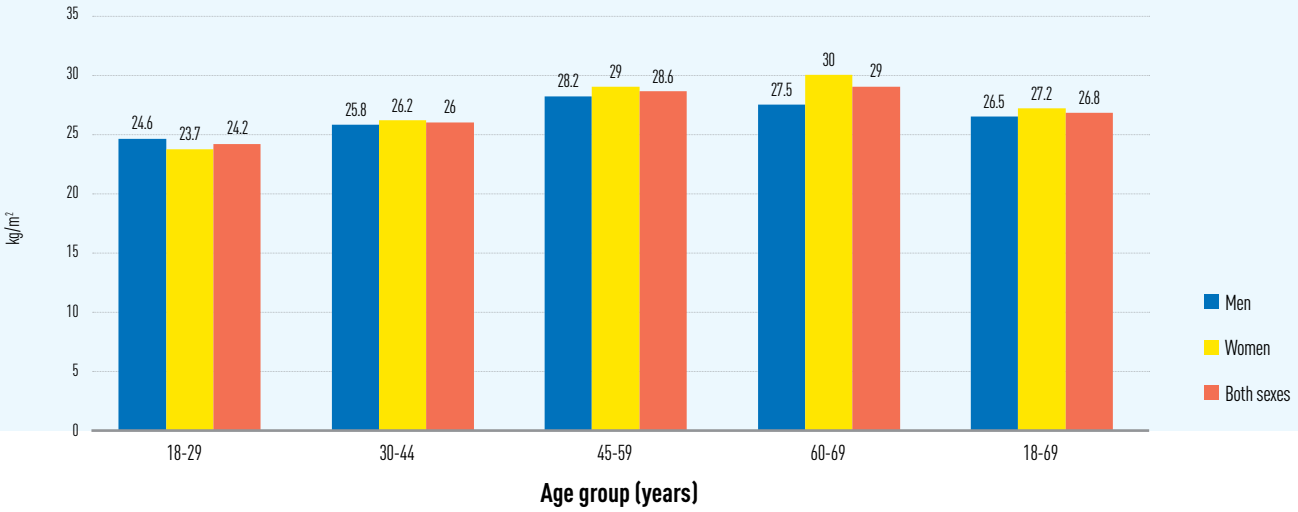


Fig. 34. Mean BMI, by age and sex (kg/m²)

with age, by approximately 4–6 cm between ages 18–29 and 60–69 years (from 179.5 cm to 173.3 cm in men; from 166.5 cm to 161.9 cm for women).

The average weight of women and men was 73.6 kg and 82.1 kg, respectively. Weight increased with age for both men and women. For men, the weight increase between ages 18–29 and 60–69 years was 3.3 kg (from 79.6 kg to 82.9 kg); for women, the weight gain was four times greater, 13.2 kg (from 65.4 kg to 78.6 kg). Women in rural settlements were on average 2 cm shorter than women in urban settlements (163.4 cm and 165.4 cm, respectively) and 3 kg heavier (75.4 kg and 72.3 kg, respectively). For men, no significant difference in weight and height by settlement type was observed.

Waist circumference was larger for men (90.4 cm) than for women (86.6 cm); for women, it increased with age, from 76.9 cm among 18–29-year-olds to 95.6 cm among 60–69-year-olds. Younger women had smaller waist circumference than men, but after the age of 45 years, the values were similar. Women in rural settings had larger waist circumference (rural: 88.8 cm; urban 85 cm). Hip circumference was larger for women (105 cm) than for men (100.1 cm), and it increased with age for women but not for men. Waist-to-hip ratio was higher among men (0.91) than among women (0.83), but it increased with age for women, reducing the difference.

4.12.3 BMI

The mean BMI of an adult in Ukraine was 26.8 kg/m², increasing with age from 24.2 kg/m² among 18–29-year-olds to 29.0 kg/m² among 60–69-year-olds (Fig. 34). In the oldest age group, BMI was significantly higher among women (30.0 kg/m²) than among men (27.5 kg/m²). It was also higher among rural women (28.3 kg/m²) than urban (26.5 kg/m²).

Only two fifths (39.6%) of the population in Ukraine had normal weight (BMI 18.5–24.9 kg/m²). Almost three fifths (59.1%) were overweight (BMI ≥25 kg/m²), including a quarter of the population (24.8%) who were obese

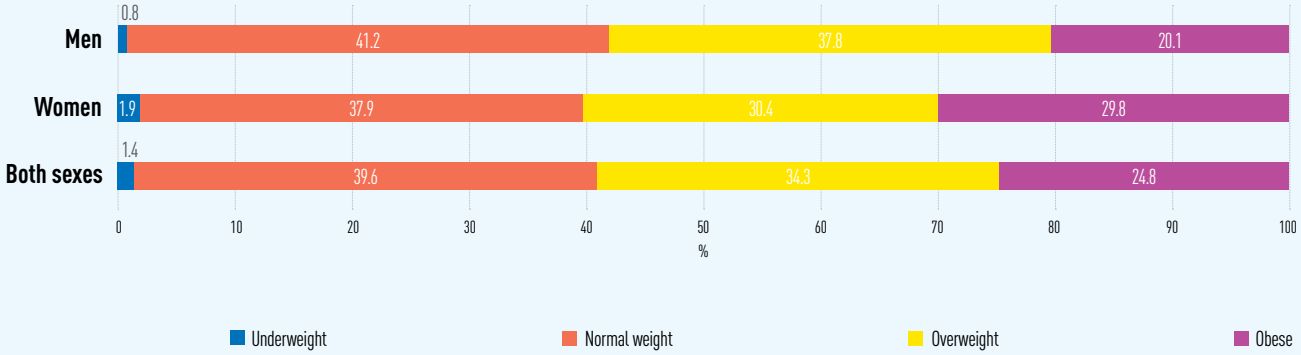


Fig. 35. Proportion of population in BMI categories, by sex (%)

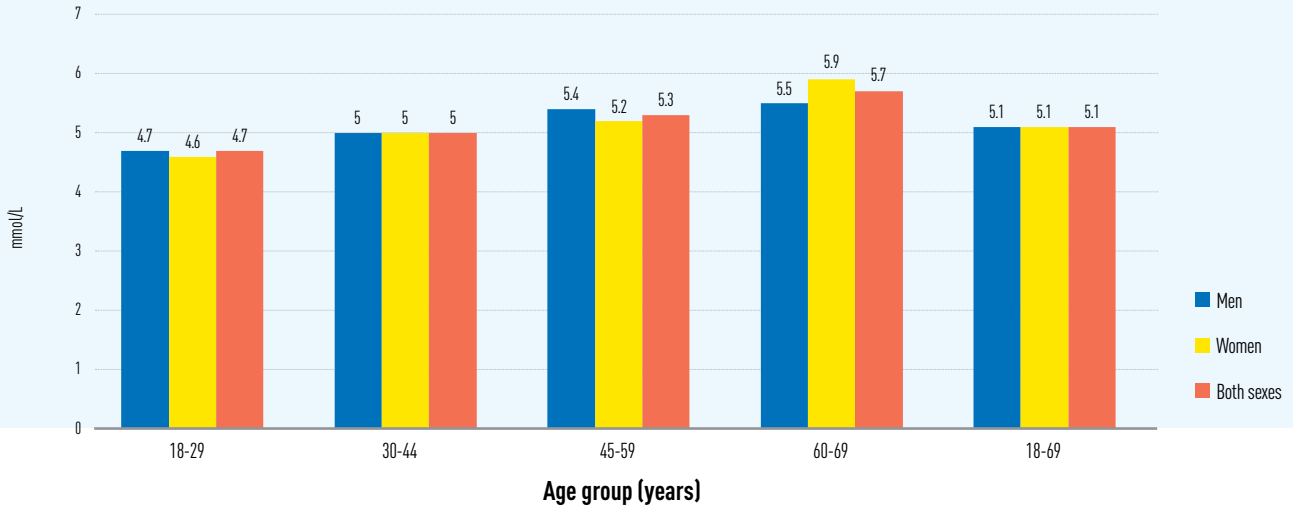
(BMI ≥30 kg/m^2) (Fig. 35). Both overweight and obesity increased sharply with age: overweight from 36.5% among 18–29-year-olds to 73% among 60–69-year-olds; obesity from 10% among 18–29-year-olds to 38.8% among 60–69-year-olds. Obesity was more prevalent among women (29.8%) than men (20.1%), especially in the oldest age group (women: 46.4%; men: 28.2%). Prevalence of overweight and obesity was higher among women living in rural settlements than urban ones (overweight in rural settings: 66.9%, in urban settings: 55.4%; obesity in rural settings: 35.9%, in urban settings: 25.4%).

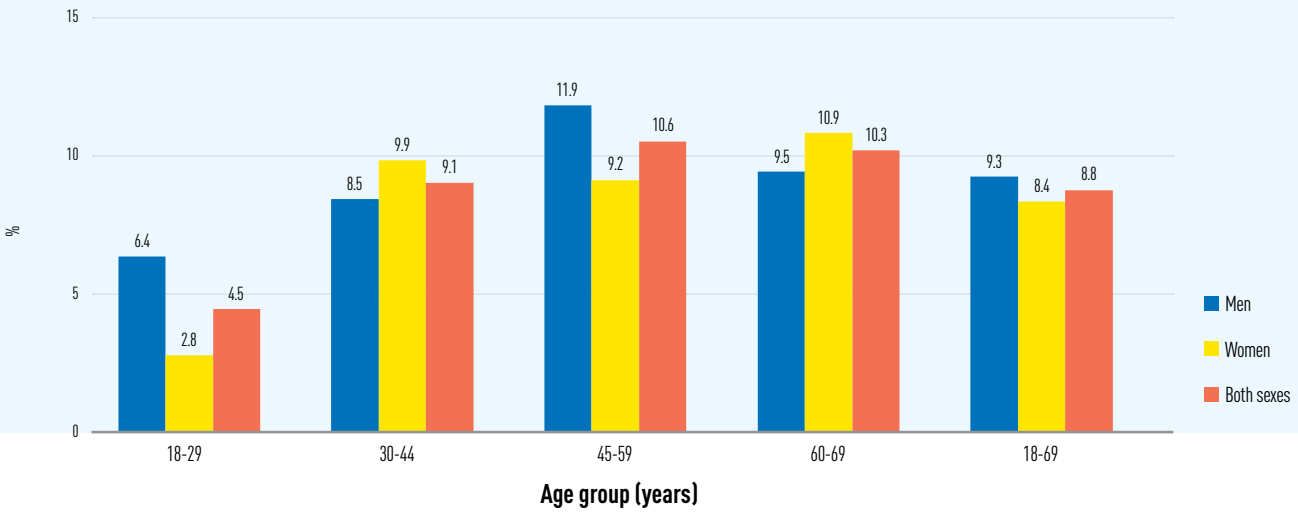
4.13 Biochemical measurements

4.13.1 Blood glucose

The mean fasting plasma glucose in the population (including those who were taking hypoglycaemic medication at the time of the survey) was 5.1 mmol/L, the values being the same for men and women (Fig. 36). Mean levels showed an increasing trend with age, from 4.7 mmol/L at ages 18–29 years to 5.7 mmol/L at ages 60–69 years, with men and women following similar trends. There was no significant difference of mean fasting plasma glucose by type of settlement.

Fig. 36. Mean fasting plasma glucose, by age and sex (mmol/L)





A plasma glucose level of ≥6.1 mmol/L and <7.0 mmol/L (impaired fasting plasma glucose) was found in 8.8% of the population (Fig. 37), with no significant difference between sexes (men: 9.3%; women: 8.4%) or types of settlement. Impaired fasting plasma glucose prevalence was lower among people aged 18–29 years.

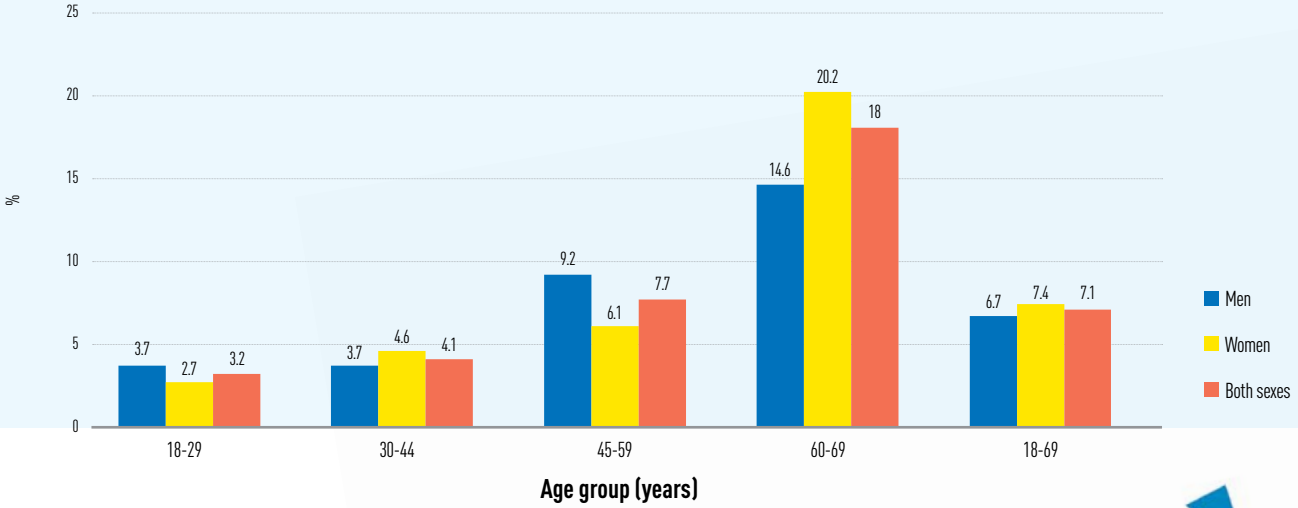
Fig. 37. Proportion of population with impaired fasting plasma glucose (≥6.1 mmol/L and <7.0 mmol/L), by sex and age (%)

The prevalence of raised fasting plasma glucose at level ≥7.0 mmol/L or currently taking oral hypoglycaemic drugs or insulin was 7.1% (Fig. 38). Prevalence levels nearly doubled at each successive age group, from 3.2% at ages 18–29 years to 18% at 60–69 years.

At the time of the survey, an estimated 2.9% of the population were taking oral hypoglycaemic drugs or insulin. The proportions increased by age from 0.7% at ages 18–29 years to 11% by ages 60–69 years.

The proportion of the population who had raised blood glucose but had not previously been diagnosed with diabetes was 3.8% (Fig. 39). Another 5.0% had previously been diagnosed with raised blood glucose but were not currently on medication (oral hypoglycaemic drugs or insulin) for diabetes, while a further 4.0% had previously been diagnosed with raised blood glucose and were currently on medication. These proportions increased with age among men and women. Differences between sexes and settlement types were not significant.

Fig. 38. Proportion of population with raised fasting plasma glucose (≥7.0 mmol/L) or currently taking oral hypoglycaemic drugs or insulin, by sex and age (%)



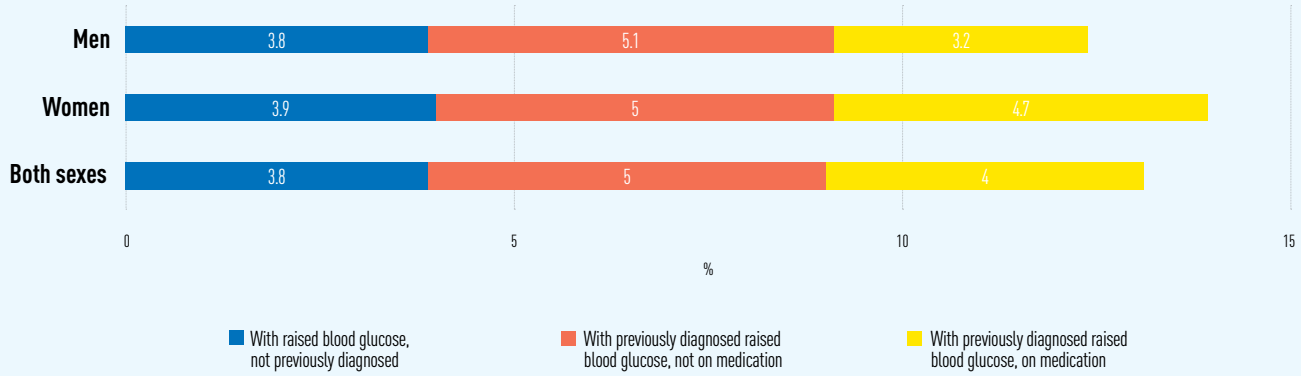


Fig. 39. Raised blood glucose, previous diagnosis and treatment for diabetes, by sex (%)

4.13.2 Blood cholesterol

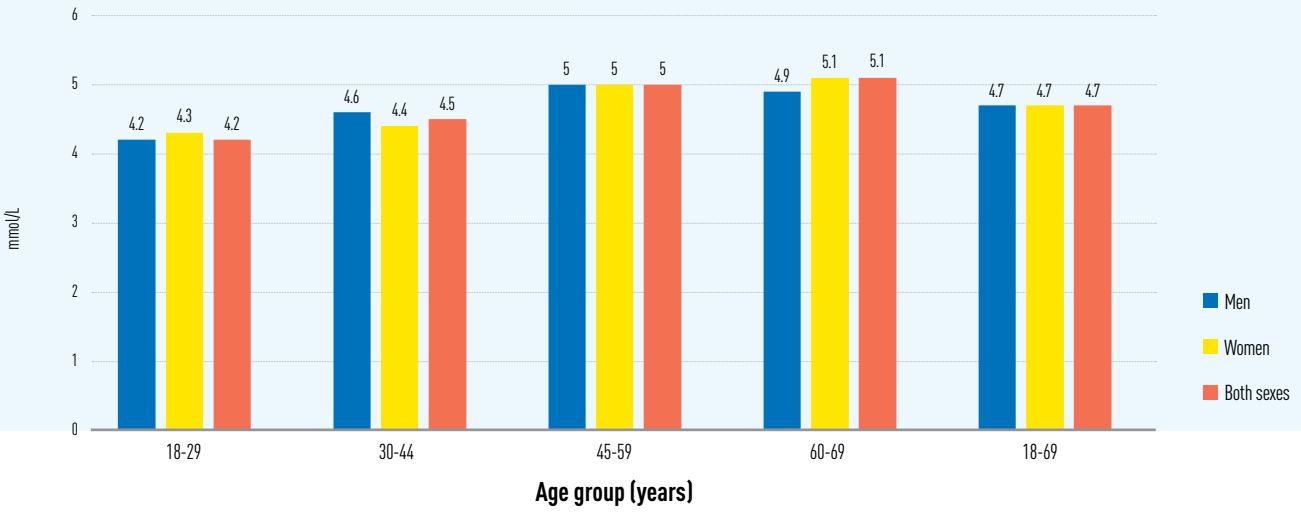
The overall population mean total cholesterol (including people on medication for raised cholesterol) was 4.7 mmol/L, the level being the same for men and women (Fig. 40). Mean values increased with age, from 4.2 mmol/L at ages 18–29 years to 5.1 mmol/L at ages 60–69 years, but the differences between sexes and types of settlement were not significant.

The proportion of the population with a level of total cholesterol ≥5.0 mmol/L or currently on medication for raised cholesterol was 40.7% (Fig. 41), the values being similar for men and women. The proportion increased with age, from 21.9% at ages 18–29 years to 54.5% at ages 60–69 years.

The overall population prevalence of raised total blood cholesterol (≥6.2 mmol/L) or currently on medication for raised blood cholesterol was 9.9%. Prevalence levels were lowest at 30–44 years (3.2%), increasing more than fivefold to 18.5% at ages 60–69 years. This age pattern was similar among both men and women. Patterns of raised blood cholesterol were not different between urban and rural settlements.

The overall population mean level of HDL cholesterol was 1.3 mmol/L, with similar levels for men and women. Overall mean levels of HDL cholesterol decreased with age from 1.3 mmol/L at ages 18–44 years to 1.2 mmol/L at ages 45–69 years. A similar age pattern was observed in men and women.

Fig. 40. Mean cholesterol level, by age and sex (mmol/L)



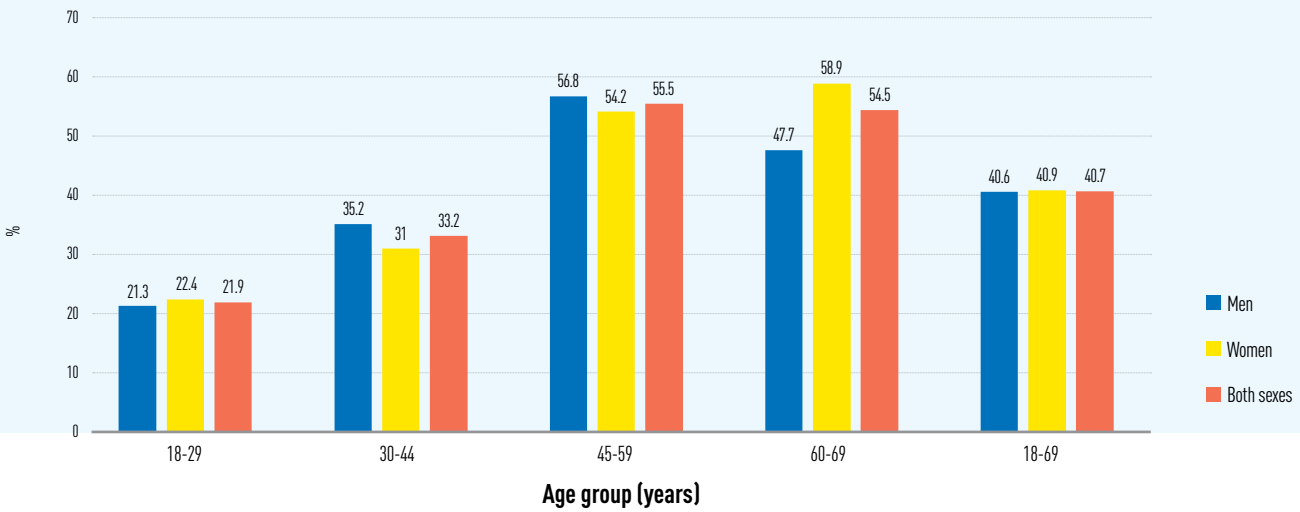


Fig. 41. Proportion of population with raised total cholesterol (≥5.0 mmol/L) or currently on medication for raised cholesterol, by sex and age (%)

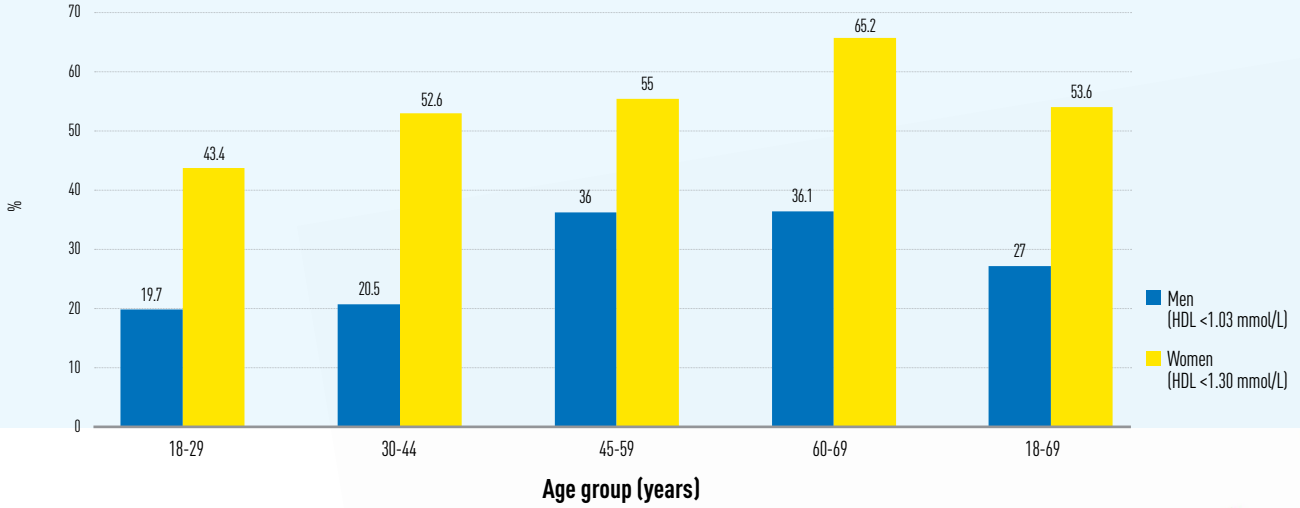
Overall, low (at-risk) levels of HDL cholesterol (<1.03 mmol/L) were observed in 27% of men (Fig. 42); 20% prevalence at ages 18–44 years rose to 36% at ages 45–69 years (an 80% increase). Among women, overall prevalence of low HDL cholesterol (<1.30 mmol/L) was 53.6%; prevalence of 43.4% at ages 18–29 years (more than twice as high as the figure for men at the same age) increased to 65.2% by ages 60–69 years.

There were no significant differences between urban and rural men and women regarding HDL cholesterol levels and risk levels.

4.13.3 Urine analysis

Average salt intake was 12.6 g per 24 hours – more than twice the maximum WHO-recommended level of 5 g per 24 hours. Only 13% of the population had a salt intake less than 5 g per 24 hours. Average potassium excretion in urine was 64.9 mmol per 24 hours. Four fifths (79.5%) of the population had insufficient potassium excretion levels (≤90 mmol per 24 hours). Average iodine concentration in 24-hour urine samples was 163.5 mcg/L. Iodine intake was insufficient (<100 mcg/L) for 44% of the population, adequate (100–199 mcg/L) for 28.7%, above requirement (200–299 mcg/L) for 19.8% and excessive (>300 mcg/L) for 7.5%.

Fig. 42. Proportion of population with low levels of HDL cholesterol, by age and sex (%)



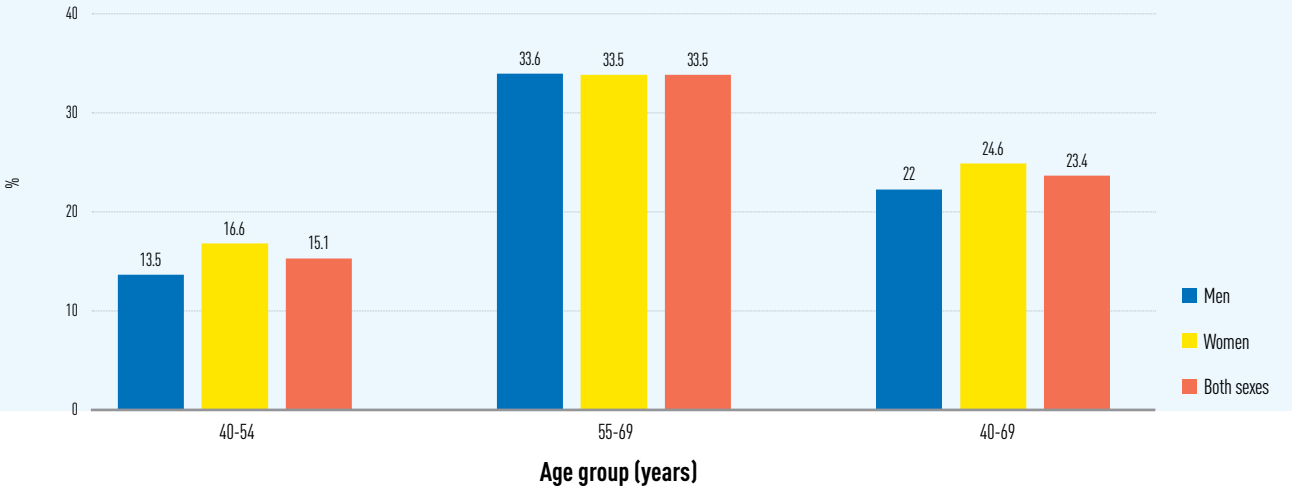


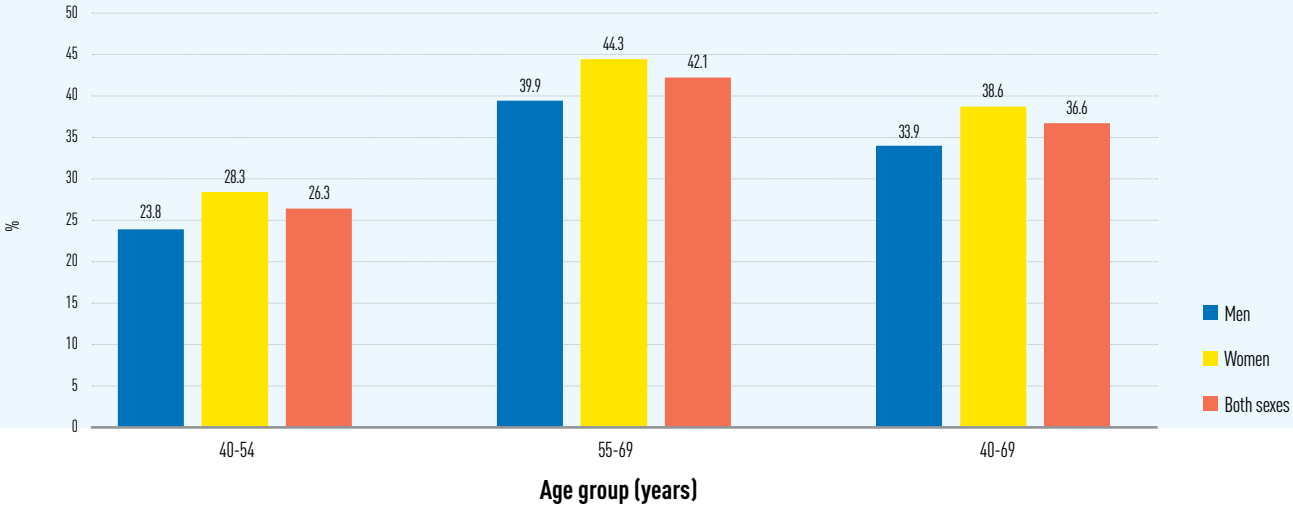
Fig. 43. Proportion of population aged 40–69 years with 10-year risk for CVD ≥ 30% or existing CVD, by age and sex (%)

4.14 CVD risk

A 10-year risk for CVD ≥30% was determined among those aged 40–69 years on the basis of age, sex, BP, smoking status (current smoker or quit smoking <1 year before assessment), total cholesterol and diabetes (diagnosed or a fasting plasma glucose concentration >6.1 mmol/L), or having an existing CVD. An overall population prevalence of 23.4% was calculated (Fig. 43), with no significant difference between sexes. The risk doubled with age from 15.1% at ages 40–54 years to 33.5% at ages 55–69 years, and this increase was similar for both men and women. The share of the population with a 10-year risk for CVD ≥30% was not significantly different between settlement types (rural: 24.8%; urban: 20.0%).

Overall, only one third (36.6%) of the population aged 40–69 years with a 10-year risk of CVD ≥30% or existing CVD were receiving medication and counselling to prevent heart attacks and strokes (Fig. 44), with no significant difference between sexes (men: 33.9%; women: 38.6%). The proportion receiving medication or counselling increased by 60%, from 26.3% at ages 40–54 years to 42.1% at ages 55–69 years, but the difference did not reach statistical significance. Similar trends by age were followed by men and women, without significant differences between urban and rural settings (rural: 35.3%; urban: 37.6%).

Fig. 44. Proportion of population aged 40–69 years with existing CVD or 10-year CVD risk ≥ 30% receiving drug treatment or counselling to prevent heart attack or stroke, by age and sex (%)

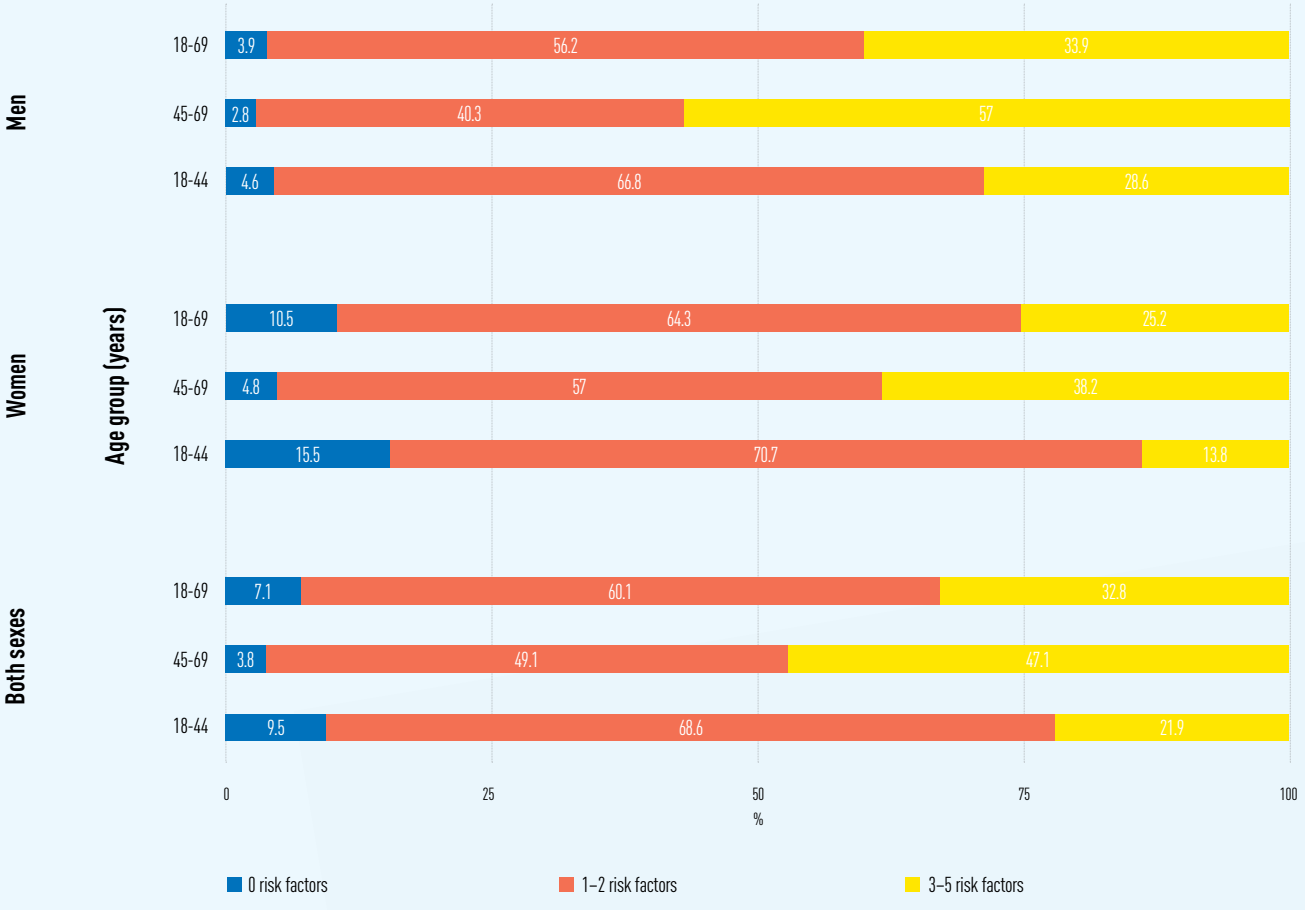


4.15 Combined risk factors

The risk factors for CVD identified in the survey and from physical and biochemical measurements were current daily smoking; insufficient daily consumption of fruits and/or vegetables; insufficient physical activity to meet WHO recommendations; overweight (BMI ≥25 kg/m^2); and raised BP (SBP >140 mmHg and/or DBP >90 mmHg or currently taking medication for high BP).

Overall, 60.1% of the population had 1–2 risk factors, 32.8% had 3–5 risk factors, and 7.1% had none (Fig. 45). In terms of age, the prevalence of 3–5 risk factors was 21.9% among those aged 18–44 years and the level had more than doubled to 47.1% by ages 45–69 years. In terms of sex, 39.9% of men had 3–5 risk factors compared to 25.2% of women. The age pattern also showed an increased prevalence among men, which doubled from 28.6% at ages 18–44 years to 57.0% at ages 45–69 years, while the prevalence among women nearly tripled from 13.8% at ages 18–44 to 38.2% at ages 45–69 years, showing an important gender inequality. Overall, these prevalence trends were also true for rural and urban settings. However, rural inhabitants had higher CVD risk, as 43.3% of them had 3–5 risk factors while 38.2% of urban dwellers did.

Fig. 45. Number of risk factors for CVD, by age and sex (%)



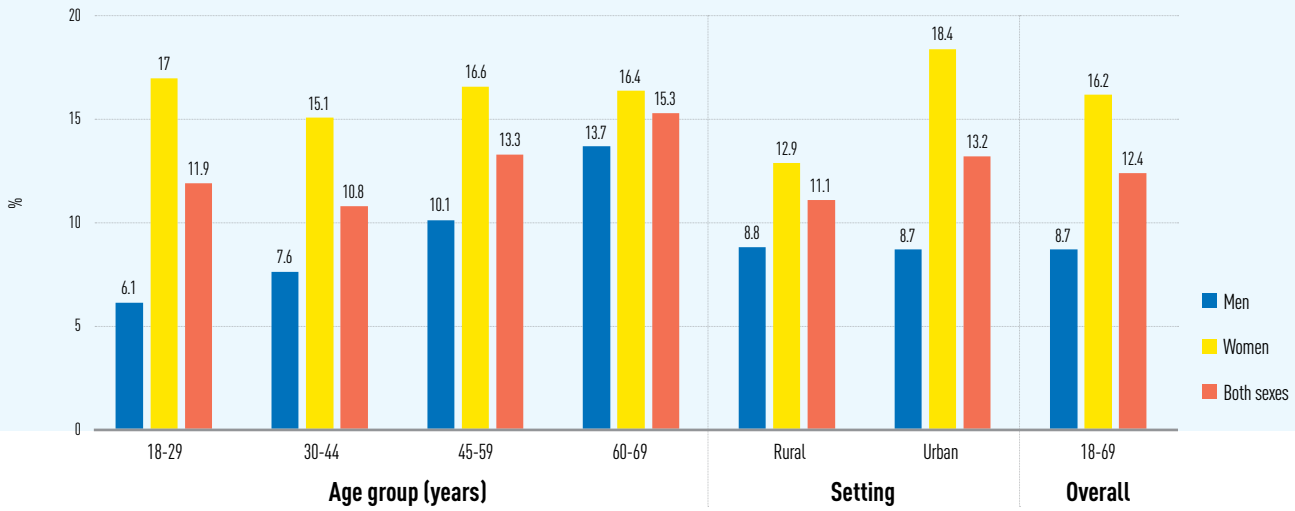
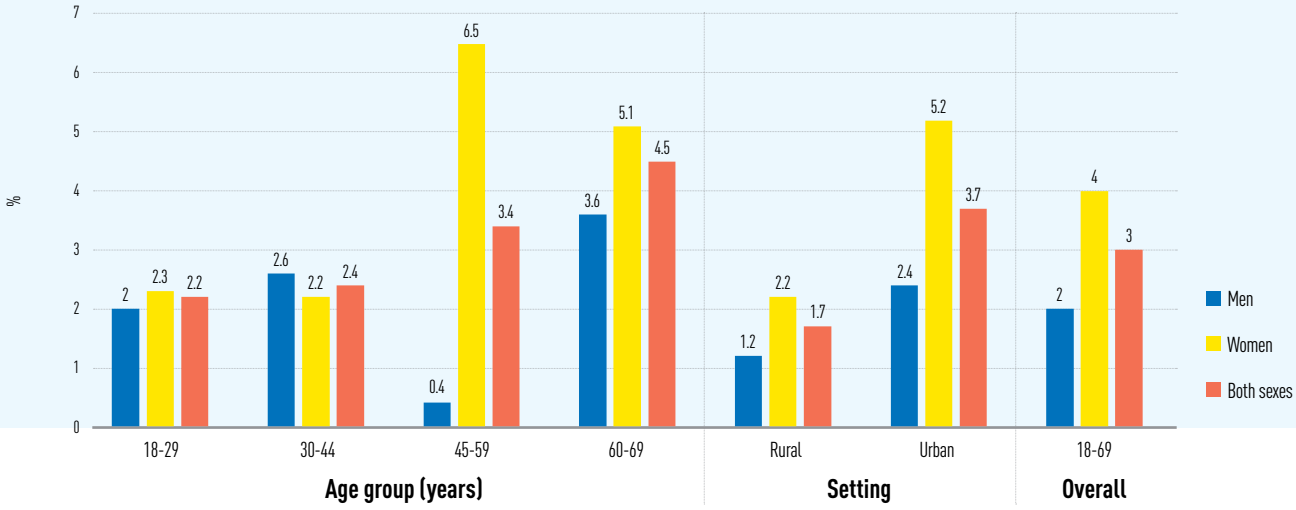


Fig. 46. Proportion of population with depressive symptoms using an established algorithm, by age, sex and setting (%)

4.16 Mental health, depression and suicidal behaviour

Approximately every eighth adult (12.4%) in Ukraine reported symptoms of depression using an established algorithm (Fig. 46), with prevalence approximately twice as high among women (16.2%) as among men (8.7%). A non-significant increasing trend with age was observed for men and for urban women. However, only one in four with probable depression (3.0% of the population) had been told by a doctor or health-care professional that they had depression (Fig. 47). Prevalence of diagnosed depression was twice as high among women (4.0%) as among men (2.0%), but this was not statistically significant except for the 45–59 age group. Inhabitants of rural areas reported diagnosed depression less often than those of urban areas (1.7% and 3.7%, respectively). Only 0.4% of the population had undergone treatment for depression, either with antidepressant medication or psychological therapy, over the preceding two weeks, with a non-significant trend towards higher use among women (men: 0.2%; women: 0.6%) and in urban settings (rural: 0.2%; urban: 0.5%). Overall, 1.1% of the population acknowledged that they had considered attempting suicide over the previous 12 months, without statistically significant differences between sexes, ages and settings.

Fig. 47. Prevalence of depression diagnosed by a health-care worker, by age, sex and setting (%)



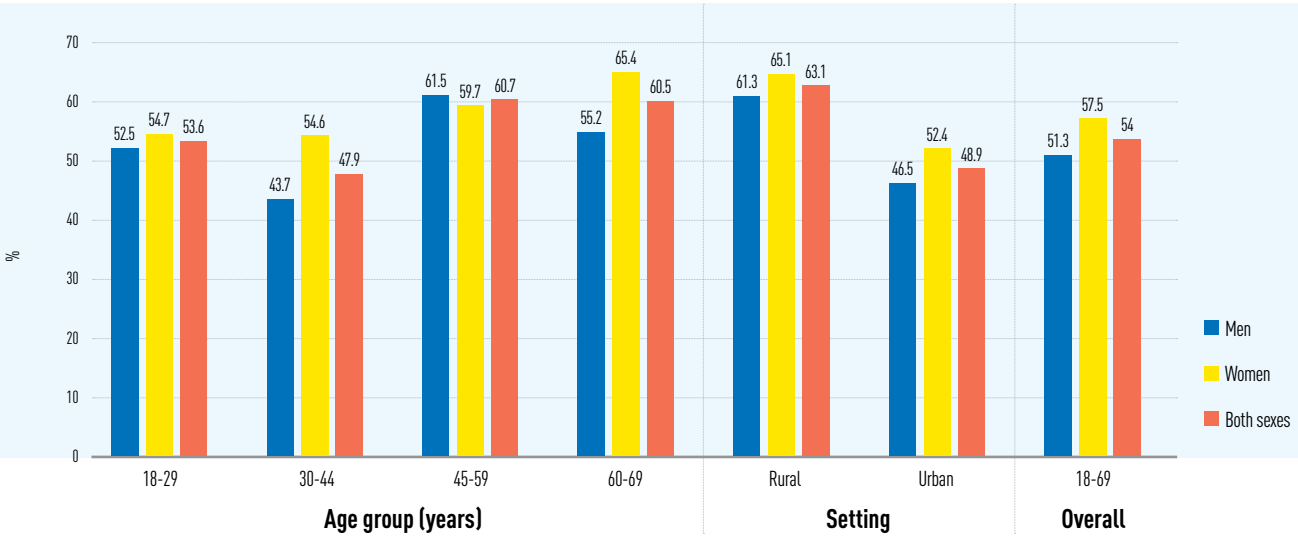


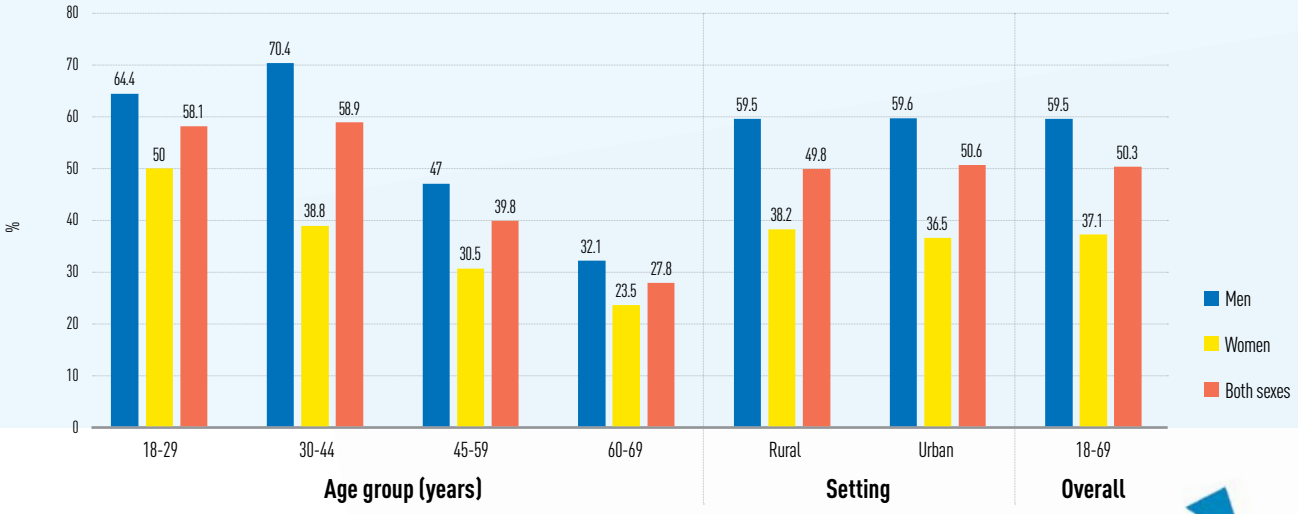
Fig. 48. Proportion of car users not always using a seat belt over the past 30 days, by age and sex (%)

4.17 Violence and injury

4.17.1 Road safety and road crashes

Car use was very common in Ukraine. Almost three quarters (71.3%) of the population had used a car in the last 30 days as driver or passenger, with less frequent use in the oldest age group, where 48% used a car. Over half (54%) of those who used a car in the last 30 days did not always use a seat belt, without significant differences between age groups and sexes (Fig. 48). The difference in use of seat belts was significant between settings: 48.9% of the urban population reported not always wearing seat belts compared to 63.1% of the rural population. Half of those who used cars (50.3%) also reported that the driver was speeding (Fig. 49), with men (men: 59.5%; women: 37.1%) and younger people reporting speeding more often. Use of gadgets such as mobile phones or tablets while driving was also frequent, with nearly half (46.8%) of drivers reporting such use in the last 30 days (Fig. 50). Gadget use was more frequent among men (53.2%) than women (37.1%), and decreased among 60–69-year-olds. Differences in speeding and gadget use while driving were not significant between settings.

Fig. 49. Proportion of car users reporting speeding over the last 30 days, by age and sex (%)



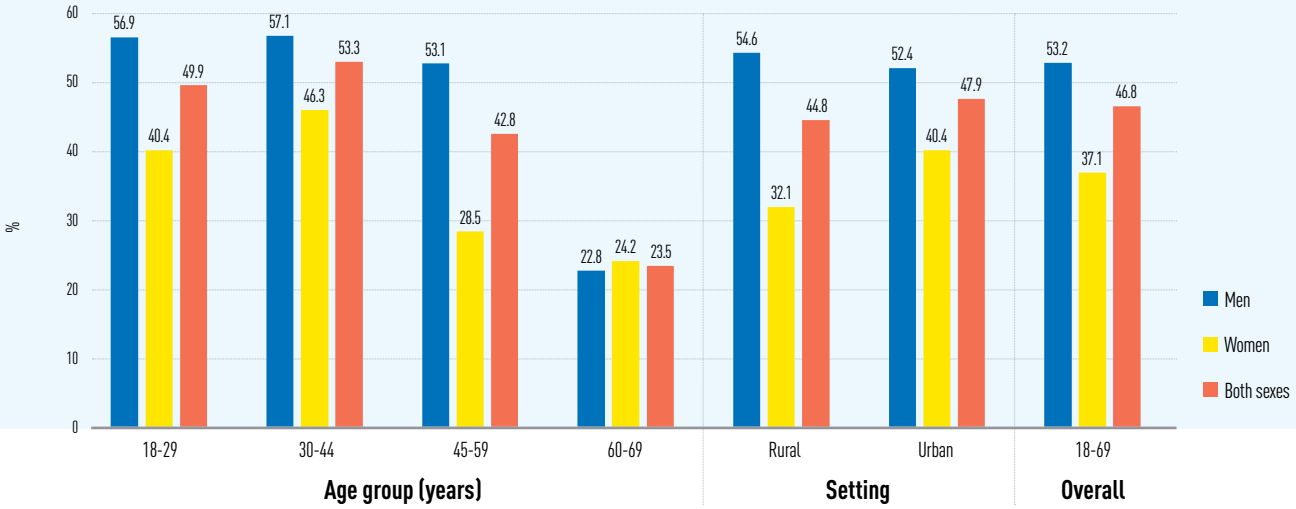
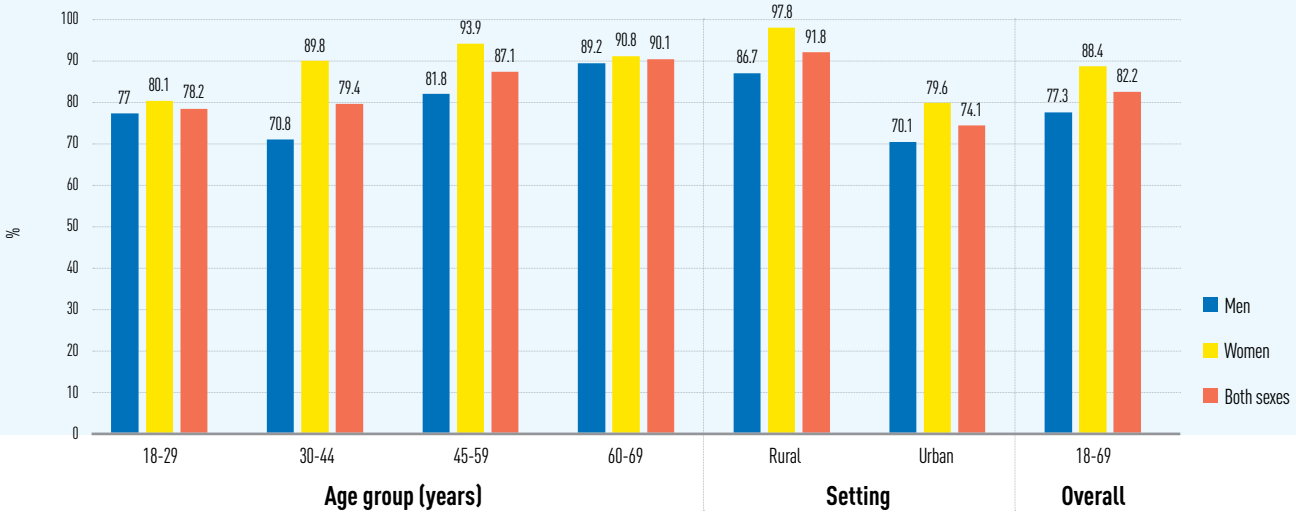


Fig. 50. Proportion of drivers using gadgets while driving over the last 30 days, by age and sex (%)

A motorcycle or motor scooter was used by 26% of the population in the last 30 days. Use was most frequent among 18–29-year-olds (39.8%), and more men than women in this age group used them (50% and 30.1%, respectively). Use was also more frequent in rural settings (rural: 32.5%; urban: 22.3%). Helmet usage among motorcycle or motor scooter drivers and passengers was low (Fig. 51): overall, 82.2% did not always use helmets (77.3% of males, 88.4% of females). Helmet use was less frequent among the rural population: helmets were not always used by 91.8% of the rural population and 74.1% of the urban population.

Driving a motorized vehicle after consuming two or more alcoholic drinks in the last 30 days was reported by 2.1% of the population and was more common among men (3.4%) than women (0.7%), especially in rural settings (4.7% among men) (Fig. 52). In addition, 4.2% of the population reported riding as a passenger in the last 30 days when the driver had consumed two or more drinks (Fig. 53). More men than women reported riding with a driver who had drunk, with a decreasing age trend for both men and women.

Fig. 51. Proportion of motorcycle or scooter drivers and passengers not always using a helmet, by age and sex (%)



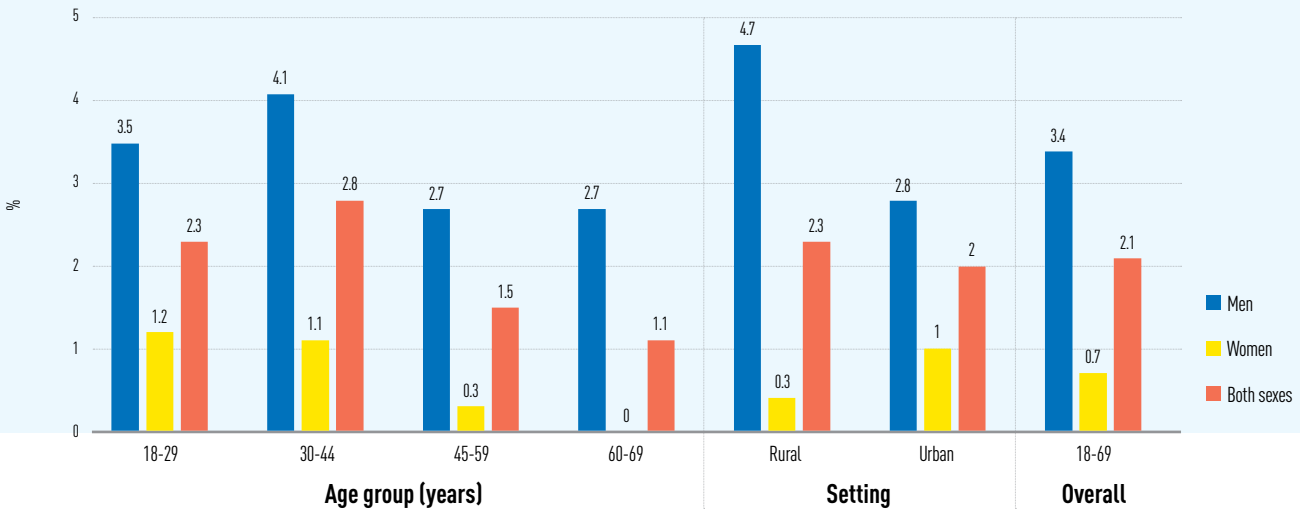


Fig. 52. Proportion of drivers driving under the influence of alcohol, by age, sex and setting (%)

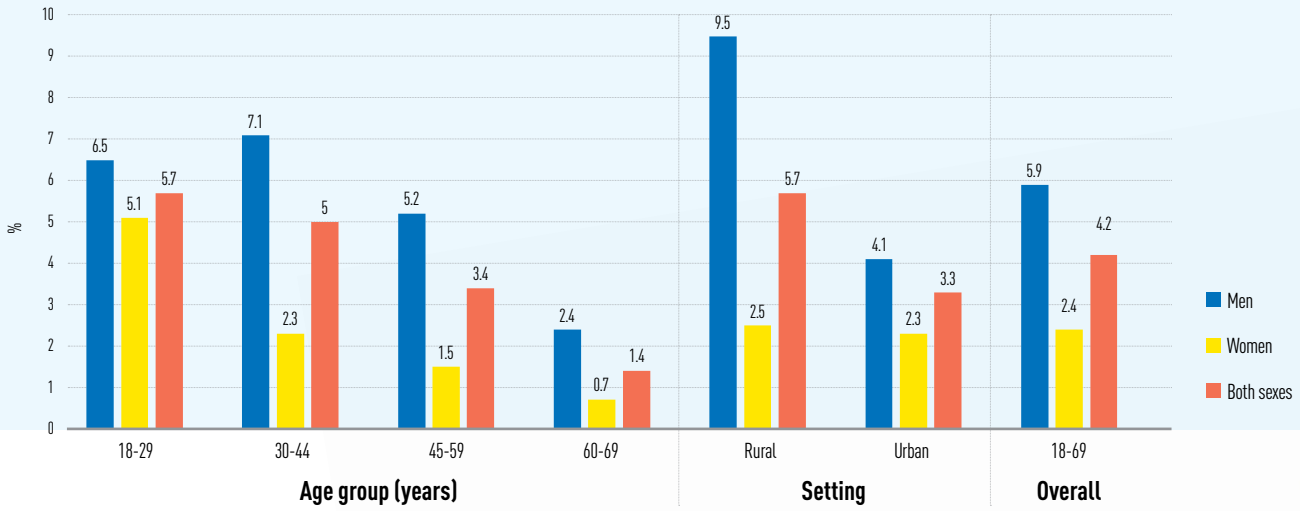
Almost one man in 10 (9.5%) in rural settings reported riding in a vehicle in the last 30 days when the driver had consumed two or more alcoholic drinks.

Bicycle use was also frequent in Ukraine, with 40.2% of the population reporting that they had ridden one in the last 30 days. Usage decreased with age, from 52.3% among 18–29-year-olds to 32.1% among 60–69-year-olds; it was also higher in rural settings (53.6%) than urban ones (32.3%). Use of bicycle helmets was very rare, with 95% of those who used bicycles reporting that they did not use helmets regularly (Fig. 54); their use was lower in rural settings, with 98.8% reporting that they did not use them regularly, compared to 91.3% in urban settings.

Around 7% of the population had been involved in a road crash over the previous 12 months (Fig. 55). People aged 18–29 years reported being involved in a road crash three times more often than 60–69-year-olds (9.4% versus 3.3%). Differences between sexes and settlement types were not significant.

Of those involved in road crashes, one third (35.4%) had injuries that required medical attention, without significant differences between sexes (men:

Fig. 53. Proportion of passengers in a vehicle with a driver under the influence of alcohol, by age, sex and setting (%)



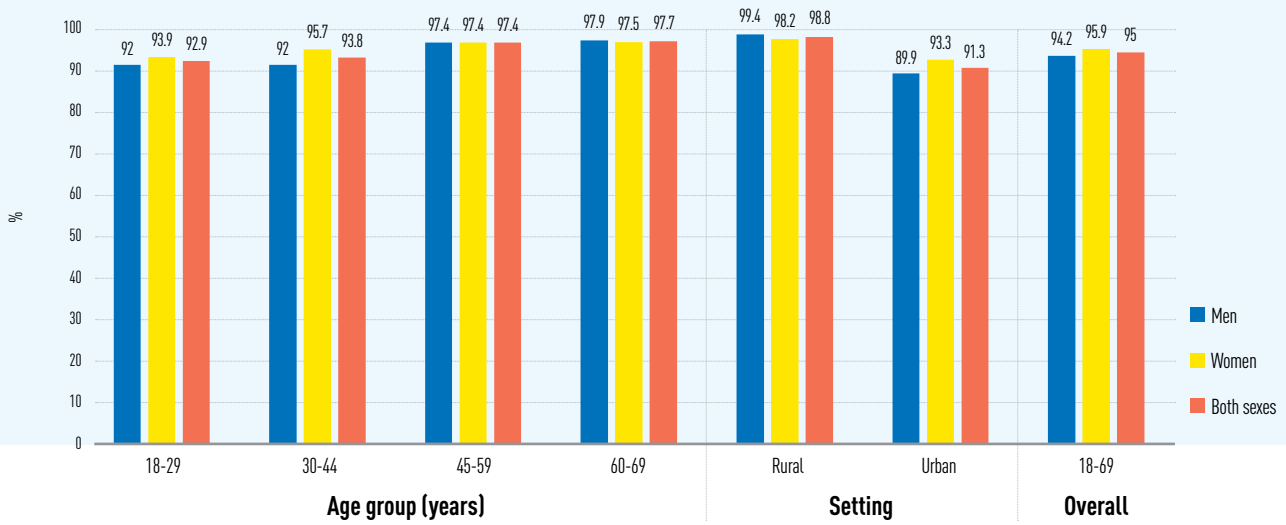


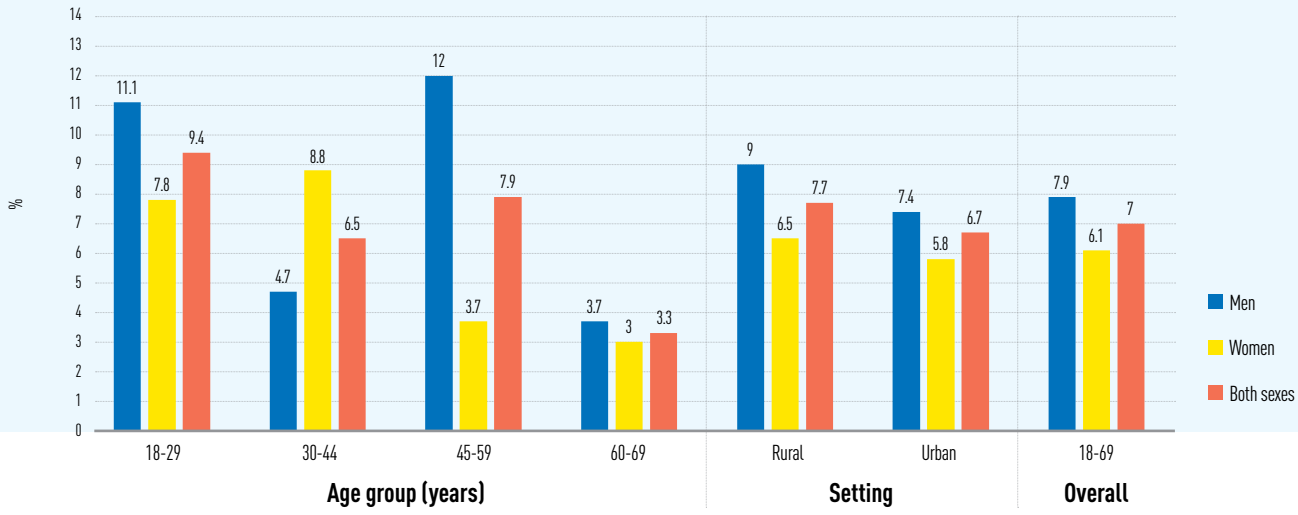
Fig. 54. Proportion of cyclists not always using a helmet, by age, sex and setting (%)

40.2%, women: 28.9%). Residents of urban areas involved in road crashes more often had injuries requiring medical attention (49.9%) than residents of rural settings (13.2%).

4.17.2 Unintentional injury

About one in 14 of the population (6.9%) had an unintentional injury other than a road crash requiring medical attention in the past 12 months (Fig. 56). The frequency of such injuries decreased with age for men but not for women. Overall, differences between sexes and settlement types were not significant. More than half (54.5%) of these injuries were caused by falls, 13.4% by cuts, 8.4% by burns, 5.6% by poisonings, 4.6% by animal bites and 13.5% by other causes (Fig. 57). Just over a third (36.8%) of injuries happened at home, 26.9% on the road/street/highway, 16.2% at school or workplace, 1.9% on a farm, 5.9% at a sports venue and 36.8% at other localities. Differences by age, sex and settlement type were not significant either for cause or place of injury, but it should be noted that the numbers were small.

Fig. 55. Proportion of population involved in a road crash during previous 12 months, by age, sex and setting (%)



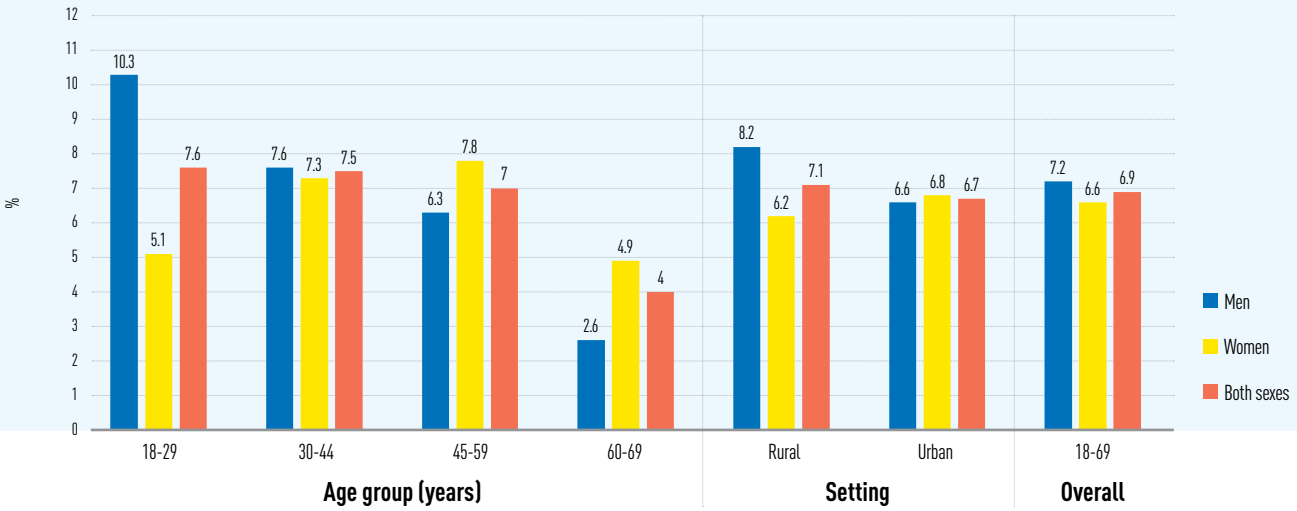


Fig. 56. Proportion of population having unintentional injury requiring medical attention in the past 12 months, by age, sex and setting (%)

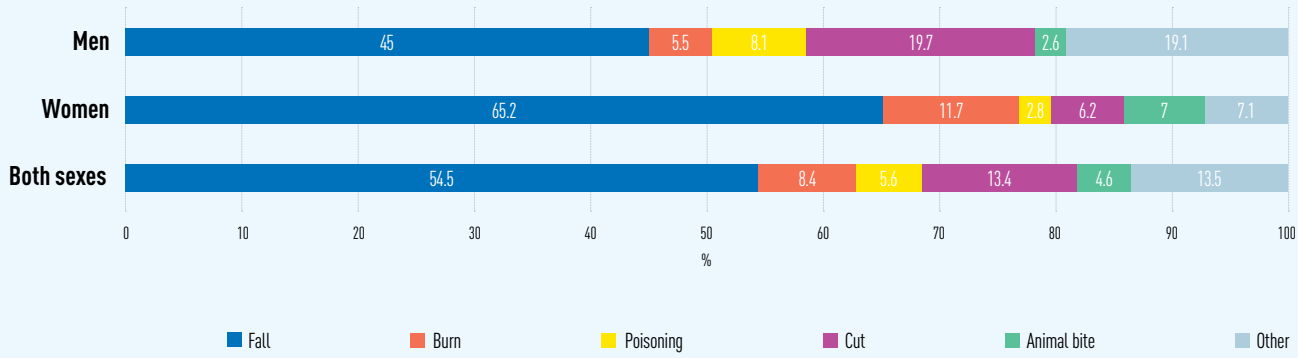


Fig. 57. Causes of unintentional injuries requiring medical attention, by sex (%)

4.17.3 Abuse and intentional injury

A little under half (44.1%) the population reported being physically abused during childhood (Fig. 58), with men reporting this more often than women (especially in rural settings – men: 55.7%; women: 36.6%). Sexual abuse during childhood was reported by 1.4% of the population and was nearly three times more frequent among women (2.1%) than men (0.8%). In addition, 2.0% of adults experienced sexual abuse during adulthood, with women reporting this more than three times as often as men (3.2% and 0.9%, respectively). Prevalence of sexual abuse during childhood and adulthood did not differ by type of setting.

Over the previous 12 months, 5.2% of the population had been frightened for their safety, or that of their family, because of anger or threats of another person (Fig. 59), without significant difference between settings. Women

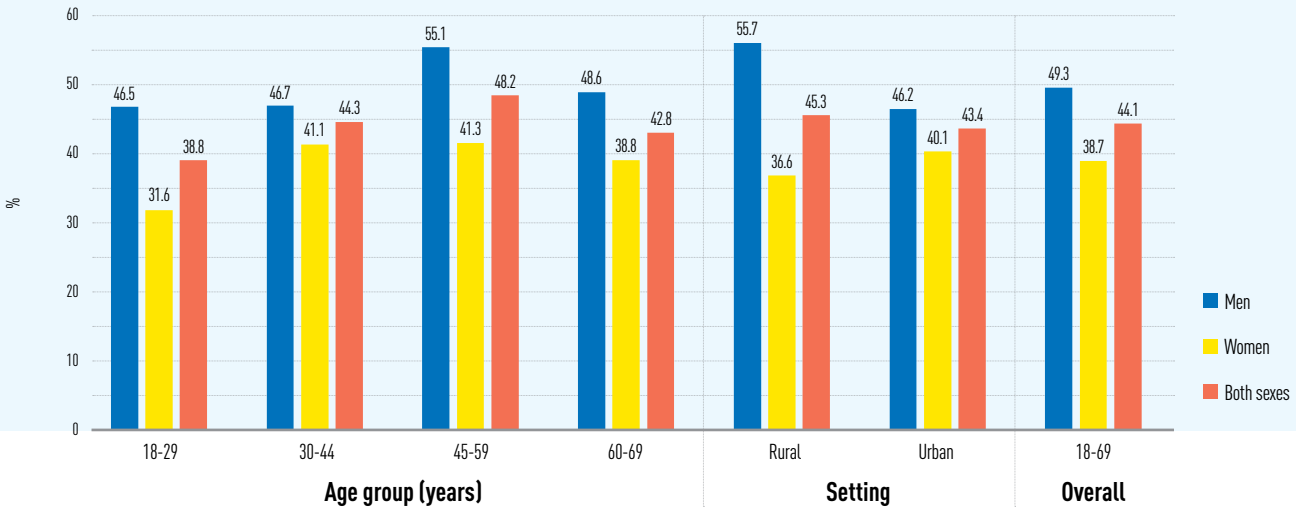
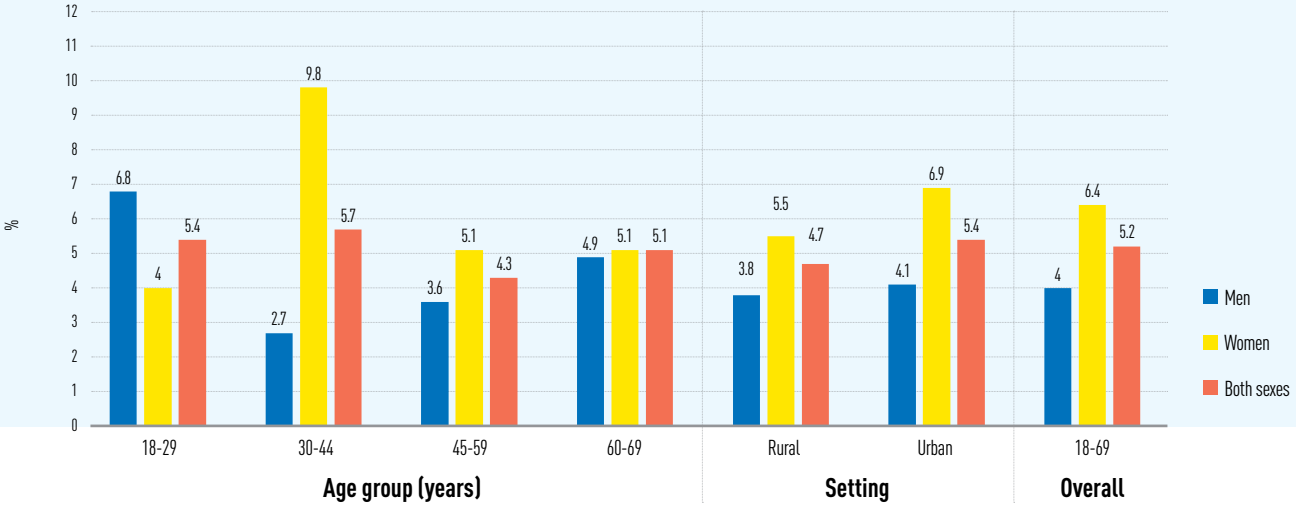


Fig. 58. Proportion of population suffering physical abuse in childhood, by age, sex and setting (%)

reported this more often than men, especially in the 30–44 age group (men: 2.7%; women 9.8%). Men reported being frightened in 31.2% of cases by an official or legal authority, while women were frightened in 38.1% of cases by a family member (Fig. 60), but it should be noted that the numbers were small. Carrying loaded firearms for personal protection was not common – 0.7% of the population had done so in the last 30 days. Differences between sexes and settings were not significant, although men tended to carry weapons more often, especially in urban settings.

Fig. 59. Proportion of population frightened for their safety because of another person, by age, sex and setting (%)



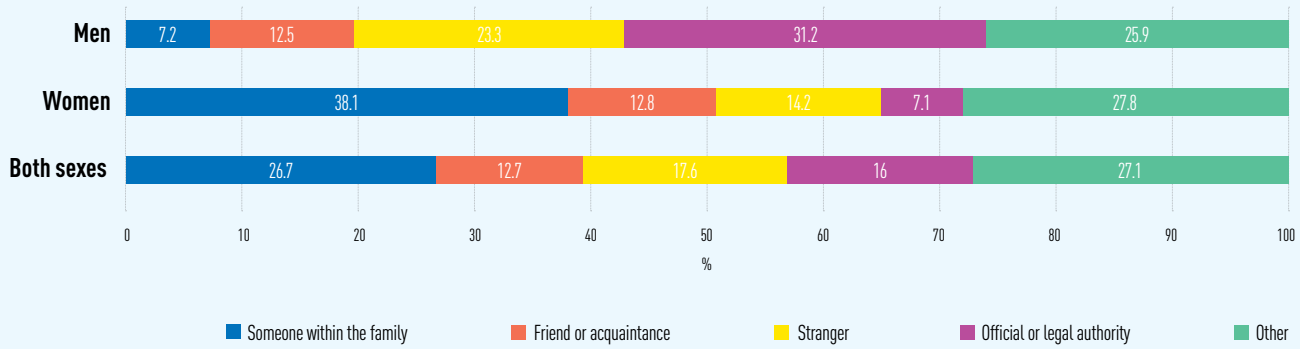
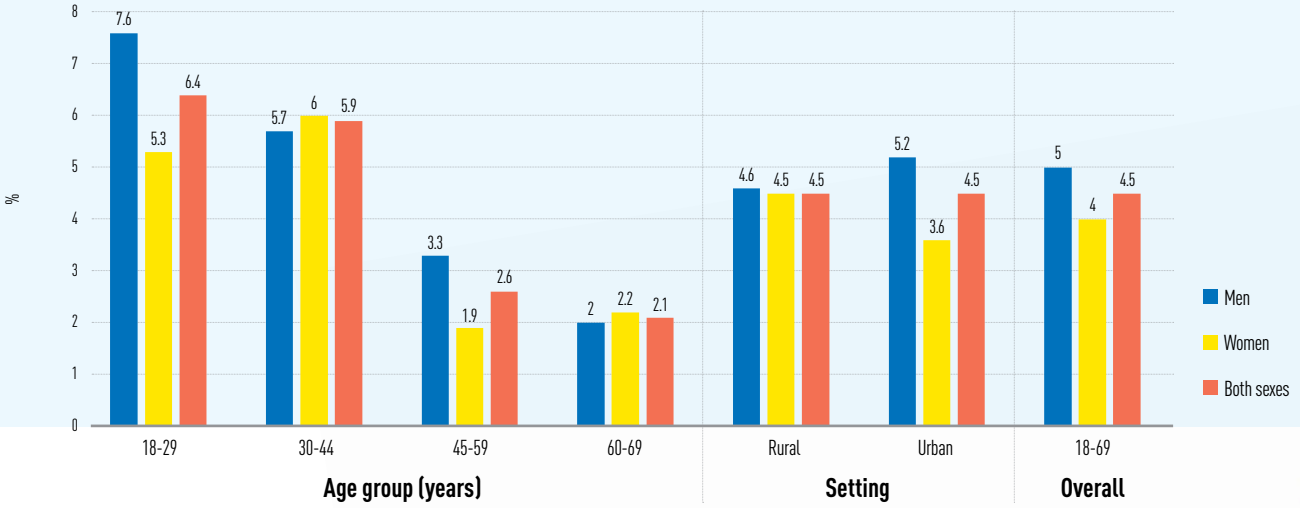


Fig. 60. Type of person/perpetrator causing feeling of fear, by sex (%)

Injury that required medical attention caused by violent incidents in the past 12 months was reported by 4.5% of the population (Fig. 61); incidence decreased with age and there was no significant difference between sexes and settings. Among men, injury was mostly caused by a friend/acquaintance (44.2%) or a stranger (38.7%), while among women injuries were caused by an intimate partner (38.3%), a friend/acquaintance (26.1%), or a stranger (13.2%). Injuries were most often caused without a firearm or other weapon.

Fig. 61. Proportion of population suffering injury in a violent incident that required medical attention in the past 12 months, by age, sex and setting (%)



5. Conclusions

The STEPS survey has provided, for the first time, comprehensive, internationally comparable and nationally representative data on NCDs and their risk factors in Ukraine. In addition to core modules, optional modules on depression and suicidal behaviours, violence and injury, and cervical cancer were included.

5.1 Main findings

The study revealed very high prevalence of NCDs and their behavioural and biological risk factors in Ukraine. One third (33.9%) of the population aged 18–69 years were current smokers, including half of all men (50.3%) and every sixth woman (16.7%). Particularly worrying was the high and – compared to previous data – increasing level of smoking among females. Novel products such as HTPs and electronic cigarettes were increasingly used, especially by younger population groups, as well as hookah, which was used by 18.7% of the population aged 18–29 years. The increased availability and use of such products could also be contributing to rising smoking rates. Every fifth current smoker (21%) had tried unsuccessfully to stop smoking; the proportion of women aged 18–29 years was particularly high, where nearly half (48.8%) had made an unsuccessful attempt to stop smoking.

Alcohol consumption was frequent and levels consumed were high in Ukraine. Two thirds of men and nearly half of women had consumed alcohol in the previous 30 days, with every fifth person (19.7%) consuming six or more drinks on a drinking occasion (heavy episodic drinking). Heavy episodic drinking was three times higher among men (29.5%) than among women (9.4%). Symptoms associated with alcohol dependence were noticeable among persons who had consumed alcohol over the previous 12 months, and three to four times more frequent among men than among women. Every eighth person (12.7%) reported not being able to stop drinking once they had started, every tenth (10.8%) reported failing to do what was normally expected of them the next day, and every eighth (13.2%) drank in the morning to ease a hangover. Unrecorded alcohol (produced at home and other untaxed forms) was consumed frequently and accounted for 17.3% of total alcohol consumption.

The response rate was **57%**

Unhealthy dietary patterns were also common. Two thirds (66.4%) of the population did not consume a sufficient quantity of fruits and vegetables (five portions daily). Nearly half the population (44.9%) always or often added salt or salty sauce to their food before or during eating, two thirds (66.7%) always or often added salt to food when cooking at home, and a quarter (26.9%) always or often ate processed food with a high salt content. Average salt intake was 12.6 g per day – more than twice the maximum recommended level of 5 g per day. Only 13% of the population had a salt intake less than 5 g per day.

On a positive note, levels of physical activity were high in Ukraine – among the highest in the WHO European Region. Only 10% of the population did not meet the WHO recommendation of at least 150 minutes of moderate-intensity physical activity, or equivalent, per week.

Regarding mental health, every eighth adult (12.4%) in Ukraine had reported symptoms consistent with a clinical diagnosis of depression. However, only one in four people with probable depression (3.0% of the total population) had been told by a doctor or health-care professional that they had it. Only 0.4% of the population had undergone treatment, either with antidepressant medication or psychological therapy – equivalent to a treatment coverage rate of only 3.2% of probable cases of depression.

12.4%

Every eighth adult in Ukraine had reported symptoms consistent with a clinical diagnosis of depression.

Adherence to road safety measures was low in Ukraine. Half of those who had used a car in the previous 30 days did not always use a seat belt, reported that the driver was speeding, or used equipment such as mobile phones or tablets while driving. Helmet usage was very low: 82.2% of motorcycle or motor scooter drivers and passengers, and 95% of bicycle users, did not always use a helmet. Over the previous 12 months, 7% of the population had been involved in a road crash as driver, passenger, pedestrian or cyclist, and one third (35.4%) of these had injuries that required medical attention. In addition, 6.9% of the population had an unintentional injury other than a road crash requiring medical attention, with falls being the most common preventable cause of such injuries.

Various forms of violence affected Ukrainian life. Almost half of respondents (44.1%) were physically abused in childhood. Furthermore, 2.1% of women and 0.8% of men were sexually abused in childhood; 3.2% of women and 0.9% of men as adults.

Regarding health and access to care, just over half of all women (53.1%) had undergone screening for cervical cancer on at least one occasion in their life. Among women who had received abnormal/positive, suspected cancer or inconclusive results, the large majority (91.4%) received treatment to their cervix. Of the 46.9% of women who had not had a cervical cancer test, the reasons for not having a test were as follows: 48.7% did not have sufficient knowledge about the procedure (how and/or where to get a test); 7.8% mentioned embarrassment (fear of the visit being disclosed, social stigma); 26.5% did not have time to do the test; 7.8% said that the clinic was too far away; and 9.2% gave fear as the reason.

Regarding population health status in Ukraine, the mean BMI of an adult was 26.8 kg/m^2 and increasing with age. Only two fifths (39.6%) of the population in Ukraine had normal weight (BMI 18.5–24.9 kg/m^2). Almost three fifths (59.1%) were overweight (BMI ≥25 kg/m^2), including a quarter of the population (24.8%) who were obese (BMI ≥30 kg/m^2). Both overweight and obesity increased sharply with age, and obesity was more prevalent among women (men: 20.1%; women: 29.8%).

14.4%

Of people with raised BP or hypertension, only one in seven had controlled BP levels

One third of the population (34.8%) had raised BP or hypertension, defined as levels of SBP ≥140 mmHg and/or DBP ≥90 mmHg, or currently taking medication for raised BP. Of these, a third (33.6%) had not been previously diagnosed; 17.6% had been diagnosed but were not taking medication; 34.4% were on medication but BP was not controlled (SBP ≥140 and/or DBP ≥90 mmHg); and only 14.4% were on medication and had controlled BP levels (SBP <140 mmHg and DBP <90 mmHg).

Prevalence of raised fasting plasma glucose (≥7.0 mmol/L) or currently taking oral hypoglycaemic drugs or insulin was 7.1%, and nearly half of these people (3.8% of the overall population) had not previously been diagnosed with diabetes. In addition, 40.7% of the population had total blood cholesterol levels of ≥5.0 mmol/L or were currently on medication for raised cholesterol.

Overall, 32.8% of the population had 3–5 risk factors for developing CVD, and 60.1% had 1–2, with the number of risk factors present increasing with age. In addition, a quarter (23.4%) of the population aged 40–69 years had a 30% or higher 10-year cardiometabolic risk of developing a CVD event such as stroke and myocardial infarction. However, only one third (36.6%) of these high-risk individuals were receiving medication and counselling for their prevention.

5.2 Strengths and limitations

The present STEPS survey has several strengths.

(1) It uses standard best-practice methods endorsed by WHO, thus allowing, as far as is practicably possible, reliable and internationally comparable data to be collected.

(2) All training and data collection procedures, using electronic tablets and a real-time internet platform, are highly standardized and quality-assured, thus minimizing variability both within the country and between countries.

(3) The study is a health examination study, with objective health measures, thus allowing estimates of the population affected by conditions but not aware of their presence and treatment efficacy; this is indispensable for monitoring universal health coverage.

(4) Multiple risk factors are considered simultaneously, which allows calculation of total risk and assessment of associations and linkages between different NCDs and their risk factors; for instance, high levels of alcohol consumption can be considered alongside depression and injury and violence, or obesity alongside diabetes and CVD risk, thus allowing more comprehensive and integrated NCD health strategies and interventions to be defined.

(5) The survey targets a nationally representative sample of adults aged 18–69 years and uses appropriate statistical methods, so that the results can be generalized, within a certain defined margin of error, to the whole population of Ukraine aged 18–69 years.

(6) The inclusion of optional modules on depression and suicidal behaviour and violence and injury provide data on two additional groups of conditions with very high disease burden in Ukraine.

The study also has several limitations. The response rate is relatively low, at 57%, and although the results are adjusted for non-response, this could still have an effect. For self-reported data, social desirability and norms and recall bias can have an important effect.

36.6%

One third of persons with high cardiometabolic risk were receiving medication and counselling

5.3 Comparison with other studies

The prevalence of NCD risk factors, especially smoking and alcohol consumption, is very high in Ukraine. Nevertheless, the results of the survey are generally comparable to those obtained by other countries in the WHO European Region that have recently conducted STEPS surveys, including Belarus, Georgia and the Republic of Moldova. As in other countries, there is room for improvement in the health system response to NCDs, as a large proportion of people with NCDs such as hypertension and diabetes are unaware of their condition. Even when hypertension, diabetes, CVD and other NCDs are detected, only a fraction of the individuals involved receive treatment, and even fewer have their condition controlled. The international targets for NCD treatment (for example, at least 50% of persons with high CVD risks to receive medication and counselling for prevention of stroke and myocardial infarction, 70% of women to undergo cervical cancer screening) are largely unmet.

GATS and the Health Index Survey, two large studies recently conducted in Ukraine, collected data on selected NCD risk factors.[7,10] Nevertheless, it should be noted that the target populations were different (18–69 years in STEPS, 15+ years in GATS, and 18+ years in the Health Index Survey) and that methods are frequently not directly comparable, especially as GATS and the Health Index Survey have only the interview component and are not examination studies. While GATS is focused on tobacco use, the Health Index Survey collected data on several NCD risk factors. The estimated smoking prevalence in STEPS (33.9%) is higher than GATS 2017 (22.8%) and more in line with Health Index 2018 (28%). As smoking prevalence decreases with age, it is difficult to determine to what extent the observed differences are due to the studies' different age ranges, but STEPS also included explicit questions on hookah and HTPs, which are frequently used in Ukraine. STEPS showed a slightly higher prevalence of overweight and obesity (59.1% and 24.8%, respectively) than the Health Index (54.2% and 17.7%, respectively), which used self-reported and not measured weight and height, which is the gold-standard method. Many self-reported behaviours, diseases and symptoms – such as prevalence of high BP or hypertension diagnosed by a health-care worker (Health Index: 27%; STEPS: 27.7%) and diabetes (Health Index: 3.7%; STEPS: 5.9%) – were comparable in the two studies. High prevalence of behavioural risk factors already in adolescence was also confirmed in an HBSC survey,[9] as well as high alcohol use in ESPAD.[8]

5.4 Suggestions for data use and future work

While the STEPS survey collected a wealth of data on NCDs and their risk factors, only selected results could be summarized and presented in the main text of this report. The accompanying Databook offers a huge amount of additional information processed in a standardized and comparable way. These data are now available to evaluate progress, to set priorities, and to plan necessary policies, interventions and actions to protect people's health and ingrain healthy attitudes over the coming years. The results of the STEPS survey should be shared broadly with all partners and associations to encourage discussion and establish a policy dialogue. When discussing policy options for prevention and control of NCDs, WHO "best buys" and other recommended interventions could be considered.[25] A large number of technical packages for prevention and management of NCDs and other conditions is available and can be considered for implementation.[26-30]

Given the breadth and depth of data available for analysis, conducting more in-depth assessments and reporting on specific topics of interest – either thematic (e.g. on cervical and breast cancer or diabetes, to name but a few) and/or cross-cutting (e.g. on gender and inequalities at subregional level or by socioeconomic status) – should be considered as a way of informing policy. Likewise, use of the collected data to strengthen implementation research and capacity for NCD surveillance in Ukraine presents a unique opportunity. As a concrete example of follow-up actions, the national Public Health Centre and the WHO Regional Office for Europe are developing a country profile using gender perspective to analyse NCD risk factor data for Ukraine and six other counties.

By conducting the STEPS survey, Ukraine has also fulfilled an important international commitment made at the Second United Nations High-level Meeting on NCDs in 2014 and has laid a cornerstone in developing a surveillance system for NCDs and their risk factors. A wealth of data is now available for monitoring of health-related Sustainable Development Goals, and national, regional and global action plans and commitments related to the prevention and control of NCDs. The next round of STEPS surveys should be conducted by 2024 in order to allow monitoring of trends and progress made on the prevention and control of NCDs and their risk factors.

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